



# Apalachicola National Estuarine Research Reserve

## Management Plan



Florida Department of Environmental Protection  
Coastal and Aquatic Managed Areas  
3900 Commonwealth Blvd., MS #235, Tallahassee, FL 32399  
[www.floridacoasts.org](http://www.floridacoasts.org)







This management plan has been developed in accordance with National Oceanic and Atmospheric Administration regulations, including all provisions for public involvement. It is consistent with the congressional intent of Section 315 of the Coastal Zone Management Act of 1972, as amended, and the provisions of the Florida Coastal Management Program.

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April 2014



# Apalachicola National Estuarine Research Reserve

## Management Plan

### Includes:

- Apalachicola Bay Aquatic Preserve
- Apalachicola National Estuarine Research Reserve



### Apalachicola National Estuarine Research Reserve

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*Tupelo trees lining the banks of the Apalachicola River*

## Mission Statements

The mission of the Office of Coastal and Aquatic Managed Areas in relation to Florida's 41 aquatic preserves, three National Estuarine Research Reserves, National Marine Sanctuary and Coral Reef Conservation Program is conserving and restoring Florida's coastal and aquatic resources for the benefit of people and the environment. The establishment and management, through Federal-state cooperation, of a national system of Estuarine Research Reserves representative of the various regions and estuarine types in the United States, provide opportunities for long-term research, education, and interpretation.

**Apalachicola National Estuarine Research Reserve Mission** / The Apalachicola National Estuarine Research Reserve's mission is promote and practice informed stewardship of upland and aquatic resources to conserve the area's natural biodiversity and cultural resources through applied research and education.





# Executive Summary

Apalachicola National Estuarine Research Reserve (NERR) Management Plan	
Lead Agency:	Florida Department of Environmental Protection's (DEP) Office of Coastal and Aquatic Managed Areas (CAMA)
Common Name of Property:	Apalachicola National Estuarine Research Reserve
Location:	Franklin County, Florida
Acreage Under Lease:	6,794 upland acres under CAMA lease
Acreage Total:	234,715 (Includes property in Franklin, Gulf and Liberty counties managed by other entities)

## Acreage Breakdown for CAMA Management Units According to Florida Natural Areas Inventory (FNAI) Natural Community Types

FNAI Natural Communities	Sovereign Submerged Lands	Upland Acres Under CAMA Lease according to GIS
Tidal Marsh-estuarine		3,034
Floodplain Swamp		1,332
Scrubby Flatwoods		589
Coastal Grasslands		557
Scrub		427
Coastal Interdunal Swale		179
Shell Mound		2
Marine Unconsolidated Substrate		179
Beach Dune		165
Salt Marsh		204
Wet Flatwoods		99
Mesic Flatwoods		14
Ruderal		7
Estuarine Unconsolidated Substrate (tidal)		4
Depression Marsh		2
Mollusk Reef	12,335	
Seagrass Meadow	4,418	
Estuarine Unconsolidated Substrate (subtidal)	93,558	
Alluvial Stream	6,887	
Blackwater Stream	287	
<b>Total Acreage:</b>	<b>117,485</b>	<b>6,794</b>

All acreages are calculated through GIS. Totals may not add up due to rounding and differences in acreage calculations by GIS and lease descriptions. Sovereign submerged lands include some lands managed by other agencies.

Lease/Management Agreement Numbers:	Lease #3862
Designated Use:	Single use for Conservation and Preservation
Legislative or Executive Directives that Constrain the Use of the Property:	None
Management Responsibilities:	Agency - DEP's CAMA lead manager
Designation:	National Estuarine Research Reserve
Sublease(s):	3584-01 from Florida Fish and Wildlife Conservation Commission for the Magnolia Bluff tract (+/-203.6 acres)
Encumbrances:	Army Corps of Engineers right-of-way
Type Acquisition:	Florida Forever, P2000, Conservation and Recreation Lands, Environmentally Endangered Lands, and Donations
Unique Features:	Natural Gulf Coastal Plain –Pleistocene Marine Sands, Tupelo/Cypress Swamp, Barrier Islands.
Archaeological/ Historical Sites:	Occupied by humans over 10,000 years – rich pre-history from Deptford period forward. More than 1,000 known sites in the Apalachicola River and Bay Drainage Basin which includes ANERR.

**Management Needs**

Ecosystem Science	<p>The role of the ANERR Ecosystem Science Program is to:</p> <ol style="list-style-type: none"> <li>1. Provide logistical support for visiting scientists toward expanding our understanding of basic and applied ecological processes related to ANERR and its watershed.</li> <li>2. Summarize existing scientific information with the purpose of communicating the status and trends in pollutants, habitats, and biological diversity, and to identify additional research needs.</li> <li>3. Initiate new research initiatives and monitoring projects to fill gaps in our understanding of key ecosystem functions as they pertain to pollutants, habitats and diversity.</li> <li>4. Develop and guide Best Management Practices.</li> </ol> <p>ANERR has been a central player in gathering and applying scientific information on the Apalachicola River and Bay system.</p>
Resource Management	<p>The Resource Management Program addresses how CAMA manages the ANERR and its resources. The ANERR accomplishes its resource management by physically conducting management activities on the resources for which it is directly responsible, and by influencing the activities of others within and adjacent to its managed areas. CAMA managed areas are particularly sensitive to upstream water quality and quantity issues, making ANERR especially conscious of potential environmental changes associated with off-site activities. CAMA works to ensure that the most effective and efficient techniques are utilized in CAMA management activities.</p>
Education and Outreach	<p>The Education and Outreach Program components are essential management tools used to increase public awareness and promote informed stewardship by local communities. Programs include on and off-site education and training activities. These activities include; field studies for students and teachers; development and distribution of various media; the dissemination of information at local events; the recruitment and management of volunteers; and training workshops for local citizens and decision-makers. The design and implementation of educational programs incorporate the strategic targeting of select audiences. These audiences include all ages and walks of life: however, each represents key stakeholders. These efforts by the Education and Outreach Program allow ANERR to build relationships and convey knowledge to the community, which is invaluable to successful management.</p> <p>New programs are developed as a result of informal market analysis, needs assessments and public requests for topics and types of programs. Program evaluations are utilized to determine program impacts and discern results gained by program participants. Programs are then adjusted to improve results.</p>
Public Use	<p>Encouraging public use that is compatible with natural and cultural protection is a priority of ANERR. The natural and cultural resources of ANERR provide a unique user experience not found elsewhere. Consistent with public expectations and ANERR's mission, sustainability will be used as a guiding principle for public use decisions affecting natural and cultural resources.</p>
Acquisition Needs/Acreage:	Several, listed in Chapter 9
Surplus Lands/Acreage:	The former ANERR Visitor Center in Apalachicola (underway)
Public Involvement:	Three advisory council meetings and two public meetings were held.

**Managed Areas within Apalachicola NERR**

<i>Agency Breakdown</i>	<i>Acreage</i>
Sovereign Submerged Lands: (This also includes the Apalachicola Bay Aquatic Preserve (80,875 acres) and submerged lands managed by other agencies.)	117, 485 acres
Uplands Under CAMA Lease:	6,794 acres
Florida Fish and Wildlife Conservation Commission:	63,814 acres
State Parks	2,024 acres
US Fish and Wildlife Service:	11,938 acres
Northwest Florida Water Management District:	36,241 acres
<b>Total Acreage:</b>	<b>238,296 acres</b> (This number does not match the "Acreage Total" above due to overlapping boundaries.)

**Apalachicola National Estuarine Research Reserve Mission:** The Apalachicola National Estuarine Research Reserve's mission is to promote and practice informed stewardship of upland and aquatic resources to conserve the area's natural biodiversity and cultural resources through applied research and education.

The Management Plan for the Apalachicola National Estuarine Research Reserve (ANERR) covers the time period from 2013 through 2018. ANERR, located on the Northwest Gulf Coast of Florida, in Franklin County, is one of 28 National Estuarine Research Reserves managed through a cooperative agreement with the National Oceanic and Atmospheric Administration's (NOAA) Estuarine Reserve Division (ERD). The Florida Department of Environmental Protection (DEP) Office of Coastal and Aquatic Managed Areas (CAMA) serves as the lead state agency for ANERR.

The ANERR Management Plan is a strategic document that describes natural and cultural resources within the boundaries of ANERR, identifies priority issues that DEP staff must address to adequately protect these resources, and the goals, objectives and strategies necessary to support ANERR's mission of informed stewardship based on science and education. DEP works in cooperation with NOAA and other federal, state, and local partners to conduct research and monitoring, educate students and teachers, increase public awareness and understanding, conduct stewardship and restoration, manage public access and use, and provide training for local policymakers.

The coastal ecosystems within the boundaries of ANERR have state, national and international significance as an ecosystem with tremendous biodiversity and productivity. ANERR includes a significant portion of the remaining commercial oyster reefs in the State. The Apalachicola River and Bay are also among the nation's few remaining relatively undeveloped and near pristine systems. Habitats within ANERR provide essential feeding and nesting grounds for a diverse assemblage of upland, coastal and estuarine wildlife, including more than 300 species of birds, 1,300 species of plants, 40 species amphibians and 80 species of reptiles, 50 species of mammals and 180 species of fishes.

The economic values associated with sustaining the environmental health of ANERR are locally significant and are of great importance to the State of Florida. Commercial and recreational fishing, tourism, and boating are among the most important industries in northwest Florida. Each generates millions of dollars per year, and each are inextricably linked to the long-term protection and conservation of the coastal ecosystems within ANERR. The Friends of the Reserve (FOR), a local non-profit volunteer community based organization, was established over 20 years ago in recognition of these values and to support ANERR's mission.

The ANERR Management Plan identifies six priority issues: 1) public use and access to ANERR-managed lands; 2) habitat change and the resultant impacts to species within ANERR; 3) changing land use patterns within the Apalachicola-Chattahoochee-Flint watershed and the potential hydrologic changes within the system; 4) loss of cultural resources within ANERR Boundary; 5) impacts of global and regional processes on ecosystems and communities within ANERR; and 6) community involvement, engagement and support. The management plan identifies key goals and strategies linked to these issues: restoring natural flow regimes, protecting ecological functions, protecting listed species, managing for compatible public use, establishing long-term control for key lands and water, increasing community awareness and involvement, increasing understanding of ecological processes, and promoting informed coastal decisions.

As of 2012, ANERR has 13 full-time employees serving in coastal management, research, education and training roles that directly support the goals and strategies outlined in the ANERR Management Plan. In addition, nine temporary and part-time staff help support priority projects.

Since the last management plan, major accomplishments include the design and completion of the new nature center and office complex in Eastpoint, increased state-funded positions at ANERR, an expansion of the System-wide Monitoring Program (SWMP) and Geographic Information System (GIS) programs, completion of the site profile, implementation of grade-specific education programs for Franklin County schools, inauguration of the Learning in Florida's Environment (LIFE) educational program, development of dock and trail facilities, development of a regional resource management partnership, establishment of a coastal training program and completion of the Needs Assessment, Market Analysis, and Strategy documents

An important element of the ANERR Management Plan is the emphasis on a fully integrated approach that links ongoing research, education, stewardship and training programs together. Past experience at ANERR in using an integrated management framework has resulted in significant outcomes that directly support ANERR's mission. An additional important element of the Management Plan is the reliance on strategic partnerships with public and private sector interests at local, regional, and national scales that also directly support ANERR's mission.

To successfully achieve the goals and strategies described in this management plan, ANERR staff and partners will work to establish links with stakeholders that will result in solving critical resource issues and that will increase community awareness while informing local policymakers. New partnerships with private sector interests including boating, tourism, and sport fishing are envisioned that engage primary users of ANERR in informed stewardship.

## CAMA/BTIITF Approval

**CAMA approval date:** May 17, 2013

**BTIITF approval date:**

**ARC approval date:** August 15, 2013

**NOAA approval date:** February 5, 2014

**Comments:**



# Table of Contents

## Part One / Basis for Management

Chapter 1 / <b>Introduction</b> .....	1
1.1 / Management Plan Purpose and Scope .....	3
1.2 / Public Involvement .....	4
Chapter 2 / <b>National Estuarine Research Reserve System</b> .....	5
2.1 / Introduction .....	5
2.2 / National Estuarine Research Reserve System Mission and Goals .....	5
2.3 / Biogeographic Regions .....	7
2.4 / Reserve Designation and Operation .....	7
2.5 / Administrative Framework.....	8
Chapter 3 / <b>The Florida Department of Environmental Protection’s Office of Coastal and Aquatic Managed Areas</b> .....	9
3.1 / Introduction .....	9
3.2 / Management Authority .....	10
3.3 / Statutory Authority .....	11
3.4 / Administrative Rules .....	12
Chapter 4 / <b>The Apalachicola National Estuarine Research Reserve</b> .....	15
4.1 / Background and Description of Apalachicola National Estuarine Research Reserve Region .....	15
History of the Apalachicola National Estuarine Research Reserve .....	15
General Description .....	16
Resource Description .....	16
Values .....	53
Citizen Support Organization .....	54
4.2 / Coastal and Aquatic Managed Areas Management Units within the National Estuarine Research Reserve Boundaries.....	56
4.3 / Non-CAMA Managed Public Lands within the Apalachicola Research Reserve Boundary .....	61
4.4 / Planned Expansion of the Apalachicola Research Reserve Boundary.....	62

## Part Two / Management Programs and Issues

Chapter 5 / <b>The Office of Coastal and Aquatic Managed Areas’ Management Programs</b> .....	63
5.1 / The Ecosystem Science Management Program .....	63
National Estuarine Research Reserve System Research and Monitoring Plan .....	64
Background of Ecosystem Science at Apalachicola National Estuarine Research Reserve .....	66
Current Status of Ecosystem Science at Apalachicola National Estuarine Research Reserve .....	67
5.2 / The Resource Management Program .....	71
Background Status of Resource Management at Apalachicola National Estuarine Research Reserve .....	71
Current Status of Resource Management at Apalachicola National Estuarine Research Reserve .....	72
Citizen Support Organization Involvement.....	75
5.3 / The Education, Outreach and Training Program .....	75
National Estuarine Research Reserve Systemwide Education and Training Plan.....	76
Background of Education, Outreach and Training at Apalachicola National Estuarine Research Reserve .....	78
Current Status of Education, Outreach and Training at Apalachicola National Estuarine Research Reserve .....	79
5.4 / The Public Use and Access Program .....	85
Background of Public Use and Access at Apalachicola National Estuarine Research Reserve.....	86
Current Status of Public Use and Access at Apalachicola National Estuarine Research Reserve .....	86
Chapter 6 / <b>Issues</b> .....	89
6.1 / Introduction to Issue-Based Management .....	89
Issue One: Public Use .....	90
Issue Two: Habitat and Species Management .....	92
Issue Three: Watershed Land Use.....	94
Issue Four: Cultural Resources .....	97
Issue Five: Global Processes .....	97
Issue Six: Community involvement, engagement and support .....	99

### *Part Three / Additional Plans*

Chapter 7 / <b>Administrative Plan</b> .....	101
Chapter 8 / <b>Facilities Plan</b> .....	107
Chapter 9 / <b>Land Acquisition Plan</b> .....	113

### *List of Maps*

Map 1 / Apalachicola National Estuarine Research Reserve Location and Boundaries .....	2
Map 2 / Coastal and Aquatic Managed Areas Site Map .....	4
Map 3 / National Estuarine Research Reserve Biogeographic Regions.....	6
Map 4 / National Estuarine Research Reserve System.....	7
Map 5 / Land Use Surrounding the Apalachicola National Estuarine Research Reserve .....	19
Map 6 / Soils of Franklin County.....	22
Map 7 / Surface Water Classifications in Apalachicola Bay .....	23
Map 8 / Apalachicola-Chattahoochee-Flint Watershed .....	25
Map 9 / Watershed of the Apalachicola River.....	26
Map 10 / Natural Communities of the Little St. George Island Subunit.....	37
Map 11 / Natural Communities of the Lower Marshes Areas of the Apalachicola River and Delta .....	39
Map 12 / Oyster Coverage, Seagrasses and Marshes.....	44
Map 13 / Select Cultural Resources of the Apalachicola National Estuarine Research Reserve.....	51
Map 14 / Publicly Owned Property Adjacent to the Apalachicola National Estuarine Research Reserve.....	52
Map 15 / Apalachicola National Estuarine Research Reserve Managed Parcels .....	54
Map 16 / Lower River Marshes .....	55
Map 17 / Cat Point Parcels and New Facility Location .....	55
Map 18 / Unit 4.....	56
Map 19 / Williamson Subunit.....	57
Map 20 / Nick's Hole / Pelican Point .....	57
Map 21 / Little St. George Island .....	58
Map 22 / Dredge Spoil Islands .....	59
Map 23 / Current and Future Facilities .....	60
Map 24 / Conservation Lands within the Apalachicola National Estuarine Research Reserve.....	61
Map 25 / System-Wide Monitoring Plan Locations .....	69
Map 26 / Proposed Public Uses.....	82
Map 27 / Eastpoint Natural Community Trail.....	110
Map 28 / Land Acquisition Recommendations .....	114

### *List of Tables*

Table 1 / Florida Counties within the Apalachicola River Watershed.....	17
Table 2 / Soils of Franklin County .....	21
Table 3 / Coastal Change Analysis Program (C-CAP), Florida Natural Areas Inventory Natural Community and NERR Habitat Classification Crosswalk .....	28
Table 4 / Distribution and Area of Major Bodies of Water within Apalachicola National Estuarine Research Reserve Boundaries.....	41
Table 5 / Summary of Natural Communities on Apalachicola National Estuarine Research Reserve .....	42
Table 6 / Education numbers over last seven years .....	76
Table 7 / Analysis of Multiple-Use Potential for the Apalachicola National Estuarine Research Reserve.....	84
Table 8 / Recommended Acquisition Priorities for Apalachicola National Estuarine Research Reserve ....	116

### *List of Figures*

Figure 1 / Federal Management Structure.....	8
Figure 2 / State Management Structure.....	13
Figure 3 / Introduction to Issue-based Adaptive Management.....	90
Figure 4 / Organizational Chart of Apalachicola National Estuarine Research Reserve.....	102

## List of Appendices

Appendix A / <b>Legal Documents</b> .....	118
A.1 / Code of Federal Regulations.....	118
A.2 / Conceptual State Lands Management Plan .....	143
A.3 / Aquatic Preserve Resolution .....	179
A.4 / Florida Statutes.....	180
A.5 / Florida Administrative Code .....	180
A.6 / Management Agreements and Related Documents.....	181
Memorandums of Understanding and Memorandums of Agreement.....	181
Apalachicola Regional Stewardship Alliance Memorandum of Understanding .....	181
Florida Division of Forestry Memorandum of Agreement .....	210
Other Agreements.....	216
Magnolia Bluff Sublease .....	216
Citizen Support Organization Agreement.....	246
Administration Agreement for the Apalachicola National Estuarine Research Reserve.....	250
First Baptist Church of St. George Island Special Use Permit .....	276
Appendix B / <b>Resource Data</b> .....	284
B.1 / Acronym List.....	284
B.2 / Glossary of Terms.....	285
B.3 / References .....	286
B.4 / Species Lists.....	304
Species of the Apalachicola River and Bay Basin .....	304
Listed Species .....	354
Non-native Species .....	358
B.5 / Monitoring Data .....	359
B.6 / Summary of Florida Natural Areas Inventory Descriptions.....	361
B.7 / Summary of Apalachicola National Estuarine Research Reserve Policies.....	364
Appendix C / <b>Public Involvement</b> .....	365
C.1 / Advisory Committee.....	365
List of Members and their Affiliations .....	365
Florida Administrative Weekly Postings.....	366
Meeting Summaries.....	368
C.2 / Public Scoping Meeting(s) .....	370
Florida Administrative Weekly Posting(s) .....	370
Advertisement Flyers.....	371
Summary of the Public Scoping Meeting(s) .....	372
C.3 / Formal Public Meeting(s) .....	375
Florida Administrative Weekly Posting(s) .....	375
Advertisement Flyers.....	376
Summary of the Formal Public Meeting(s) .....	377
C.4 / Acquisition and Restoration Approval Letter.....	382
C.5 / Federal Review .....	383
Federal Review and Public Commenting.....	383
Federal Register Notices .....	384
Appendix D / <b>Goals, Objectives and Strategies Tables</b> .....	386
D.1 / Current Goals, Objectives and Strategies Table .....	386
D.2 / Budget Summary Table .....	397
D.3 / Major Accomplishments since the Approval of the Previous Plan.....	398
D.4 / Eliminated Goals, Objectives and Strategies from Previous Plan.....	399
Appendix E / <b>Division of State Lands/Acquisition and Restoration Council Requirements</b> .....	401
E.1 / Acquisition and Restoration Council Management Plan Compliance Checklist .....	401
E.2 / Trustees Lease Agreement and Related Documents.....	404
E.3 / Letter of Compliance of the Management Plan with the Local Government Comprehensive Plan ..	405
E.4 / Management Prospectus .....	406
E.5 / Fire Management Plan.....	406
E.6 / Management Procedures for Archaeological and Historical Sites and Properties on State-Owned or Controlled Lands.....	417
E.7 / Analysis of Contracting Potential.....	418
E.8 / Land Management Review Team Recommendations .....	419
E.9 / Magnolia Bluff Management Plan.....	426
E.10 / Arthropod Control Letter .....	436







*Brown Pelican*

*Part One*

## Basis for Management

*Chapter One*

### Introduction

The National Estuarine Research Reserve (NERR) System is a network of protected areas established for long-term research, education and stewardship. Section 315 of the Coastal Zone Management Act of 1972, as amended, established the NERR System to be administered by the National Oceanic and Atmospheric Administration (NOAA) in cooperation with the coastal states in which the NERRs are designated. Under the NERR System, healthy estuarine ecosystems which typify different regions of the United States are designated and managed as sites for long-term research and are used as a base for estuarine education and interpretation programs. The NERR System also provides a framework through which research results and techniques for estuarine education and interpretation can be shared throughout the region and across the nation.

This partnership program between NOAA and the coastal states protects more than one million acres of estuarine land and water, which provide essential habitat for wildlife; offer educational opportunities for students, teachers and the public; and serve as living laboratories for scientists. In 1979, the Apalachicola National Estuarine Research Reserve (ANERR) was designated in Franklin County, Florida as a part of the NERR System because of its pristine nature and valued habitat for commercially and recreationally important species. Public lands included within ANERR are the St. Vincent Island National Wildlife Refuge, St. George Island State Park, Apalachicola River Wildlife and Environmental Area, Apalachicola River Water Management Area, and Little St. George Island. The boundaries of ANERR also include the Apalachicola Bay Aquatic Preserve. The new ANERR headquarters is located in Eastpoint on Cat Point. Highway 98 provides the only access to Apalachicola and Eastpoint, either eastward from Panama City or westward from Crawfordville.



The Florida NERRs are administered on behalf of the state by the Florida Department of Environmental Protection's Office of Coastal and Aquatic Managed Areas (CAMA) as part of a network that includes 41 aquatic preserves, three NERRs, a National Marine Sanctuary, the Coral Reef Conservation Program and the Florida Oceans and Coastal Council. This provides for a system of significant protections to ensure that our most popular and ecologically important aquatic and wetland ecosystems are cared for in perpetuity. Each of these special places is managed with strategies based on local resources, issues and conditions.

The expansive coastline and wealth of aquatic resources of Florida attracts millions of residents and visitors, and the businesses that serve them. Florida's submerged lands play important roles in maintaining good water quality, hosting a diversity of wildlife and habitats (including economically and



ecologically valuable nursery areas), and supporting a treasured quality of life for all. In the 1960s, it became apparent that the ecosystems that had attracted so many people to Florida could not support rapid growth without science-based resource protection and management. To this end, state legislators provided extra protection for certain exceptional aquatic areas by designating them as aquatic preserves.

Title to submerged lands not previously conveyed to private landowners is held by the Board of Trustees of the Internal Improvement Trust Fund (the Trustees). The Governor and Cabinet, sitting as the Trustees, act as guardians for the people of the State of Florida (§253.03, Florida Statutes [F.S.]) and regulate the use of these public lands. Through statute, the Trustees have the authority to adopt rules related to the management of sovereignty submerged lands (Florida Aquatic Preserve Act of 1975, §258.36, F.S.). A higher layer of protection is afforded to aquatic preserves which include areas of sovereign lands that have been “set aside forever as aquatic preserves or sanctuaries for the benefit of future generations” due to “exceptional biological, aesthetic, and scientific value” (Florida Aquatic Preserve Act of 1975, §258.36, F.S.).

This tradition of concern and protection of these exceptional areas continues, and now includes: the Rookery Bay NERR in Southwest Florida, designated in 1978; the Apalachicola NERR in Northwest Florida, designated in 1979; and the Guana Tolomato Matanzas NERR in Northeast Florida, designated in 1999. In addition, the Florida Oceans and Coastal Council was created in 2005 to develop Florida’s ocean and coastal research priorities, and establish a statewide ocean research plan. The group also coordinates public and private ocean research for more effective coastal management. This dedication to the conservation of coastal and ocean resources is an investment in Florida’s future.

### **1.1 / Management Plan Purpose and Scope**

With increasing development, recreation and economic pressures, our aquatic resources have the potential to be significantly impacted, either directly or indirectly. These potential impacts to resources can reduce the health and viability of the ecosystems that contain them, requiring active management to ensure the long-term health of the entire network. Effective management plans for the NERRs and aquatic preserves are essential to address this goal and each site’s own set of unique challenges. The purpose of these plans is to incorporate, evaluate and prioritize all relevant information about the site into a cohesive management strategy, allowing for appropriate access to the managed areas while protecting the long-term health of the ecosystems and their resources.

The NOAA requirements for the preparation of management plans are outlined in the NERR program regulations (Coastal Zone Management Act section 315, and 15 Code of Federal Regulations (C.F.R.) Part 921.13). The federal regulations ensure that NERR management programs are consistent with the goals, objectives and policies of the NERR System. The mandate for developing aquatic preserve management plans is outlined in Rule 18-20.013 and Subsection 18-18.013(2) of the Florida Administrative Code (F.A.C.).

Management plan development and review begins with collecting resource information from historical data, research and monitoring and includes input from individual CAMA managers and staff, area stakeholders, and members of the general public. The statistical data, public comment and cooperating agency information is then used to identify management issues and threats affecting the present and future integrity of the site, its boundaries and adjacent areas. This information is used in the development and review of the management plan, which is examined for consistency with the statutory authority and intent of the aquatic preserve and NERR programs. Each management plan is evaluated periodically and revised as necessary to allow for strategic improvements. Intended to be used by site managers and other agencies or private groups involved with maintaining the natural integrity of these resources, the plan includes scientific information about the existing conditions of the site and the management strategies developed to respond to those conditions.

To aid in the analysis and development of the management strategies for the site plans, four comprehensive management programs are identified. In each of these programs, relevant information about the specific sites is described in an effort to create a comprehensive management plan. It is expected that the specific needs or issues are unique and vary at each location, but the four management program areas will remain constant. These areas are:

- Ecosystem Science
- Resource Management
- Education, Training and Outreach
- Public Use

In addition, unique local and regional issues are identified, and goals, objectives and strategies are established to address these issues. Finally, the program and facility needs required to meet these goals



are identified. These components are all key elements in an effective coastal management program and for achieving the mission of the sites.

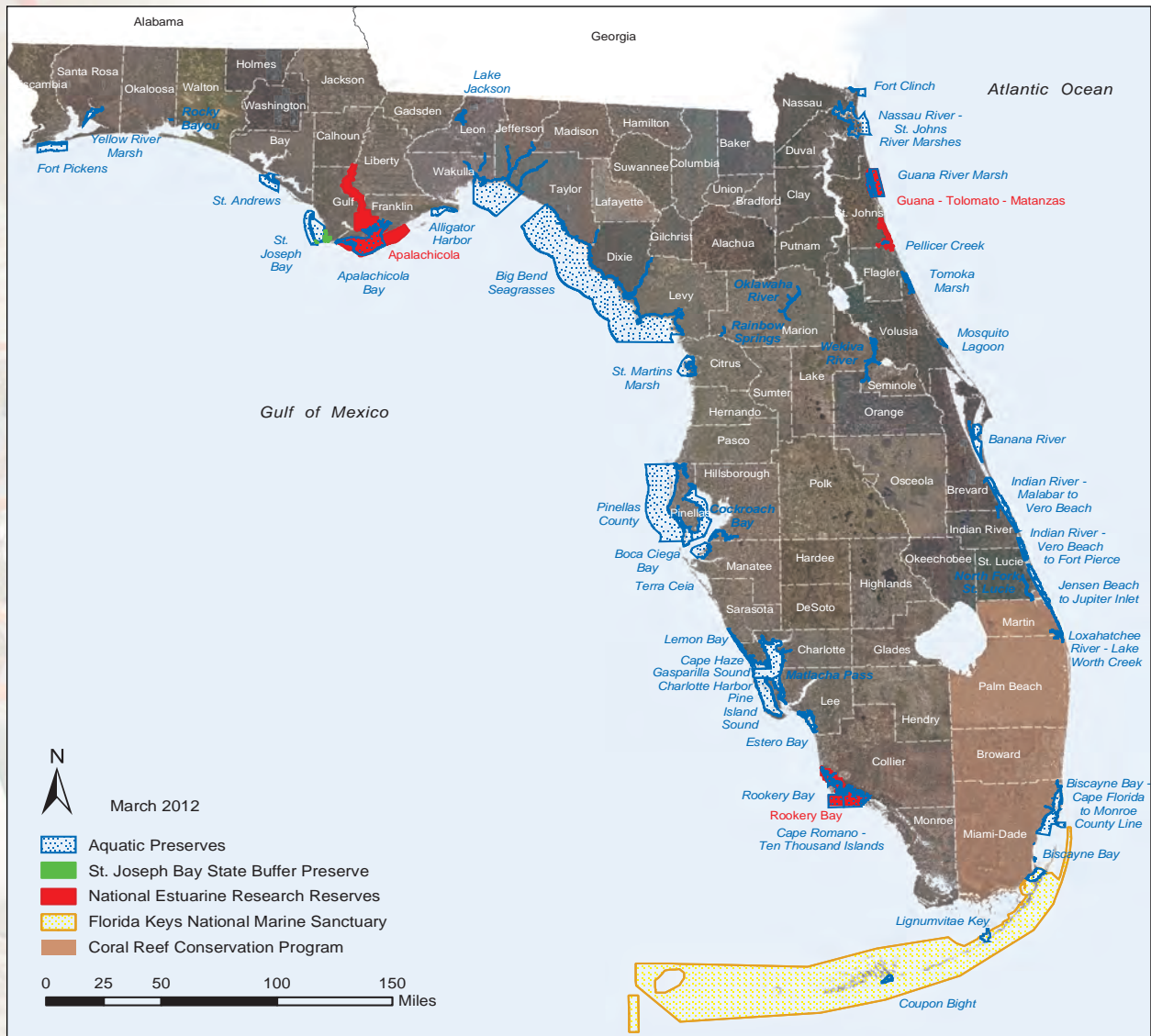
The original ANERR management plan was accepted on July 23rd of 1998 and covered the period between 1998 and 2003. This plan serves as an update of the original plan.

### 1.2 / Public Involvement

CAMA recognizes the importance of stakeholder participation and encourages their involvement in the management plan development process. CAMA is also committed to meeting the requirements of the Sunshine Law (§286.011, F.S.):

- Meetings of public boards or commissions must be open to the public;
- Reasonable notice of such meetings must be given; and
- Minutes of the meetings must be recorded.

Several key steps are to be taken during management plan development. First, staff organizes an advisory committee comprised of key stakeholders. Next, staff advertises and conducts one or more public meetings to receive input from stakeholders on the concerns and perceived issues affecting each of the sites. This input is used in the development of a draft management plan that is reviewed by CAMA staff and the advisory committee. After the initial reviews, the staff advertises and conducts, in conjunction with the advisory committee, additional public meetings to engage the stakeholders for feedback on the draft plan and the development of the final draft of the management plan. For additional information about the advisory committee and the public meetings refer to Appendix C - Public Involvement.







*Sunrise on Graham Creek*

## Chapter Two

# National Estuarine Research Reserve System

## 2.1 / Introduction

The National Estuarine Research Reserve (NERR) System was created by the Coastal Zone Management Act of 1972, as amended, 16 United States Code Section 1461, to augment the Federal Coastal Zone Management Program. The Coastal Zone Management Program is dedicated to comprehensive, sustainable management of the nation's coasts.

The NERR System is a network of protected areas established to promote informed management of the nation's estuaries and coastal habitats. The NERR System currently consists of 28 NERRs in 23 states and territories, protecting over one million acres of estuarine lands and waters.

## 2.2 / National Estuarine Research Reserve System Mission and Goals

**National Estuarine Research Reserve Mission** - As stated in the NERR regulations, 15 Code of Federal Regulations (C.F.R.) Part 921.1(a), the NERR System mission is:

*“the establishment and management, through federal-state cooperation, of a national system of Estuarine Research Reserves representative of the various regions and estuarine types in the United States. Estuarine Research Reserves are established to provide opportunities for long-term research, education, and interpretation.”*

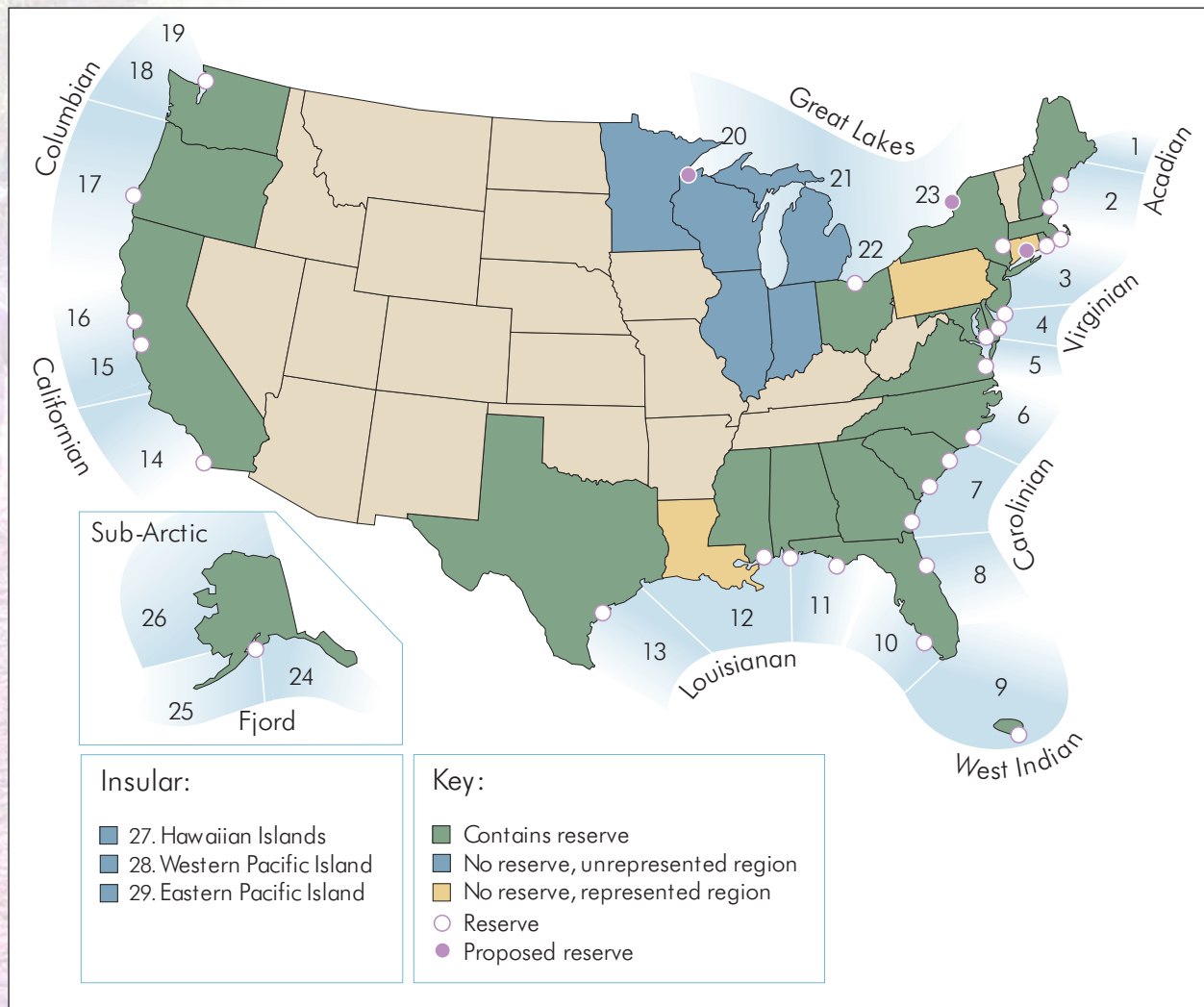
**National Estuarine Research Reserve System Goals** - Federal regulations, 15 C.F.R. Part 921.1(b), provide five specific goals for the NERR System:

1. Ensure a stable environment for research through long-term protection of NERR resources;
2. Address coastal management issues identified as significant through coordinated estuarine research within the NERR System;

3. Enhance public awareness and understanding of estuarine areas and provide suitable opportunities for public education and interpretation;
4. Promote federal, state, public and private use of one or more NERRs within the NERR System when such entities conduct estuarine research; and
5. Conduct and coordinate estuarine research within the NERR System, gathering and making available information necessary for improved understanding and management of estuarine areas.

**National Estuarine Research Reserve System Strategic Goals 2011-2016** - The NERR System began a strategic planning process in 1994 in an effort to help the National Oceanic and Atmospheric Administration (NOAA) achieve its environmental stewardship mission to “sustain healthy coasts.” In conjunction with the strategic planning process, Estuarine Reserves Division (ERD) and NERR staff has conducted a multi-year action planning process on an annual basis since 1996. The resulting three-year action plan provides an overall vision and direction for the NERR System. As part of this process, the NERR System developed a vision: Resilient estuaries and coastal watersheds where human and natural communities thrive; and mission: To practice and promote stewardship of coasts and estuaries through innovative research, education, and training using a place-based system of protected areas. The following three goals are outlined in the 2011-2016 Strategic Plan.

1. Estuaries and coastal watersheds are better protected and managed by implementing place-based approaches at NERRs.
2. NERRs scientific investigations improve understanding and inform decisions affecting estuaries and coastal watersheds.
3. NERRs education and training increases participants’ environmental literacy and ability to make science-based decisions related to estuaries and coastal watersheds.





### 2.3 / Biogeographic Regions

NOAA has identified 11 distinct biogeographic regions and 29 subregions in the U.S., each of which contains several types of estuarine ecosystems (15 C.F.R. Part 921, Appendix I for NERR typology system). These geographic areas are characterized by similar flora and fauna as well as climate. The Apalachicola National Estuarine Research Reserve (ANERR) is within the Panhandle Coast subregion of the Louisianian bioregion. When complete, the NERR System will contain examples of estuarine hydrologic and biological types characteristic of each biogeographic region.

As of 2011, the NERR System included 28 NERRs and one reserve in the process of designation (Connecticut).

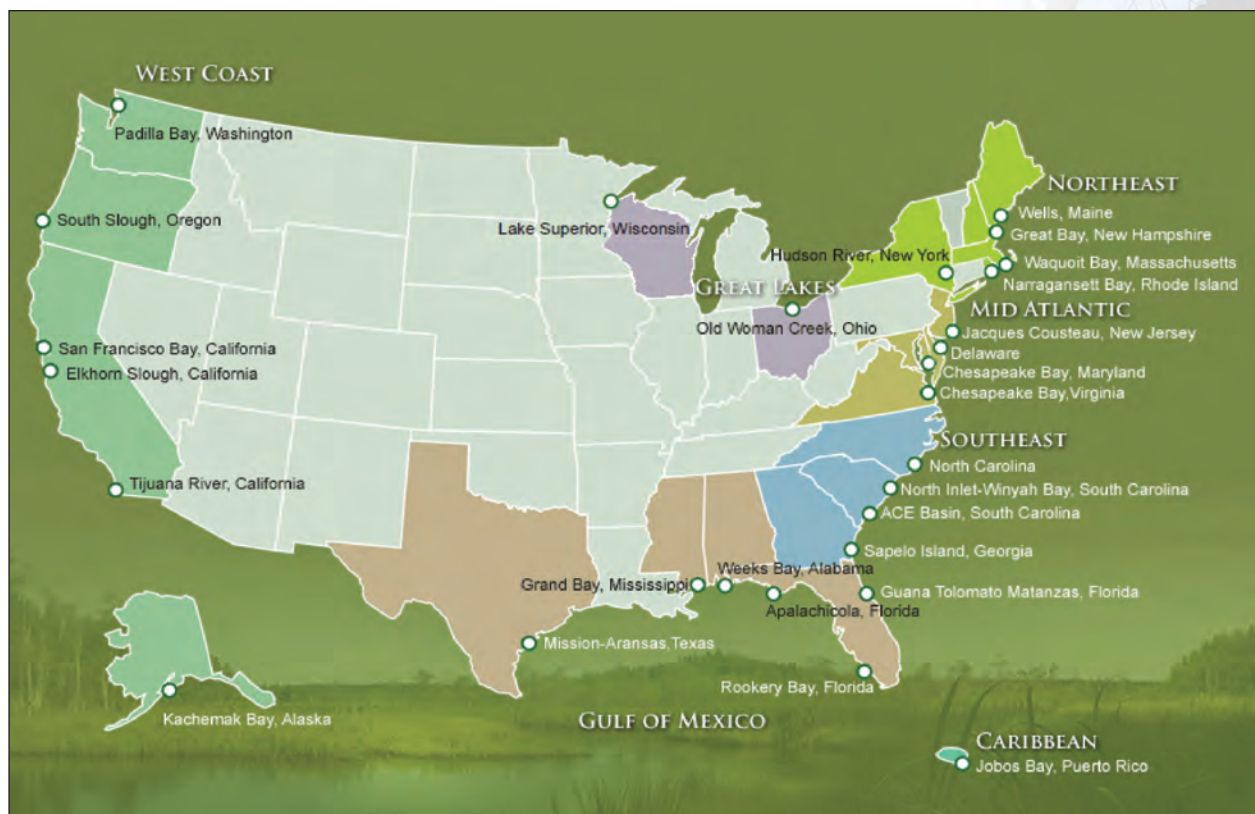
### 2.4 / National Estuarine Research Reserve Designation and Operation

Under federal law (16 United States Code Section 1461), a state can nominate an estuarine ecosystem for Research Reserve status so long as the site meets the following conditions:

- The area is representative of its biogeographic region, is suitable for long-term research and contributes to the biogeographical and typological balance of the NERR System;
- The law of the coastal state provides long-term protection for the proposed NERR's resources to ensure a stable environment for research;
- Designation of the site as a NERR will serve to enhance public awareness and understanding of estuarine areas, and provide suitable opportunities for public education and interpretation; and
- The coastal state has complied with the requirements of any regulations issued by the Secretary [of Commerce].

NERR boundaries must include an adequate portion of the key land and water areas of the natural system to approximate an ecological unit and to ensure effective conservation.

If the proposed site is accepted into the NERR System, it is eligible for NOAA financial assistance on a cost-share basis with the state. The state exercises administrative and management control, consistent with its obligations to NOAA, as outlined in a memorandum of understanding. A NERR may apply to NOAA's ERD for funds to help support operations, research, monitoring, education/interpretation, training, stewardship, development projects, facility construction and land acquisition.



Map 4 / NERR systems.

## 2.5 / Administrative Framework

The ERD of the Office of Ocean and Coastal Resource Management (OCRM) administers the NERR System. The OCRM is part of NOAA's National Ocean Service. The Division establishes standards for designating and operating NERRs, provides support for reserve operations and system-wide programming, undertakes projects that benefit the NERR System, and integrates information from individual NERRs to support decision-making at the national level. As required by federal regulation, 15 C.F.R. Part 921, Subpart E, Section 921.40, OCRM periodically evaluates NERRs for compliance with federal requirements and with the individual NERR's federally-approved management plan.

The ERD currently provides support for three system-wide programs: the System-Wide Monitoring Program, the Graduate Research Fellowship Program and the Coastal Training Program. They also provide support for NERR initiatives on restoration science, invasive species, K-12 education, and NERR specific research, monitoring, education, training and resource stewardship initiatives and programs.

The NERR is intended to operate as a federal/state partnership.

The state interest is usually represented through one or more state agencies (or a higher education institution or non-profit organization); typically agencies charged with environmental, wildlife or coastal management responsibilities. The state partners usually administer NERR personnel and day-to-day NERR management. For Florida the agency that manages the NERRs is the Florida Department of Environmental Protection's Office of Coastal and Aquatic Managed Areas.

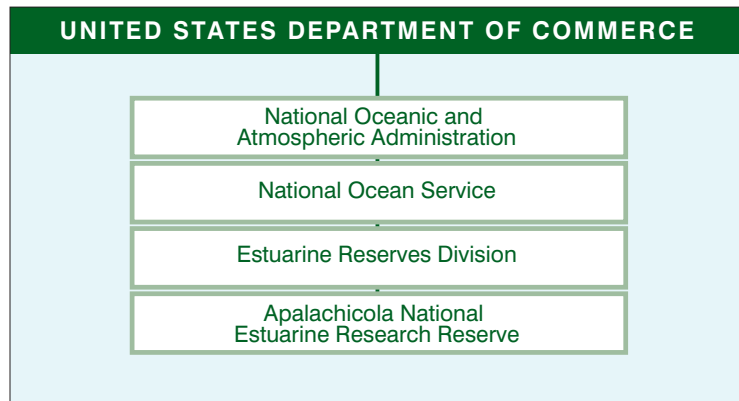


Figure 1 / Federal Structure for Managing National Estuarine Research Reserves.





*Sandwich Tern*

### *Chapter Three*

## **The Florida Department of Environmental Protection's Office of Coastal and Aquatic Managed Areas**

### **3.1 / Introduction**

The Florida Department of Environmental Protection (DEP) protects, conserves and manages Florida's natural resources and enforces the state's environmental laws. The DEP is the lead agency in state government for environmental management and stewardship and commands one of the broadest charges of all the state agencies, protecting Florida's air, water and land. The DEP is divided into three primary areas: Regulatory Programs, Land and Recreation, and Water Policy and Ecosystem Restoration. Florida's environmental priorities include restoring America's Everglades; improving air quality; restoring and protecting the water quality in our springs, lakes, rivers and coastal waters; conserving environmentally-sensitive lands; and providing citizens and visitors with recreational opportunities, now and in the future.

The Office of Coastal and Aquatic Managed Areas (CAMA) is the unit within the DEP that manages more than four million acres of submerged lands and select coastal uplands. This includes three National Estuarine Research Reserves (NERRs), 41 aquatic preserves, the Florida Keys National Marine Sanctuary and the Coral Reef Conservation Program (CRCP). The three NERRs, the Florida Keys National Marine Sanctuary and the CRCP are managed in cooperation with the National Oceanic Atmospheric Administration.

CAMA manages sites in Florida for the conservation and protection of natural and historical resources and resource-based public use that is compatible with the conservation and protection of these lands. CAMA is a strong supporter of the NERR system and its approach to coastal ecosystem management.

The State of Florida has three designated NERR sites, each encompassing at least one aquatic preserve within its boundaries. Rookery Bay NERR includes Rookery Bay Aquatic Preserve and Cape Romano - Ten Thousand Islands Aquatic Preserve; Apalachicola NERR includes Apalachicola Bay Aquatic Preserve; and Guana Tolomato Matanzas NERR includes Guana River Marsh Aquatic Preserve and Pellicer Creek Aquatic Preserve. These aquatic preserves provide discrete areas designated for additional protection beyond that of the surrounding NERR and may afford a foundation for additional protective zoning in the future.

Each of the Florida NERR managers serves as a regional manager overseeing multiple other aquatic preserves in their region. This management structure advances CAMA's ability to manage its sites as a part of the larger statewide system.

### 3.2 / *Management Authority*

Established by law, aquatic preserves are submerged lands of exceptional beauty that are to be maintained in their natural or existing conditions. The intent was to forever set aside submerged lands with exceptional biological, aesthetic, and scientific values as sanctuaries, called aquatic preserves, for the benefit of future generations.

The laws supporting aquatic preserve management are the direct result of the public's awareness of and interest in protecting Florida's aquatic environment. The extensive dredge and fill activities that occurred in the late 1960s spawned this widespread public concern. In 1966, the Board of Trustees of the Internal Improvement Trust Fund (the Trustees) created the first aquatic preserve, Estero Bay, in Lee County.

In 1967, the Florida Legislature passed the Randall Act (Chapter 67-393, Laws of Florida), which established procedures regulating previously unrestricted dredge and fill activities on state-owned submerged lands. That same year, the legislature provided the statutory authority (§253.03, Florida Statutes [F.S.]) for the Trustees to exercise proprietary control over state-owned lands. Also in 1967, government focus on protecting Florida's productive water bodies from degradation due to development led the Trustees to establish a moratorium on the sale of submerged lands to private interests. An Interagency Advisory Committee was created to develop strategies for the protection and management of state-owned submerged lands.

In 1968, the Florida Constitution was revised to declare in Article II, Section 7, the state's policy of conserving and protecting natural resources and areas of scenic beauty. That constitutional provision also established the authority for the legislature to enact measures for the abatement of air and water pollution. Later that same year, the Interagency Advisory Committee issued a report recommending the establishment of 26 aquatic preserves.



*A Great Egret*



The Trustees acted on this recommendation in 1969 by establishing 16 aquatic preserves and adopting a resolution for a statewide system of such preserves. In 1975 the state Legislature passed the Florida Aquatic Preserve Act of 1975 (Act) that was enacted as Chapter 75-172, Laws of Florida, and later became Chapter 258, Part II, F.S. This Act codified the already existing aquatic preserves and established standards and criteria for activities within those preserves. Additional aquatic preserves were individually adopted at subsequent times up through 1989.

In 1980, the Trustees adopted the first aquatic preserve rule, Chapter 18-18, Florida Administrative Code (F.A.C.), for the administration of the Biscayne Bay Aquatic Preserve. All other aquatic preserves are administered under Chapter 18-20, F.A.C., which was originally adopted in 1981. These rules apply standards and criteria for activities in the aquatic preserves, such as dredging, filling, building docks and other structures that are stricter than those of Chapter 18-21, F.A.C., which apply to all sovereignty lands in the state. These rules are intended to be cumulative, meaning that Chapter 18-21, F.A.C., should be read together with Chapter 18-18, F.A.C., or Chapter 18-20, F.A.C., to determine what activities are permissible within an aquatic preserve. If Chapter 18-18, F.A.C., or Chapter 18-20, F.A.C., are silent on an issue, Chapter 18-21, F.A.C., will control; if a conflict is perceived between the rules, the stricter standards of Chapter 18-18, F.A.C., or Chapter 18-20, F.A.C., supersede those of Chapter 18-21, F.A.C.

This plan is in compliance with the Conceptual State Lands Management Plan, adopted March 17, 1981 by the Board of Trustees of the Internal Improvement Trust Fund and represents balanced public utilization, specific agency statutory authority, and other legislative or executive constraints. The Conceptual State Lands Management Plan also provides essential guidance concerning the management of sovereignty lands and aquatic preserves and their important resources, including unique natural features, seagrasses, endangered species and archaeological and historical resources.

Through delegation of authority from the Trustees, the DEP and CAMA have proprietary authority to manage the sovereignty lands, the water column, spoil islands (which are merely deposits on sovereignty lands), and some of the natural islands and select coastal uplands to which the Trustees hold title.

NERR sites include state-owned uplands in addition to sovereignty lands. Florida's first acquisition program was born in 1963 as the Land Acquisition Trust Fund (LATF), which funded the Outdoor Recreation and Conservation Program to purchase park and other recreational areas. The Environmentally Endangered Lands (EEL) program was created in 1972.

In 1979, the current Division of State Lands was created within the Florida Department of Natural Resources, a predecessor agency to the DEP. The same year the legislature substantially amended Chapter 253, F.S., pertaining to the use and management of state lands and created the Conservation and Recreation Lands (CARL) program to replace EEL. CARL and its successors were eventually codified in Chapter 259, F.S. 1981 saw the establishment of the Save Our Coast (SOC) program, which augmented the LATF to focus on coastline purchases. CARL eventually subsumed the responsibilities of both SOC and LATF.

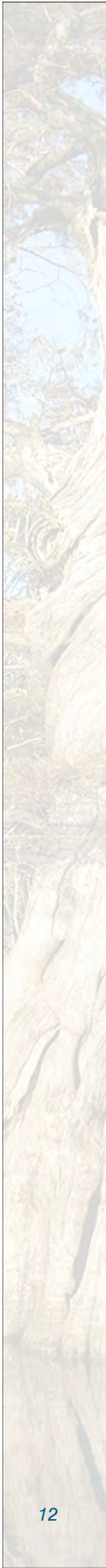
The Preservation 2000 Program commenced in 1990 to fund CARL and other acquisition initiatives. Preservation 2000 was intended as a 10-year program and was succeeded by the Florida Forever Program at the end of its course. Florida Forever has replaced CARL and continues to provide for the evaluation of land for acquisition and inclusion within the boundaries of Florida's three NERRs as well as other areas.

Enforcement of state statutes and rules relating to criminal violations and non-criminal infractions rests with the Florida Fish and Wildlife Conservation Commission law enforcement, DEP law enforcement and local law enforcement agencies. Enforcement of administrative remedies rests with CAMA, the DEP Districts and Water Management Districts.

### **3.3 / State Statutory Authority**

The fundamental laws providing management authority for the aquatic preserves are contained in Chapters 258 and 253, F.S. These statutes establish the proprietary role of the Governor and Cabinet, sitting as the Board of Trustees of the Internal Improvement Trust Fund, as Trustees over all sovereignty lands. In addition, these statutes empower the Trustees to adopt and enforce rules and regulations for managing all sovereignty lands, including aquatic preserves. The Florida Aquatic Preserve Act was enacted by the Florida Legislature in 1975 and is codified in Chapter 258, F.S.

The legislative intent for establishing aquatic preserves is stated in Section 258.36, F.S.: "It is the intent of the Legislature that the state-owned submerged lands in areas which have exceptional biological,



aesthetic, and scientific value, as hereinafter described, be set aside forever as aquatic preserves or sanctuaries for the benefit of future generations.” This statement, along with the other applicable laws, provides a foundation for the management of aquatic preserves. Management will emphasize the preservation of natural conditions and will include only sovereignty or state-owned lands that are specifically authorized for inclusion as part of an aquatic preserve.

Management responsibilities for aquatic preserves may be fulfilled directly by the Trustees or by staff of the DEP through delegation of authority. Other governmental bodies may also participate in the management of aquatic preserves under appropriate instruments of authority issued by the Trustees. CAMA staff serves as the primary managers who implement provisions of the management plans and rules applicable to the aquatic preserves. CAMA does not “regulate” the lands per se; rather, that is done primarily by the DEP Districts (in addition to the Water Management Districts) which grant regulatory permits. The Florida Department of Agriculture and Consumer Services through delegated authority from the Trustees, may issue proprietary authorizations for marine aquaculture within the aquatic preserves and regulates all aquaculture activities as authorized by Chapter 597, Florida Aquaculture Policy Act, F.S. Aquatic preserve staff evaluates proposed uses or activities in the aquatic preserve and assesses the possible impacts on the natural resources. Project reviews are primarily evaluated in accordance with the criteria in the Act, Chapter 18-20, F.A.C., and this management plan.

CAMA staff comments and those of the public are submitted to the appropriate permitting staff for consideration in their issuance of any delegated authorizations in aquatic preserves or in developing recommendations to be presented to the Trustees. This mechanism provides a basis for the Trustees to evaluate public interest and the merits of any project while also considering potential environmental impacts to the aquatic preserves. Any activity located on sovereignty lands requires a letter of consent, a lease, an easement, or other approval from the Trustees.

The same authorities in Chapters 258 and 253, F.S., discussed above, provide management directives relevant to the NERRs. Of critical importance, Section 253.86 grants CAMA the explicit authority to promulgate rules for the management of uplands assigned to its management. Additionally, NERR management must take into account Chapter 259, F.S., which authorizes and governs acquisition and use of lands to conserve and protect important habitats, wildlife, water resources and archaeological sites in accordance with the Land Conservation Act of 1972. Land managing agencies must prepare management plans in compliance with guidelines established in Chapter 259, F.S. Once again, the Trustees fulfill the proprietary management overview role for the NERRs, with management responsibilities assigned to staff acting as “agents” of the Trustees, pursuant to delegations of authority, management agreements and other legal mechanisms. Typically, a lease agreement with the Trustees delegates management authority for the uplands assigned to the DEP and CAMA. Leases for Trustees’ lands within this NERR are included in Appendix E.

Many provisions of the Florida Statutes that empower non-CAMA programs within DEP or other agencies may be important to the management of CAMA sites. For example, Chapter 403, F.S., authorizes DEP to create rules concerning the designation of “Outstanding Florida Waters (OFWs),” a program that provides aquatic preserves with additional regulatory protection. Saltwater fisheries are regulated by the FWC pursuant to Article IV Section 9 of the Florida Constitution which provides enforcement authority and powers for law enforcement. Likewise, Chapter 379, F.S., provides similar powers relating to wildlife management. Because the NERR boundaries encompass areas directly managed by other state and federal agencies, interested parties should refer to the management plans produced by the relevant agencies for those parcels for a discussion of their legal authorities. The sheer number of statutes that affect NERR management prevents an exhaustive list of all such laws from being provided here.

### **3.4 / State Administrative Rules**

Chapters 18-18, 18-20 and 18-21, F.A.C., are the three administrative rules directly applicable to the uses allowed in aquatic preserves specifically and sovereignty lands generally. These rules are intended to be cumulative, meaning that Chapter 18-21, F.A.C., should be read together with Chapter 18-18, F.A.C., or Chapter 18-20, F.A.C., to determine what activities are permissible within an aquatic preserve. If Chapter 18-18, F.A.C., or Chapter 18-20, F.A.C., are silent on an issue, Chapter 18-21, F.A.C., will control; if a conflict is perceived between the rules, the stricter standards of Chapter 18-18, F.A.C., or Chapter 18-20, F.A.C., supersede those of Chapter 18-21, F.A.C. Because Chapter 18-21, F.A.C. concerns all sovereignty lands, it is logical to discuss its provisions first.



Originally codified in 1982, Chapter 18-21, F.A.C., is meant “to aid in fulfilling the trust and fiduciary responsibilities of the Board of Trustees of the Internal Improvement Trust Fund for the administration, management and disposition of sovereignty lands; to insure maximum benefit and use of sovereignty lands for all the citizens of Florida; to manage, protect and enhance sovereignty lands so that the public may continue to enjoy traditional uses including, but not limited to, navigation, fishing and swimming; to manage and provide maximum protection for all sovereignty lands, especially those important to public drinking water supply, shellfish harvesting, public recreation, and fish and wildlife propagation and management; to insure that all public and private activities on sovereignty lands which generate revenues or exclude traditional public uses provide just compensation for such privileges; and to aid in the implementation of the State Lands Management Plan.”

To that end, Chapter 18-21, F.A.C., contains provisions on general management policies, forms of authorization for activities on sovereignty lands, and fees applicable for those activities. “Activity,” in the context of the rule, includes “construction of docks, piers, boat ramps, boardwalks, mooring pilings, dredging of channels, filling, removal of logs, sand, silt, clay, gravel or shell, and the removal or planting of vegetation” (Rule 18-21.003, F.A.C.). To be authorized on sovereignty lands, activities must be not contrary to the public interest (Rule 18-21.004, F.A.C.).

Chapter 18-21, F.A.C., also sets policies on aquaculture, geophysical testing (using gravity, shock wave and other geological techniques to obtain data on oil, gas or other mineral resources), and special events related to boat shows and boat displays. Of particular importance to CAMA site management, it additionally addresses spoil islands, preventing their development in most cases.

Chapters 18-18 and 18-20, F.A.C., apply standards and criteria for activities in the aquatic preserves that are stricter than those of Chapter 18-21, F.A.C. Chapter 18-18, F.A.C., is specific to the Biscayne Bay Aquatic Preserve and is more extensively described in that site’s management plan. Chapter 18-20, F.A.C., is applicable to all other aquatic preserves. It further restricts the type of activities for which authorizations may be granted for use of sovereignty lands and requires that structures that are authorized be limited to those necessary to conduct water dependent activities. Moreover, for certain activities to be authorized, “it must be demonstrated that no other reasonable alternative exists which would allow the proposed activity to be constructed or undertaken outside the preserve” (Paragraph 18-20.004(1)(g), F.A.C.).

Chapter 18-20, F.A.C., expands on the definition of “public interest” by outlining a balancing test that is to be used to determine whether benefits exceed costs in the evaluation of requests for sale, lease, or transfer of interest of sovereignty lands within an aquatic preserve. The rule also provides for the analysis of the cumulative impacts of a request in the context of prior, existing, and pending uses within the aquatic preserve, including both direct and indirect effects.

Chapter 18-20, F.A.C., directs management plans and resource inventories to be developed for every aquatic preserve. Further, the rule provides provisions specific to certain aquatic preserves and indicates the means by which the Trustees can establish new or expand existing aquatic preserves.

NERRs, because they manage uplands in addition to their oversight of sovereignty lands within aquatic preserves, must follow the provisions of Chapter 18-2, F.A.C., Chapter 18-23, F.A.C., and Chapter 18-24, F.A.C. Chapter 18-2, F.A.C., establishes policies concerning use of uplands owned by the Trustees and

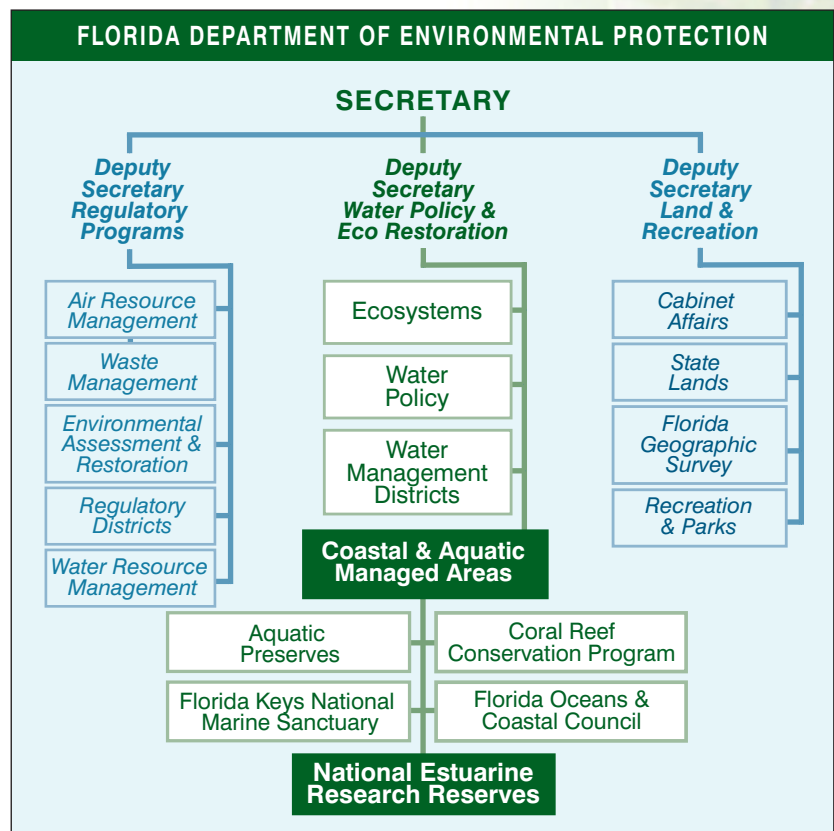
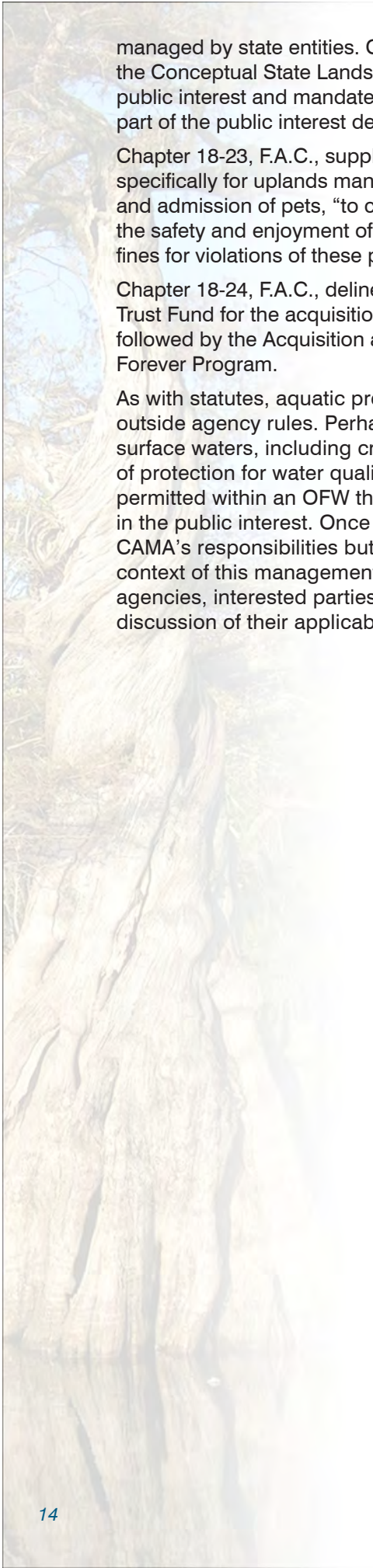


Figure 2 / State structure for managing NERRs.



managed by state entities. Originally codified in 1996, this rule expands upon the guidelines set forth in the Conceptual State Lands Management Plan. It requires that uses of the uplands be not contrary to the public interest and mandates that direct and indirect impacts and cumulative effects be considered as part of the public interest determination.

Chapter 18-23, F.A.C., supplements Chapter 18-2, F.A.C., by establishing guidelines and criteria specifically for uplands managed by CAMA. It limits certain activities on these uplands, such as hunting and admission of pets, “to conserve, preserve and restore the natural and cultural resources and ensure the safety and enjoyment of visitors” (Subsection 18-23.007(2), F.A.C.). The rule provides a schedule of fines for violations of these policies, which are considered non-criminal infractions.

Chapter 18-24, F.A.C., delineates procedures specific to the use of monies from the Florida Forever Trust Fund for the acquisition and restoration of uplands. It also prescribes the procedures that are to be followed by the Acquisition and Restoration Council in advising the Trustees in administering the Florida Forever Program.

As with statutes, aquatic preserve management relies on the application of many other DEP and outside agency rules. Perhaps most notably, Chapter 62-302, F.A.C., concerns the classification of surface waters, including criteria for OFW, a designation that provides for the state’s highest level of protection for water quality. All aquatic preserves contain OFW designations. No activity may be permitted within an OFW that degrades ambient water quality unless the activity is determined to be in the public interest. Once again, the list of other administrative rules that do not directly address CAMA’s responsibilities but do affect CAMA sites is so long as to be impractical to create within the context of this management plan. For areas within NERR boundaries directly managed by other agencies, interested parties should refer to the relevant management plans for those areas for a discussion of their applicable rules and regulations.



*An Apalachicola Bay sunset.*

#### *Chapter Four*

## **The Apalachicola National Estuarine Research Reserve**

### **4.1 / Background and Description of Apalachicola National Estuarine Research Reserve Region**

#### **4.1.1 / History of the Apalachicola National Estuarine Research Reserve**

Because of its uniqueness, numerous protective designations have been granted to note the importance of and help protect the Apalachicola system. Not only have state and federal agencies been involved, but local participation has been a key element as well. In 1969, the State of Florida designated Apalachicola Bay as one of eighteen aquatic preserves. In 1979, the lower river and bay system was designated a National Estuarine Research Reserve (NERR) by the National Oceanic and Atmospheric Administration (NOAA). The State of Florida designated the lower Apalachicola River an Outstanding Florida Water (OFW) in 1979, and included the upper river in 1983. Thus, the ambient water quality of the river at the time of designation serves as the standard which cannot be lowered by activities on or near the water. In 1984, the United Nations Educational, Scientific and Cultural Organization designated the Apalachicola National Estuarine Research Reserve (ANERR) a Biosphere Reserve under the Man and Biosphere program. Due to growing development pressures, in 1985 the State of Florida designated Franklin County an Area of Critical State Concern (ACSC). By 2011, the ACSC designation had been removed from all of Franklin County except for the City of Apalachicola.



#### **4.1.2 / General Description**

ANERR was designated in 1979. Located in Franklin, Gulf and Liberty counties in the Florida panhandle, ANERR is one of the least populated coastal areas of the state. It has two facilities in Franklin County: the headquarters is currently located on Island Drive in Eastpoint with a second facility at 350 Carroll Street in Eastpoint housing the shop and boatyard.

The second largest of the 28 existing NERRs, ANERR encompasses 234,715 acres, more than half of which (135,680 acres) are state-owned sovereignty submerged lands. ANERR is one of the more complex NERRs in the national system. It consists of several independently managed subunits, supports a wide variety of recreational and commercial activities, and is affected by land and water use policies in three states.

#### **Reserve Mission**

The Apalachicola National Estuarine Research Reserve's mission is to conserve the region's natural biodiversity and cultural resources using applied research and monitoring, through education, training and outreach, resulting in effective stewardship.

#### **International/National/State/Regional Significance**

The Apalachicola River basin is only part of the larger Apalachicola-Chattahoochee-Flint River system (ACF). The ACF basin covers the north-central and southwestern part of Georgia, the southeastern part of Alabama, and the central part of the Florida panhandle. It drains an area covering approximately 19,600 square miles (see Map 8). The Chattahoochee River flows 436 miles from its source in the Blue Ridge Mountains of northern Georgia, drains a land area of 8,650 square miles, and has 13 dams located on the river. The Flint River flows 350 miles from its source south of Atlanta, drains a land area of 8,494 square miles, and has two dams affecting stream flow. The Apalachicola River is formed by the confluence of the Chattahoochee and Flint rivers, flows 107 miles to Apalachicola Bay, and drains a land area of approximately 2,400 square miles (United States Army Corps of Engineers [USACOE], 1978).

Through geological, chemical, physical and biological interactions, the Apalachicola River and Bay drainage basin has evolved a river with the largest flow, the most extensive forested floodplain, and the most productive estuary in Florida (Map 9). ANERR is located in Franklin, Gulf and Liberty counties, on the northwest coast of Florida, in one of the least populated coastal areas in the state.

Public lands included within ANERR are the St. Vincent Island National Wildlife Refuge, St. George Island State Park, Apalachicola River Wildlife and Environmental Area (ARWEA), Apalachicola River Water Management Area, and Cape St. George Island. ANERR's offices are located within the community of Eastpoint at 108 Island Drive and 350 Carroll Street. Highway 98 provides the only access to Apalachicola and Eastpoint, either eastward from Panama City or westward from Crawfordville.

#### **Location/Boundaries**

ANERR is situated largely in Franklin County, but its boundary also stretches into Gulf and Liberty counties as well. The boundary includes the lower 52 miles of the Apalachicola River and floodplain, most of Apalachicola Bay and a diverse set of upland and wetland communities around the bay. Public lands managed by the U.S. Fish and Wildlife Service (USFWS), Florida Fish and Wildlife Conservation Commission (FWC), Florida Park Service, Northwest Florida Water Management District (NFWFMD) and the Florida Department of Environmental Protection's (DEP) Office of Coastal and Aquatic Managed Areas (CAMA) are all within the boundary of ANERR.

The coverage of land and open water within the ANERR boundary is in excess of 234,000 acres. Of the non-submerged acreage in ANERR, 6,794 acres are managed by CAMA, 11,938 acres by USFWS (St. Vincent Island National Wildlife Refuge), 2,024 acres by other DEP agencies (St. George Island State Park), 36,241 acres by the NFWFMD, and 63,814 acres by FWC. The balance of the total acreage is open water.

#### **4.1.3 / Resource Description**

##### **Surrounding Population Data and Future Projected Changes**

Franklin County, which surrounds Apalachicola Bay, is a rural county encompassing 348,800 acres (544.3 square miles) of land. According to the U.S. Census Bureau, in 2010 the County's population was 11,549 people county-wide, with less than half of them living in the two incorporated areas of Apalachicola and Carrabelle. The population is projected to increase by 12.8 percent between 2010 and 2015 to 13,023 and by 2.5 percent between 2015 and 2020 to 13,351 (Florida Legislature Office of Economic and Demographic Research, 2011). Minorities are projected to continue to comprise a small portion of the overall population of the county. African Americans and Hispanics are projected to



comprise approximately 13 percent and 6.5 percent of the total population in 20 years. Currently ANERR is a partner in the Environmental Cooperative Science Center at Florida Agricultural and Mechanical University (FAMU), a Minority Serving Institution. ANERR participates in FAMU's summer camps for young adults, summer teacher institute activities, undergraduate research and graduate research. The purpose of the program is to increase the capacity for science education at all levels. ANERR also participates in the Green Industries Best Management Practices Training Program, which provides training and materials in both English and Spanish to the lawn and landscape industry.

Franklin County, which surrounds Apalachicola Bay, is a rural county encompassing 348,800 acres (544.3 square miles) of land. According to the U.S. Census Bureau, in 2010 the County's population was 11,549 people county-wide, with less than half of them living in the two incorporated areas of Apalachicola and Carrabelle. The population is projected to increase by 12.8% between 2010 and 2015 to 13,023 and by 2.5% between 2015 and 2020 to 13,351 (Florida Legislature Office of Economic and Demographic Research, 2011).

Population and residential development in Franklin and Gulf counties is relatively sparse. The only incorporated municipalities within these counties are Apalachicola, Carrabelle, Port St. Joe and Wewahitchka. The combined population of these four cities is approximately 15,300 based on 2010 U.S. Census Bureau data. Population centers adjacent to ANERR boundaries in Franklin County include Apalachicola, Carrabelle, and the communities of Alligator Point, Eastpoint, Lanark Village and St. George Island in unincorporated Franklin County. Other areas surrounding ANERR are mostly rural with low density, scattered development or are undeveloped. Based on the U.S. Census Bureau data, Apalachicola's population was reported at 2,334 in 2000. In 2010 Apalachicola's population was reported as 3,858 and Carrabelle was 4,007. The population of the Eastpoint community was reported as 3,149 and Lanark Village was 217. (Source: *zip-codes.com* taken directly from US Census data.)

Growth and new development in Franklin County is primarily concentrated in and adjacent to the cities of Apalachicola and Carrabelle, and the communities of Alligator Point, Eastpoint, Lanark Village and St. George Island. The recent economic downturn has slowed the pace of new development. Much of the development on St. George Island is related to vacation rentals, including homes and small motels. There are roughly 1,824 homes on St. George Island, with approximately half being occupied by full time residents and half on the seasonal rental market. Apalachicola is a traditional fishing village with an historic district. The city strives to manage growth in ways that sustain the historic character, maritime focus and economic viability of the seafood industry.

Many new residents are retirees or professionals who move to the area from other counties in Florida and out of state. In addition, the area is experiencing increased tourism. The tourism numbers are not captured in the census population data. With the opening of the new facility in a more visible and accessible location, visitation by tourists and local retirees is increasing dramatically. ANERR is revising its educational strategy to address a higher demand for on-site programming with day-use visitors. Programming will need to include more emphasis on using on-site facilities and field experiences that meet the needs of the rising number of visitors.

Land use characteristics influence runoff patterns, types of pollutants, water quality and quantity, and virtually all aspects of riverine and river-dominated estuarine systems. The upper portion of the river basin is dominated by forestry and agriculture while the lower portion is predominantly natural areas with large tracts of managed forests and forested and non-forested wetlands (Rains,

County	Population 1990	Population 2000	Estimated Population 2010	% of County Area Within Watershed
Bay	126,994	148,217	168,852	1.5
Calhoun	11,011	13,017	14,625	94
Franklin	8,967	9,829	11,549	89
Gadsden	41,105	45,087	46,389	21.1
Gulf	16,798	14,559	15,863	59.1
Jackson	41,375	46,755	49,746	87.3
Liberty	5,569	7,021	8,365	64.8
Washington	16,919	20,973	24,896	1.9
<b>Total</b>	<b>268,738</b>	<b>305,458</b>	<b>340,285</b>	

\*modified from U.S. Census Bureau, 2011

Table 1 | Florida counties within the Apalachicola River Watershed

1993). The major land use on most of the land surrounding ANERR has historically been forestry operations, predominantly pine plantations. Agricultural/Silviculture land dominates in all eight counties within the drainage basin, however, only a small number of people are specifically employed in farming or forestry.

### Adjacent Land Use Characteristics

Franklin County is predominantly rural with 96 percent of the total county area of 348,800 acres zoned either agriculture (primarily forestry) or conservation lands (Franklin County, 2004). Large areas have been drained, ditched, and diked for silviculture and wetter species such as cypress have been replaced by slash pine (*Pinus elliottii*). The Apalachicola River floodplain was first harvested between 1870 and 1925 and has been logged once or twice since that time. Regrowth has been rapid, however,

and much of the floodplain has the general appearance of a mature forest, although the percent of cypress has been reduced (Clewell, 1977). The development of the local area surrounding ANERR could have the most direct effect on the water quality within the bay. The effects of clearing, ditching, and draining of land surrounding the bay may result in increases in pH and decreases in detrital influx. Increases in pervious surfaces and stormwater runoff could degrade water quality. Additionally, shoreline changes can result in loss of marsh habitat and erosion.

Much of the land away from the coast and outside ANERR boundaries is owned and managed by the state or federal government. Large areas of public lands, including the Apalachicola National Forest and Tate's Hell State Forest that are outside of ANERR's boundaries, limit the amount of private land and potential growth. There has been a significant shift from agricultural lands to conservation lands since 1989, mostly due to the large land purchases by the State of Florida as part of its efforts to protect Apalachicola Bay. The Tate's Hell State Forest, created in 1994, is the second largest in the State of Florida at 202,437 acres, and accounts for most of this change. Much of the agriculture and conservation land is also wetlands. The northern and interior portion of the county remains mostly uninhabited.

Most new development within ANERR boundaries is concentrated near the lower

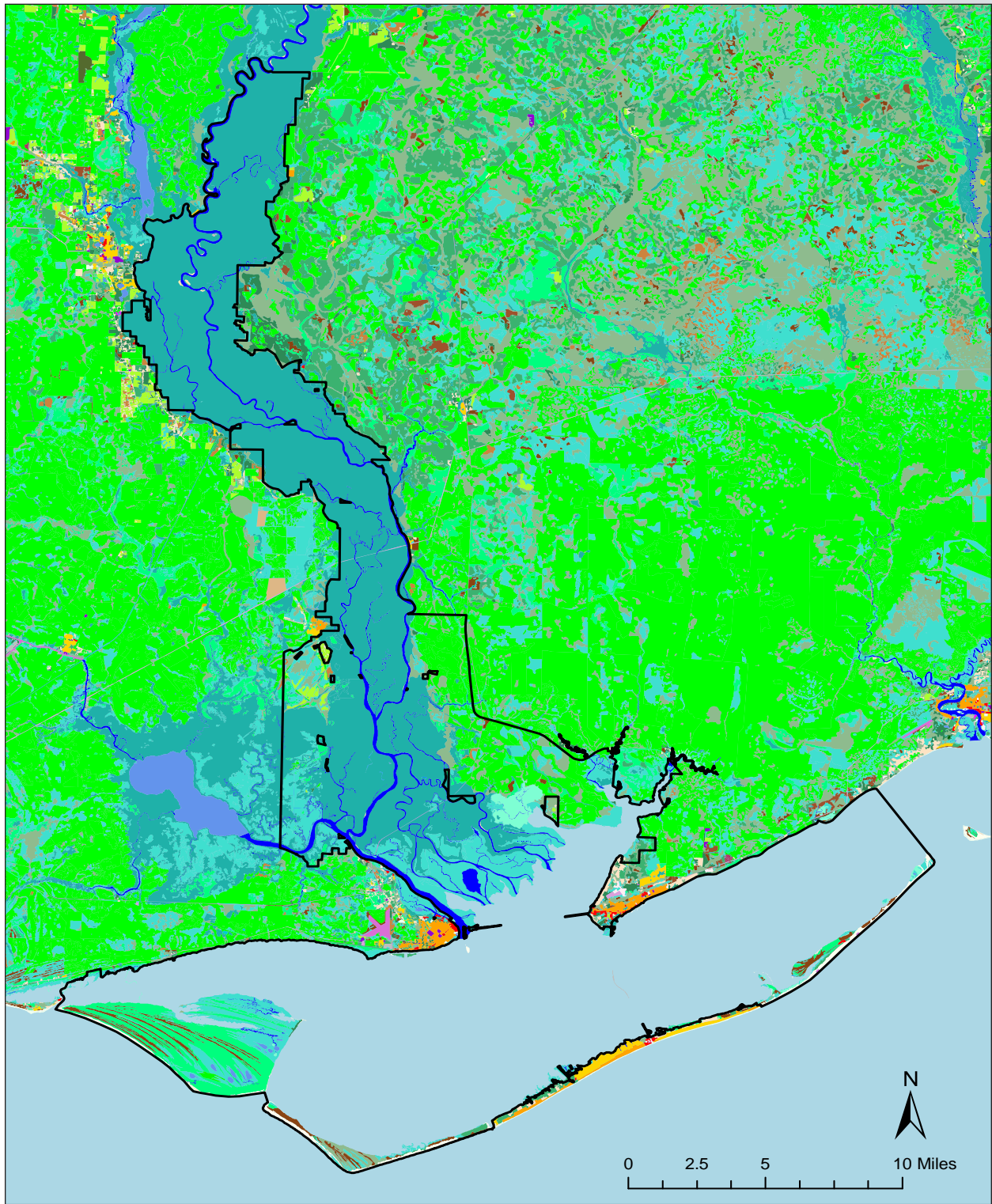
reaches of the river floodplain, river mouth, bay and Gulf of Mexico shoreline, especially along the coast. Potential impacts to these sensitive areas include loss of habitat due to development and declining water quality due to wastewater discharges, stormwater runoff and increased sediment.

Industrialization and residential development typically result in an increase in the number of septic systems that may affect the quality of the nonpoint runoff going into the bay (Livingston, Clewell, Iverson, Means, & Stevenson, 1975). Although many residents of Apalachicola, Carrabelle, and Eastpoint are connected to municipal wastewater facilities in their area, there are still large numbers of residences in the county that are utilizing on-site disposal systems, primarily aerobic and anaerobic septic systems. Between 1978 and 1995, there were over 1,600 permits issued for septic system construction, with an additional 545 permits issued for repairs to systems. In 1995 approximately 478 septic systems were documented that had the potential to directly impact the bay's shellfish harvesting areas (Shields & Pierce, 1997). Septic systems in particular can be a source of fecal coliforms, due to the inadequate treatment, poor installation, and improper siting.



Cypress tree on Owl Creek.






**2004 Land Use FLUCCS**

Residential Low Density	Feeding Operations	Lakes	Wetland Shrub
Residential Medium Density	Nurseries and Vineyards	Reservoirs	Beaches Other Than Swimming Beaches
Residential High Density	Specialty Farms	Bays and Estuaries	Sand Other Than Beaches
Commercial and Services	Other Open Lands <Rural>	Major Springs	Exposed Rock
Industrial	Herbaceous	Slough Waters	Disturbed Lands
Extractive	Shrub and Brushland	Oceans Seas and Gulfs	Riverine Sandbars
Institutional	Mixed Rangeland	Wetland Hardwood Forests	Transportation
Recreational	Upland Coniferous Forests	Wetland Coniferous Forests	Communications
Open Land	Upland Hardwood Forests	Wetland Forested Mixed	Utilities
Cropland and Pastureland	Tree Plantations	Vegetated Non-Forested Wetlands	Vegetation-Sea Grass
Tree Crops	Streams and Waterways	Non-Vegetated	ANERR Boundary

Map 5 | Land Use Surrounding the Apalachicola National Estuarine Research Reserve





High levels of total and fecal coliforms, fecal streptococci, magnesium, zinc, and nutrients were characteristic of base flow in a stormwater runoff study of the City of Apalachicola Battery Park marina site. Storm events elevate turbidity, total suspended solids, and nitrate/nitrite levels. Phosphorous, aluminum, and lead were also elevated to a lesser degree. At other Apalachicola sites, samples taken during base flow showed consistently low dissolved oxygen and high total coliform, fecal coliform, and fecal streptococci. Nutrient concentration levels were also significantly high. High water flow associated with a storm event carried elevated amounts of total suspended solids, nitrate/nitrite, phosphorous, aluminum, copper, and zinc. The study concluded that “this combination of results could be indicative of sewage contamination, through cross connections, illicit connections, or through contamination by combined sewer overflows” (Marchman & Wooten, 2000). Apalachicola, Eastpoint and Carrabelle, as well as some of the other developed communities in Franklin County, are upgrading and extending central wastewater systems and removing septic systems from use.

Fishing, both fresh and saltwater, is probably the largest recreational activity in the area. As the commercial finfish fisheries have changed over the last 20 years, a growing number of charter boats have become active in Apalachicola Bay. They specialize in taking recreational fishermen out for a day of fishing. As with many other coastal and aquatic based areas, increased use leads to additional pressures on the resource, which normally leads to degradation of the resource. Staff, through the Stewardship Program, works to reduce or eliminate impacts of recreational activities on lands managed by ANERR.

Apalachicola Bay lies at the terminus of the Apalachicola River, which originates at the northern border of Florida at the confluence of the Chattahoochee and the Flint Rivers. The Florida portion of the basin encompasses only approximately 12% of the entire drainage basin (2,400 square miles), has a limited population, and is mostly undeveloped. Because of its large watershed (19,600 square miles), proximity to a major metropolitan area (Atlanta), multiple adjacent land uses, including agricultural and urban, and somewhat modified hydrology, the system has the potential to carry contaminants and cause water quality degradation downstream. Other physical alterations such as damming and dredging directly affect water habitats as well as augment flow regimes and water quality. Due to growth increases in Atlanta and surrounding areas and agriculture in the watershed, the demand for upstream water use has increased and added pressure to reduce freshwater flows into Florida and the Apalachicola Bay system. A potential threat to the oyster bars is related to upstream water diversion from the tributaries of the Apalachicola River. Preliminary modeling efforts have demonstrated that decreased freshwater inflow, especially during drought conditions, could cause a significant increase in oyster mortality due to predation (Christensen, et al., 1998). A drought in the ACF system that stretched from 1999 to 2002 caused the loss of oysters on various bars due to increased predation from higher salinities (Florida Department of Agriculture and Consumer Services [FDACS], 2004).

The largest numbers of contaminant sources in the ACF basin come from the Chattahoochee and Flint rivers due to the large population concentrated in these regions, and the amount of urban and agricultural land-uses associated with this population. Urban and suburban areas account for only about five percent of the entire ACF watershed, less than two percent within the Florida portion of the basin; however, they can have a large impact on stream quality. Approximately 29% of the watershed, primarily in Georgia and Alabama, is agricultural lands that can impact stream quality (Frick, Buell, & Hopkins, 1996).

Ninety-seven percent of the population within the drainage basin lives in these two upper watersheds and approximately ninety percent of the municipal wastewater discharges are located in these areas. Upstream (Georgia and Alabama) municipal wastewater facilities contribute over ninety-eight percent of the nitrogen and phosphorus loadings in the ACF basin. Agricultural land uses in these watersheds also contribute ninety-five percent of the nonpoint nutrient loadings to the entire drainage basin. Industrial effluents, stormwater runoff, groundwater inputs, and other sources of contaminants including natural inputs are not included in these estimates. Please refer to tables 31 and 32 in the Apalachicola NERR Site Profile for additional data on contaminant contributors, point and non-point source in the ACF Basin. The Site Profile focuses on the natural and cultural resources of the Apalachicola River and Bay system. Its purpose is to provide a synthesis of species and habitat data, identify natural and anthropogenic stressors, and be used to direct new research towards gaps in knowledge. Each reserve within the NERR System is tasked with writing a Site Profile. The ANERR site profile can be found online at: [http://www.dep.state.fl.us/coastal/downloads/management\\_plans/A\\_River\\_Meets\\_the\\_Bay.pdf](http://www.dep.state.fl.us/coastal/downloads/management_plans/A_River_Meets_the_Bay.pdf).

The two main threats to the Apalachicola River and Bay system that currently confront ANERR are the upstream diversion of fresh water (ACF Water Wars) and increasing local coastal development with associated land use changes.

Water diversions have the potential for productivity impacts, biodiversity impacts (river, floodplain, bay), habitat/species loss and economic impacts. Development impacts include the potential for nutrient enrichment, increased coliform bacteria density and distribution (impacting oyster harvest), habitat/species loss and contaminant increases.

### Topography and Geomorphology

ANERR lies completely within the Gulf Coastal Lowlands physiographic province, which is characterized by low elevations and poor drainage. Numerous relict bars and dunes are associated with this province, indicating historic fluctuations in sea level (USACOE, 1978; Clewell, 1986).

The Apalachicola Embayment is the major structural feature that dominates the geology of ANERR and the river system. This feature represents a downfallen block of land that is a relatively shallow basin between the Ocala and Chattahoochee uplifts (Schmidt, 1984).

The Gulf Coastal Lowlands are characterized by Pleistocene marine sands near the river mouth and Pliocene sands to the north (Alt & Brooks, 1965). The large cusp of the entire Apalachicola coast is believed to have been built out by the Apalachicola River during the late Tertiary and Quaternary periods and has subsequently been modified by waves and longshore drift. The present structure of the bay system is considered to be less than 10,000 years old and the general outline of the bay has been stable over the last 5,000 years, except for the southward migration of the delta into the estuary. The present barrier island chain formation is thought to have occurred approximately 6,000 years ago when sea level reached its modern position (Tanner, 1983).

### Minerals

There are no known commercially viable mineral resources on ANERR lands. The lithological log for well #W11425, near the Rodrique Tract, indicates the Intracoastal Formation (limestone) is reached at a depth of 110 feet. This overburden presumably makes mining uneconomical.

Two test wells within five miles of ANERR lands were both plugged and abandoned as dry wells. Neither oil nor gas has ever been produced in the area.

### Soils

Franklin County and much of the Gulf of Mexico coastal region soils are derived from beach deposits, river alluvium, or marine terrace deposits. Twelve soil associations have been identified in Franklin County that range from deep, excessively drained soils to very poorly drained soils with water tables above the surface (United States Department of Agriculture [USDA], 1994). Approximately 90 percent of the land area is dominated by soil associations that are poorly suited or unsuitable for development and septic tank use (see Table 2). These soil conditions pose major limitations for development in much of Franklin County (Franklin County, 1991).

Throughout the county, the soil is generally uniform with the color patterns reflecting drainage conditions (dark soils for poor drainage and light colors for areas of good drainage) (Moony & Patrick, 1915). The Scranton-Rutlege Association is the predominant general soil type in the county, comprising approximately 26 percent of the land area. The Apalachicola floodplain and coastal and delta marshes are predominantly comprised of the Chowan-Brickyard-Wehadkee and Bohicket-Tisonia-Dirego Associations. St. Lucie-Kureb-Riminini and Lakeland Associations are found predominantly along the coastal areas while Plummer-Rutledge and Leon-Chipley-Plummer Associations are found in the interior of the county (USDA, 1994).

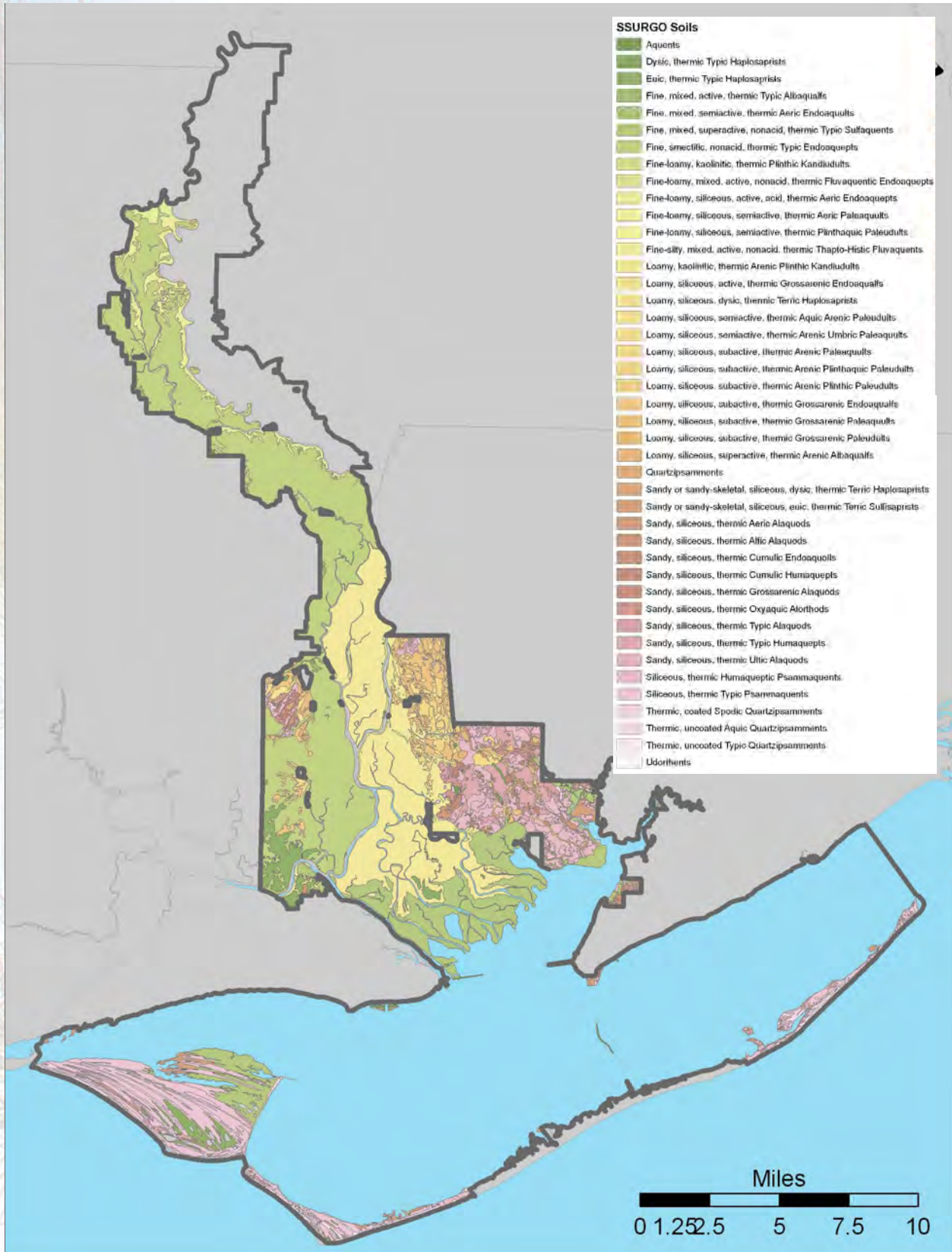
Soil Association	Percent of County	Suitability for Development	Agriculture
Albany-Blanton-Stilson	2	Mod. to Well	Moderate
Kershaw-Ortega-Ridgewood	3	Moderate	Poor
Plummer-Surrency-Pelham	15	Poor	Moderate
Mandarin-Resota-Leon	5	Moderate	Moderate
Leon-Scranton-Lynnhaven	17	Poor	Moderate
Scranton-Rutlege	26	Poor	Poor
Pamlico-Pickney-Maurepas	3	Poor to Unsuitable	Poor
Bohicket-Tisonia-Dirego	5	Unsuitable	Unsuitable
Meadowbrook-Tooless-Harbeson	9	Poor	Mod. To Poor
Pickney-Pamlico-Dorovan	4	Poor	Poor
Chowan-Brickyard-Wehadkee	6	Unsuitable	Unsuitable
Corolla-Duckston-Newhan	5	Poor	Poor

Table 2 / Soils of Franklin County (1994 – USDA Soil Conservation Service)



## Hydrology and Watershed

The Apalachicola River can be classified as a large alluvial river. It is the only river in Florida which has its origins in the Piedmont and Southern Appalachians. Characteristics of alluvial rivers include a heavy sediment load, turbid water, large watersheds, sustained periods of high flow, and substantial annual flooding. Upstream rainfall has a much greater influence on river flows than Florida rainfall because the majority of the ACF basin is in Georgia and Alabama (Meeter, Livingston, & Woodsum, 1979; Leitman,

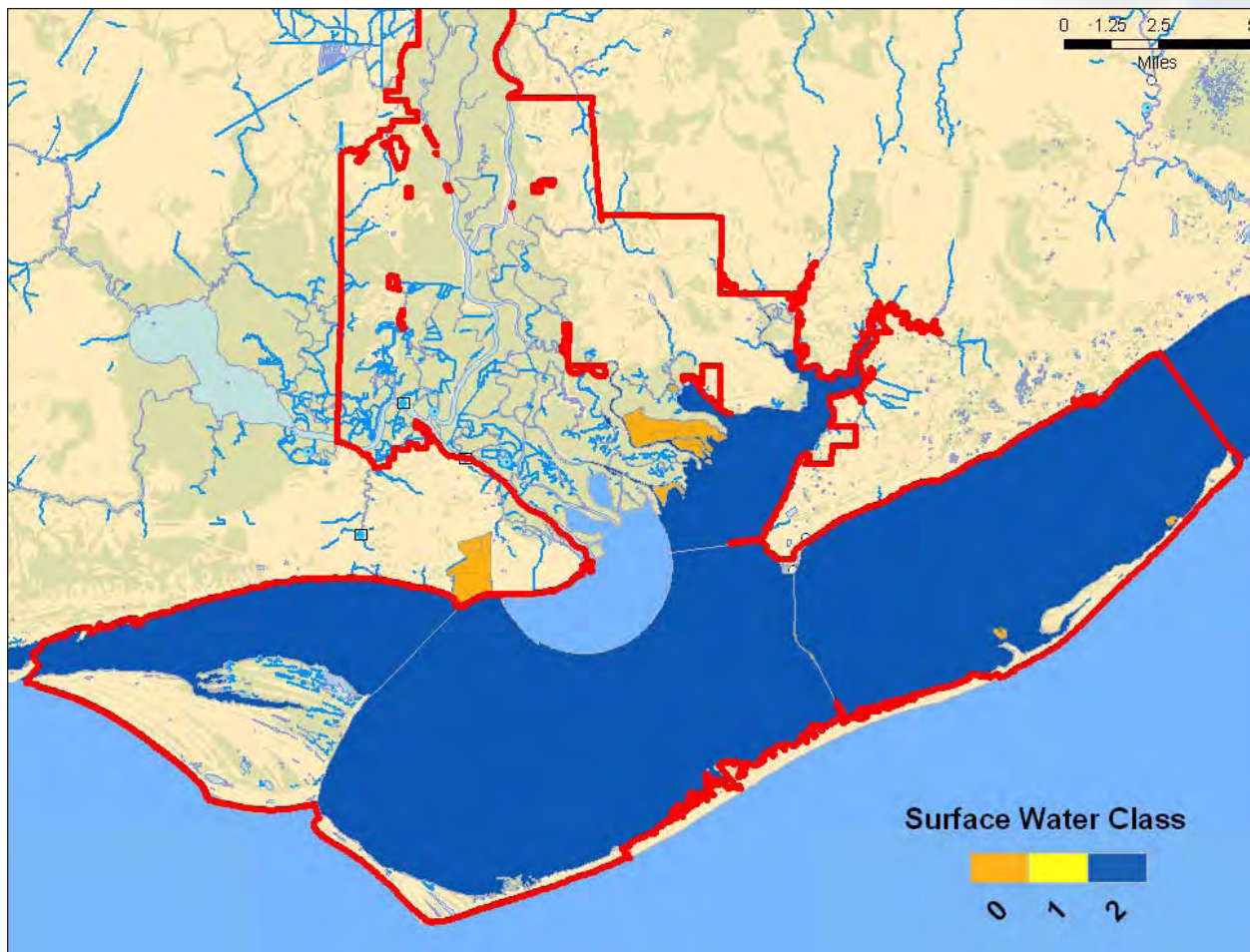




Sohm, & Franklin, 1983). However, flows in the lower river can be substantially increased by Florida rainfall during periods of low flow because of inflow from the Chipola River, a spring fed river and the Apalachicola's major tributary.

The mean annual discharge of the river is approximately 25,000 cubic feet per second (cfs) at the Sumatra gage, 21 miles upriver, which includes the discharge of the Chipola River. Minimum and maximum flows average 9,300 cfs and 200,000 cfs, respectively, although yearly flows vary considerably (USACOE, 1978). Low flows occur in summer and fall while highest flows occur in winter and spring. McNulty, Lindall, and Sykes (1972) estimate that the Apalachicola River discharge accounts for 35 percent of the total freshwater runoff from the west coast of Florida.

Stream modifications such as dams, channelization and maintenance dredging have altered the historic flow regimes and stage height of most of the river south of the Jim Woodruff Dam. With the construction of the dam in 1957, the United States Army Corps of Engineers (USACOE) formed Lake Seminole. While the dam provides services such as recreational opportunities, hydropower and flood navigation, it has reduced the sediment load to the lower river. Maintenance dredging required for navigation purposes has also had a significant influence on the hydrology of the river by straightening curved segments of the river and removing sediments from the main channel. Both practices have resulted in an increase in flow rate and decrease in river height. These factors have contributed to the lowering of water in the main channel of the river. The lower river height has been exacerbated by reduced flow rate recently due to severe drought conditions and increased water diversion caused by population increases and increased agricultural needs. Reduced river height translates to reduced inundation into backwater swamp areas. These waters are important habitat for many species of fish and invertebrates. These backwater areas are also the source of detritus and nutrients that flow into the bay and provide an important component of the food web. Also, this reduced inundation is causing documented range shifts in the tree species of the floodplain (Darst and Light, 2008). Several restoration projects have been funded on the Apalachicola River such as efforts to reconnect backwater areas by the removal of dikes and dams. Other targets for restoration efforts are the sand disposal sites located along much of the river channel.



Map 7 | Surface Water Classifications in Apalachicola Bay.

Apalachicola Bay is in an area of transition between the semi-diurnal tides of southwestern Florida and the diurnal tides of northwestern Florida. Its tides are, therefore, classified as mixed, which accounts for the number of tides, ranging from 1 to 5 daily. The normal tidal range in the bay is one to two feet with a maximum range of three feet (Dawson, 1955; Gorsline, 1963). Strong winds can modify water movement to the point of obscuring tidal effects. Strong winds may also thoroughly mix the shallow water of the bay, but winds of lesser velocity affect only the surface layer, resulting in stratification of the water column (Estabrook, 1973).

Water currents in the bay system are due primarily to the astronomical tides, but are strongly affected by the direction and speed of prevailing winds, riverflow, and the physical structure of the bay (Dawson, 1955). Net movement of water is from the east to the west. The more saline gulf water enters through St. George Sound and moves west mixing with the fresher water in East Bay and Apalachicola Bay and eventually moves back out to the Gulf through Sike's Cut, West Pass, and Indian Pass (Ingle & Dawson, 1953; Conner, Conway, Benedict, & Christensen, 1982). In the bay, water velocities rarely exceed 1.5 feet per second, but velocities of 10 feet per second are common in the passes. Roughly 700,000 cubic feet of water per second leaves the bay system at maximum velocity during ebb flow (Gorsline, 1963).

### **Surface Water Classification**

All surface waters of the State have been classified by DEP according to their designated use. Five classes have been defined with water quality criteria designed to maintain the minimum conditions necessary to assure the suitability of water for its designated use (Department of Environmental Resources [DER], 1985). ANERR has two of the five classes of water present, including:

- Class II: Shellfish propagation or harvesting
- Class III: Recreation, propagation and maintenance of a healthy, well-balanced population of fish and wildlife.

Each of these classes has specific water quality standards for parameters such as bacterial levels, metals, pesticides and herbicides, dissolved oxygen and turbidity, etc., designed to protect and maintain the use of the water body. All surface waters of the state are classified as Class III waters, except those specifically described in Chapter 17-3.161, F.A.C. Class II waters, those used for shellfish propagation or harvesting, include the majority of the brackish water areas in the estuary. The entire bay system from Alligator Harbor through St. George Sound, Apalachicola Bay, East Bay and tributaries, St. Vincent Sound, and Indian Lagoon are Class II waters with the exception of a two-mile radius near Apalachicola and the area north of the Eastpoint breakwater. These areas have been closed to shell-fishing for years due to pollution from the City of Apalachicola and runoff from Eastpoint. Class II water standards are more stringent concerning bacteriological quality than any other class because shellfish, oysters and clams that are consumed uncooked by people can concentrate pathogens in quantities significantly higher than the surrounding waters. All Class II waters are additionally classified by the Florida Department of Agriculture and Consumer Services (FDACS) as approved, conditionally approved, or prohibited for harvesting based upon these surveys. Localized rainfall and high river flow serve as proxy indicators for increases in bacterial levels due to increased runoff. Following these events, harvesting areas will be closed quickly as a precaution. As conditions change, areas are re-opened based on results from bacterial surveys confirming that the levels are safe for harvesting (DEP, 1997).

All other waters in ANERR, which include the river and all its tributaries, distributaries and the two areas in the bay mentioned above, are Class III waters.

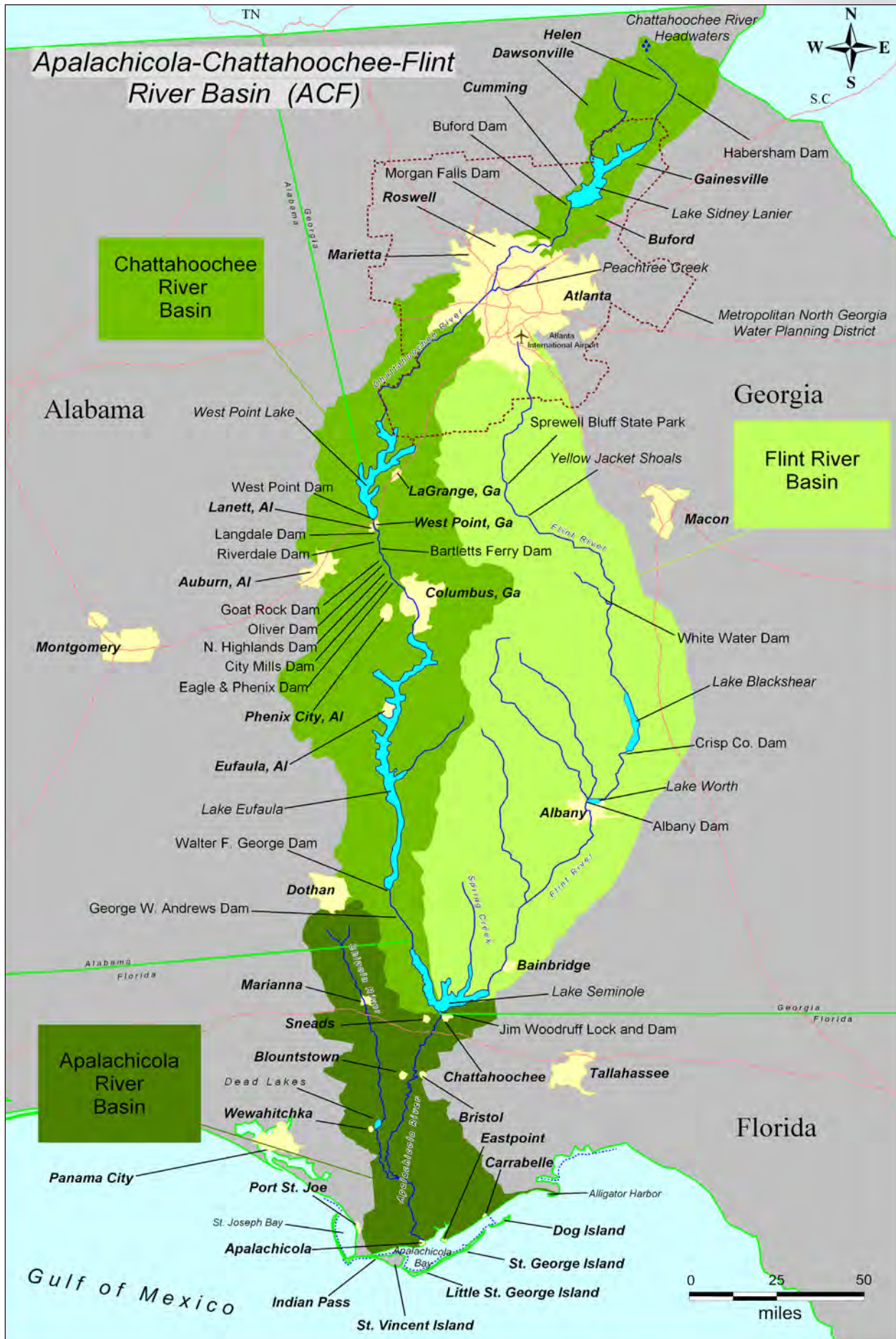
Another important designation used by DEP is that of OFW. All waters, both fresh and saltwater within ANERR are designated as OFWs. These waters are afforded special protection by the state due to their high quality, recreational or ecological significance, or their location within state or federally owned lands. This designation is intended to preserve the ambient water quality at the time of designation and not allow any degradation. Stringent standards are applied regarding proposed alterations or potentially damaging activities planned for these waters.

### **Climate**

The Apalachicola Research Reserve experiences a mild, subtropical climate due to its latitude (29 degrees) and the stabilizing effects of adjacent Gulf of Mexico waters (Bradley, 1972). Mean temperatures range from the 40's Fahrenheit in January to the 80's in July (Fernald, 1981). Seasonal and annual temperatures vary greatly, ranging from the upper 90's in the summer to the lower 20's in the winter.

Average annual rainfall ranges from 52 to 60 inches within ANERR boundaries (Jordan, 1984). Peak rainfall periods occur primarily during the summer with a secondary peak in early spring. Apalachicola



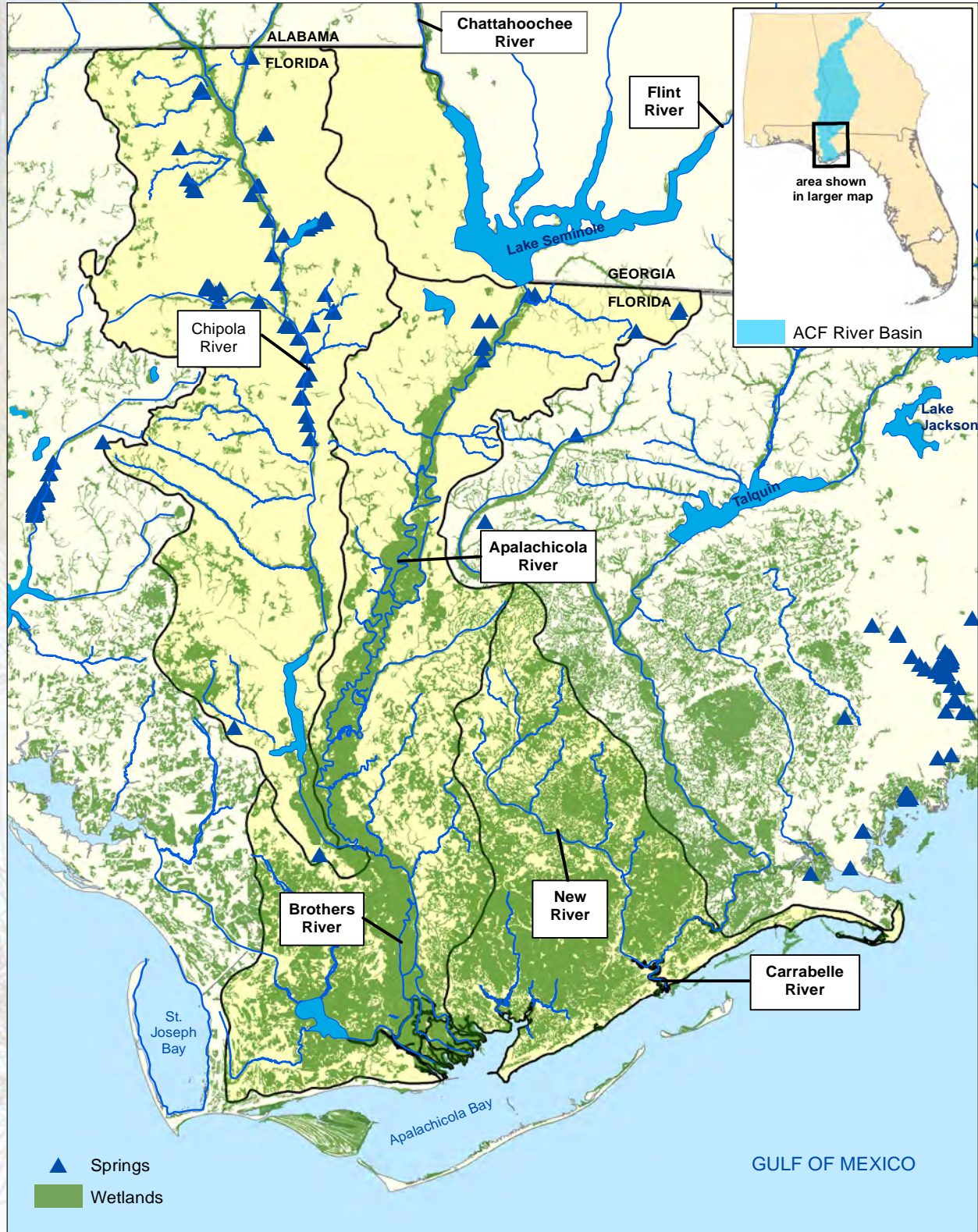


Map 8 / Apalachicola-Chattahoochee-Flint Watershed



experiences approximately 73 days of thunderstorms annually, three-quarters of these occurring between June and September (Jordan, 1973). Low rainfall periods occur primarily in the fall and mid-spring. Local rainfall differs from up basin rainfall in the impacts to the salinity of the bay's waters. Typically large rainfall in the watershed increases riverflow and decreases salinity at all locations in the estuary. Local rainfall has a more limited effect on the salinity of the bay; impacting East Bay and Cat Point areas more than the western portion of the bay.

The local climate is also characterized by seasonal tropical storms and hurricanes. Between 1851 and 2004, 273 hurricanes impacted the U.S. Coastline between Maine and Texas. Of these, approximately





one third had direct hits on the coastlines of Mississippi, Alabama or Northwest Florida panhandle (Blake, Jarrell, Rappaport, & Landsea, 2005). The associated high winds, rainfall and storm surge have a tremendous impact on the hydrology and physiography of the area. The region is still recovering from Hurricane Dennis, a storm that made landfall more than 200 miles west of ANERR in 2005. An estimated 8 to 10 foot storm surge pushed across the barrier islands, moving much of the beach and primary dune structure across the secondary dune and island. The surge also transported sediment and high water up into areas near the river mouth; covering submerged aquatic vegetation and exposing low salinity species of vegetation to high salinity waters (Edmiston et al., 2008). Many of the species found in these areas were lost due to a combination of the two processes and have yet to be completely recovered six years later.

The impact of climate change on the estuarine resources has become an issue of increasing importance for coastal land management. Potentially the greatest impact to ANERR will be sea level rise, which is projected to range from around a half a meter to well over one meter (Intergovernmental Panel on Climate Change, 2007). Due to the low topography of the area, sea level rise impacts will manifest in several ways. Saltwater intrusion and changes to inundation patterns may change the composition of coastal vegetation communities or may result in complete loss of certain natural communities. Tidal boundaries within the estuary will move closer to the mouth of the river, resulting in conditions that may support faunal or trophic changes. Water level and temperature increases may allow the invasion of native or non-native species, which may be able to out-compete native species. Lastly, as sea level increases, storm surge impacts will also increase (Florida Oceans and Coastal Council, 2009).

One of the priority science strategies identified in the NERRS Strategic Plan (2011-2016) is to “Implement monitoring and research projects that use reserves as sentinel sites for detecting and understanding the effects of sea level change and other climate change effects on estuaries.” ANERR is in the process of establishing itself as a sentinel site and additional details can be found in the Ecosystem Science program section of the plan. While research and monitoring focuses on the impacts to natural communities, the other ANERR programs use models and map products to inform the public on the potential impacts to private property, infrastructure and other public resources. Adaptation and mitigation strategies are developed and discussed as new scientific information becomes available.

### **Florida Natural Areas Inventory Natural Communities**

The natural community classification system used in the text of this plan was developed by the Florida Natural Areas Inventory (FNAI) and the DEP. In order to achieve consistency with NOAA/NERRS classification standards the habitat map provided in this plan is based on the Coastal Change and Analysis Program (C-CAP) scheme. C-CAP is a nationally standardized database of land cover and land change information, developed using remotely sensed imagery, for the coastal regions of the U.S. C-CAP products inventory coastal intertidal areas, wetlands, and adjacent uplands with the goal of monitoring these habitats by updating the land cover maps every five years. The development of standardized, regional land cover information enables managers to coordinate the planning of shared resources, facilitating an ecosystem approach to environmental issues that transcends local and state regulatory boundaries. A C-CAP/FNAI crosswalk table is provided to explain the relationship between these two classification systems (see Table 3). Appendix B.6 provides an explanation of the FNAI community types and the ranking system.

**Natural Community Descriptions** - This section describes the 24 major FNAI natural communities as they occur on CAMA managed lands within ANERR.

The description below of natural communities found within ANERR is followed by discussion of the distribution of the primary ecosystems and location of the FNAI natural communities within them. The FNAI descriptions are taken from the Guide to FNAI Natural Community, 2010 (Florida Natural Areas Inventory [FNAI], 2010), where available or from the Guide to FNAI Natural Community, February 1990 (FNAI & Department of Natural Resources, 1990).

**Scrub** – (synonyms: sand pine scrub, Florida scrub, sand scrub, rosemary scrub, oak scrub). Scrub is a community composed of evergreen shrubs, with or without a canopy of pines, and is found on dry, infertile, sandy ridges. The signature scrub species are three species of shrubby oaks - myrtle oak (*Quercus myrtifolia*), sand live oak (*Q. geminata*), and Chapman’s oak (*Q. chapmanii*); Florida rosemary (*Ceratiola ericoides*); and sand pine (*Pinus clausa*) – are common to scrubs throughout the state. The dominance of these species, however, is variable from site to site. The most common form is oak scrub. The oaks form a dense cover interspersed with patchy openings that consist of bare sand with a sparse cover of herbs. Some scrubs are dominated by Florida rosemary, especially on drier ridge crests. Rosemary-dominated scrubs tend to retain openings between the shrubs, even long after fire, in contrast to oak-dominated scrubs where vegetation tends to fill in openings with time since fire (Hawkes & Menges, 1996; Young & Menges, 1999). Scrubs dominated by a canopy of sand pine are usually found

*Table 3 | Coastal Change Analysis Program (C-CAP), Florida Natural Areas Inventory Natural Community and NERR Habitat Classification Crosswalk*

<b>CCAP Classification</b>	<b>FNAI Classification</b>	<b>NERR Classification</b>
10 Evergreen Forest	Xeric Hammock	6153 Upland Supratidal Forested Broad-leaved Evergreen
10 Evergreen Forest	Sandhill	6154 Upland Supratidal Forested Narrow-leaved Evergreen
10 Evergreen Forest	Mesic Flatwoods	6154 Upland Supratidal Forested Narrow-leaved Evergreen
10 Evergreen Forest	Scrubby Flatwoods	6154 Upland Supratidal Forested Narrow-leaved Evergreen
10 Scrub/Shrub	Scrub	6143 Upland Supratidal Scrub-Shrub Broad-leaved Evergreen
13 Palustrine Forested Wetland	Alluvial Forest	5255 Palustrine Intermittent Forested Mixed
13 Palustrine Forested Wetland	Dome Swamp	5252 Palustrine Intermittent Forested Narrow-leaved Deciduous
13 Palustrine Forested Wetland	Floodplain Swamp	5252 Palustrine Intermittent Forested Narrow-leaved Deciduous
15 Palustrine Emergent Wetland	Basin Marsh	5232 Palustrine Intermittent Emergent Wetland Persistent
15 Palustrine Emergent Wetland	Coastal Interdunal Swale	5232 Palustrine Intermittent Emergent Wetland Persistent
15 Palustrine Emergent Wetland	Depression Marsh	5232 Palustrine Intermittent Emergent Wetland Persistent
15 Palustrine Emergent Wetland	Flatwoods/Prairie/Marsh Lake	5232 Palustrine Intermittent Emergent Wetland Persistent
18 Estuarine Emergent Wetland	Salt Marsh	2261 Estuarine Intertidal Haline Emergent Wetland Persistent
19 Unconsolidated Shore	Marine Unconsolidated Substrate	6123 Upland Supratidal Unconsolidated Sand
19 Unconsolidated Shore	Marine Unconsolidated Substrate	1243 Marine Intertidal Unconsolidated Shore Sand
21 Unconsolidated Shore	Mollusk Reef	2141 Estuarine Subtidal Reef Mollusk
19 Unconsolidated Shore	Estuarine Unconsolidated Substrate	2323 Estuarine Supratidal Haline Unconsolidated Bottom Sand
19 Unconsolidated Shore	Estuarine Unconsolidated Substrate	2253 Estuarine Intertidal Haline Unconsolidated Shore Sand
11 Mixed Forest	Shell Mound	6155 Upland Supratidal Forested Mixed
8 Grassland	Beach Dune	613X Upland Supratidal Herbaceous (1 Grassland and 2 Herbs)
21 Open Water	Estuarine Unconsolidated Substrate	212X Estuarine Subtidal Unconsolidated Btm. (3 Sand and 4 Mud)
21 Open Water	Marine Unconsolidated Substrate	112X Marine Subtidal Unconsolidated Btm. (3 Sand and 4 Mud)
21 Open Water	Alluvial Stream	3112 Riverine Lower Perennial Unconsolidated Bottom Sand
21 Open Water	Blackwater Stream	3113 Riverine Lower Perennial Unconsolidated Bottom Mud
2 High Intensity Developed	Developed	8133 Cultural Developed Residential High Density
3 Medium Intensity Developed	Developed	8132 Cultural Developed Residential Medium Density
4 Low Intensity Developed	Developed	8131 Cultural Developed Residential Low Density
5 Developed Open Space	Developed	8156 Cultural Developed Unconsolidated Cover Cleared Land
6 Cultivated	Agriculture	8181 Cultural Developed Tree Cover Managed Trees
7 Pasture/Hay	Agriculture	823X Cultural Agricultural Herbaceous Cover (2 Pasture and 3 Hay Meadow)
8 Grassland	Agriculture	823X Cultural Agricultural Herbaceous Cover (2 Pasture and 3 Hay Meadow)
13 Palustrine Emergent Wetland	Floodplain Marsh	5232 Palustrine Intermittent Emergent Wetland Persistent



13 Palustrine Emergent Wetland	Freshwater Tidal Marsh	2551 Estuarine Intertidal Fresh Emergent Wetland Persistent
13 Palustrine Forested Wetland	Baygall	5253 Palustrine Intermittent Forested Broad-leaved Evergreen
13 Palustrine Forested Wetland	Hydric Hammock	5253 Palustrine Intermittent Forested Broad-leaved Evergreen
15 Palustrine Emergent Wetland	Wet Prairie	5232 Palustrine Intermittent Emergent Wetland Persistent
13 Palustrine Forested Wetland	Bottomland Forest	5255 Palustrine Intermittent Forested Mixed
12 Scrub/Shrub	Coastal Berm	6143 Upland Supratidal Scrub-Shrub Broad-leaved Evergreen
14 Palustrine Scrub/Shrub Wetland	Shrub Bog	5241 Palustrine Intermittent Scrub-Shrub Broad-leaved Deciduous
21 Open Water	River Floodplain Lake and Swamp Lake	3113 Riverine Lower Perennial Unconsolidated Bottom Mud

on the highest sandy ridgelines. The pine canopy may range from widely scattered trees with a short, spreading growth form, to tall thin trees forming a dense canopy of uniform height. The sand pine scrub understory is characterized by either scrub oaks or Florida rosemary.

While scrub is a fire-maintained community, it is not easily ignited. Scrub is thought to have burned less frequently than communities with a more easily ignited grassy groundcover, such as sandhill and mesic flatwoods. The variety of sand pine in Panhandle scrubs (*P. clausa* var. *immuginata*, or the Choctawhatchee variety) is open-coned and is therefore capable of maintaining its populations in the absence of fire (Parker, Hamrick, Parker, & Nason, 2001). Sand pines are highly susceptible to being killed by salt spray and wind throw from coastal storms. Storm-related disturbances in sand pine scrub along the Panhandle coast play a significant role in stimulating stand regeneration in this region (Huck et al., 1996).

Wildlife species endemic to scrub and other xeric habitats in northwest Florida include the Florida mouse (*Podomys floridanus*). Scrub is also important for gopher tortoise (*Gopherus polyphemus*) and over 400 associated commensals, including eastern diamondback rattlesnakes (*Crotalus adamanteus*) and eastern indigo snakes (*Drymarchon couperi*).

Scrub on Little St. George Island is in various stages of succession. Scrubby flatwoods and scrub can be difficult to distinguish on Little St. George because there is so much community transition due to variable microtopography. Since scrub is successively better developed on older ridges, young scrub ridges have a different shrub composition than the older ones.

**Beach Dune** – (synonyms: sand dunes, beaches, coastal strand). Beach dune is a predominantly herbaceous community of wide-ranging coastal specialist plants on the vegetated upper beach and first dune above the beach (foredune). Water and wind movement exert the primary environmental forces that shape the ecology of beach dunes. Plants on the foredune are regularly exposed to salt spray and sand burial; plants on the upper beach are subject to these stresses plus occasional inundation by high seasonal or storm tides and periodic destruction by waves. The plants of the beach dune community are adapted to either withstand these stresses or to rapidly re-colonize from seed or vegetative parts following destruction. This community is usually built by sea oats (*Uniola paniculata*), whose stems trap the sand grains blown off the beach, building up the dune by growing upward to keep pace with sand burial. Other grasses that can tolerate some sand burial include bitter panicgrass (*Panicum amarum*) and saltmeadow cordgrass (*Spartina patens*). Gulf bluestem (*Schizachyrium maritimum*), which is dominant in the adjacent coastal grassland community, can also be found on the

inland slope of the foredune. The upper beach area seaward of the foredune is a less stable habitat and is continually re-colonized by annuals, trailing species and salt-tolerant grasses. Rare plant species found in the beach dune community include Godfrey's goldenaster (*Chrysopsis godfreyi*) and Gulf Coast lupine (*Lupinus westianus*).

Beach dune is also foraging and primary nesting habitat for numerous shorebirds and marine turtles, including many rare and endangered species. Many rare shorebirds use Florida beaches for nesting. These include the state-listed snowy plover (*Charadrius alexandrinus*), American oystercatcher (*Haematopus palliatus*), black skimmer (*Rynchops niger*) and least tern (*Sterna antillarum*). The federally listed piping plover (*C. melodus*), which breeds further north, winters along Florida beaches. FNAI-listed shorebirds using beaches include Wilson's plover (*C. wilsonia*), royal tern (*S. maxima*), and sandwich tern (*S. sandvicensis*). Florida beaches are one of the three major nesting areas in the world for loggerhead turtles (*Caretta caretta*). Other rare sea turtles that nest in Florida are the green (*Chelonia mydas*) and Kemp's ridley (*Lepidochelys kempii*).

Certain procedures intended to make the beach more pleasant or accessible for recreational use can interfere with natural processes. Raking seaweed off the beach deprives the plants of nutrients needed for luxuriant growth following storms. In areas with strong onshore winds and stable communities protected by the foredune, paths through the sea oats dunes at right angles to the beach can promote blowouts, allowing

a wave of sand to move inland burying existing stable vegetation. This can be prevented by using dune walkovers, or winding paths parallel to the shore. If restoration plantings are used, care should be taken not to plant coastal endemics outside their range.

On Little St. George Island the beach dune on the bay side of the island is a low, water-driven dune with the same species as the ocean side dunes with the addition of coastal sea rocket (*Cakile lanceolata*), shoreline seapurslane (*Sesuvium portulacastrum*), saltmeadow cordgrass, seashore dropseed (*Sporobolus virginicus*), sea blite (*Suaeda linearis*), amaranth (*Amaranthus spp.*), crested saltbush (*Atriplex cristata*), coastal groundcherry (*Physalis angustifolia*) and dock (*Rumex spp.*).

**Coastal Grassland** - (synonyms: overwash plain, coastal savannah, coastal strand, dunes and maritime hammocks -transition zone). Coastal grassland is a predominantly herbaceous community occupying the drier portions of the transition zone between beach dunes on the immediate coast and communities dominated by woody species further inland. Coastal grassland is a low flat area behind the foredunes that is found on broader barrier islands, capes, spits, and



*Apalachicola aster (Aster spinulosa).*

is best developed along the Gulf Coast. It may be periodically flooded by saltwater and covered with sand and debris during major storms. The specialized dune building grasses of the beach dune community, sea oats, bitter panicgrass, and saltmeadow cordgrass are usually present, along with a variety of other herbaceous species typically found on more stable soils. Coastal grassland is well-developed in the Panhandle where it includes a number of rare or endemic plants including the dominant grass, Gulf bluestem and Gulf Coast lupine. Three rare shorebirds may nest in coastal grasslands, the snowy plover, Wilson's plover, and American oystercatcher.

On Little St. George Island, coastal grassland is found between the dunes and other more inland communities such as scrub, or on the slightly higher ridges within coastal interdunal swale communities. The coastal grassland on the eastern arm of the island includes small areas of abundant telegraph weed (*Heterotheca subaxillaris*). Generally, coastal grassland is lacking canopy cover, but occasionally slash pine, and cabbage palm (*Sabal palmetto*) occur. The sparse shrub and vine layers consists of false rosemary (*Conradina canescens*), cockspur pricklypear (*Opuntia pusilla*), earleaf greenbrier (*Smilax auriculata*) and saw palmetto (*Serenoa repens*).

**Coastal Interdunal Swale** - (synonyms: interdune area, transition zone) Coastal interdunal swales are marshes, moist grasslands, dense shrubs, or damp flats in linear depressions formed between successive



dune ridges as sandy barrier islands, capes, or beach plains build seaward. Dominant species are quite variable depending on local hydrology, substrate, and the age of the swale. Wetter areas are often dominated by sawgrass (*Cladium jamaicense*), cattail (*Typha spp.*), or needle rush (*Juncus roemerianus*), while shallower areas have a diverse mixture of herbs. Shrubby areas are often dominated by wax myrtle (*Myrica cerifera*), with coastal plain willow (*Salix caroliniana*) or St. John's wort (*Hypericum reductum*). Moist grasslands may be dominated by hairawn muhly (*Muhlenbergia capillaris*), lovegrass (*Eragrostis spp.*), sand cordgrass (*Spartina bakeri*) or saltmeadow cordgrass. Nearer the shore, where swales are exposed to occasional salt water intrusion, they may be dominated by halophytic species. Hurricanes and tropical storms can flood swales with salt water, after which they are colonized for a time by more salt tolerant species.

Salt water intrusion and sand burial during storm overwash may leave coastal interdunal swales vulnerable to invasion by exotic species, principally torpedo grass (*Panicum repens*) and Chinese tallow (*Sapium sebiferum*).

Coastal interdunal swale is a widespread community on Little St. George Island and very diverse, therefore two variations were recognized: short hydroperiod and long hydroperiod swale. Short hydroperiod swale is moist grassland dominated by either hairawn muhly or saltmeadow cordgrass and commonly also includes (*Andropogon spp.*), spadeleaf (*Centella asiatica*), wand goldenrod (*Solidago stricta*) and three-square (*Scirpus pungens*). Short hydroperiod swale has a sometimes abundant canopy of slash pine and/or cabbage palm and may be similar to or grade into wet flatwoods. Long hydroperiod swale remains inundated at least half of the year, and is dominated by cattail and sawgrass with intermittent patches of needle rush. Torpedo grass has been introduced to coastal interdunal swales in various places throughout the island (possibly from storms transporting rhizomes).

**Shell Mound** – (synonyms: midden, Indian mound, upland hardwood hammock, maritime hammock, coastal hammock). Shell mounds are small hills, usually in coastal locations, composed entirely of shells (clams, oysters, whelks) discarded by generations of Native Americans which support an assemblage of calciphilic plant species. Archaeological evidence indicates they were occupied at the time Europeans first landed in Florida. A rich calcareous soil develops on the deposited shells which supports a diverse hardwood forest on undisturbed mounds. Shell mounds in the Florida Panhandle support temperate canopy trees such as live oak (*Quercus virginiana*) and cabbage palm (*Sabal palmetto*) as well as calcium-loving temperate species not found in nearby maritime hammocks on sand, including soapberry (*Sapindus saponaria*) and Carolina buckthorn (*Rhamnus caroliniana*) (Johnson, Muller, & Bettinger, 1992).

Soil disturbance on shell mounds from old home sites, clearings, potholes from illegal digging, etc. can allow exotic species to invade. Loss of the historical resource can result from illegal digging as well.

**Scrubby Flatwoods** – (synonyms: scrubby, xeric, or dry flatwoods; longleaf pine - scrub oak; southern mixed forest, pine flatwoods). Scrubby flatwoods have an open canopy of widely spaced pine trees and a low, shrubby understory dominated by scrub oaks and saw palmetto (*Serenoa repens*), often interspersed with areas of barren white sand. Scrubby flatwoods occur on slight rises within mesic flatwoods and in transitional areas between scrub and mesic flatwoods. Soils of scrubby flatwoods are moderately well-drained sands. Principal canopy species are longleaf pine (*Pinus palustris*) and slash pine. The shrub layer consists of sand live oak, myrtle oak and Chapman's oak; and typical shrubs of mesic flatwoods. Grasses and dwarf shrubs make up a substantial portion of the cover. A variety of forbs, many typical of drier types of mesic flatwoods, are present. Bare sand openings are often present but are generally small. Large-leaved jointweed (*Polygonella macrophylla*) is a rare plant found primarily in coastal scrubby flatwoods of the Florida Panhandle.

Scrubby flatwoods are inhabited by many of the same rare animal species found in scrub. These include the Florida mouse, gopher tortoise and more than 400 associated tortoise commensal species.

Because there is a more continuous ground cover, scrubby flatwoods burn more readily than scrub (United States Fish and Wildlife Service [USFWS], 1999) and somewhat less readily than mesic flatwoods. Variability in season and frequency of prescribed fires to produce a mosaic of burned and unburned patches would be most desirable for maintaining high biotic diversity in this community. Invasive exotic plants that can displace native species in disturbed scrubby flatwoods include natal grass (*Rhynchelytrum repens*) and cogon grass (*Imperata cylindrica*).

Scrubby flatwoods generally have a more developed herbaceous layer than scrub, often including wiregrass. However, the scrubby flatwoods on Little St. George Island do not contain wiregrass. Flatsedge (*Cyperus spp.*), witchgrass (*Dichantheium spp.*), Florida scrub frostweed (*Helianthemum nashii*), pinweed (*Lechea spp.*), bracken fern (*Pteridium aquilinum*), sandyfield beaksedge (*Rhynchospora megalocarpa*) and sweet goldenrod (*Solidago odora*) are the most common herbaceous species within ANERR's scrubby flatwoods. Earleaf greenbrier is the most common vine.





*Doyle Creek marsh and hammock*

**Mesic Flatwoods** – (synonyms: pine flatwoods) Mesic flatwoods is characterized by an open canopy of tall pines and a dense, low ground layer of low shrubs, grasses, and forbs. Mesic flatwoods is the most widespread natural community in Florida, covering the flat sandy terraces left behind by former high stands of sea level during the Plio-Pleistocene. The soils are alternately droughty during dry periods and saturated, or even inundated, after heavy rains. Longleaf pine is the principal canopy tree. However, slash pine is more common than longleaf pine in mesic flatwoods in northern Florida. The prevalence of slash pine is a result of the logging of longleaf pine followed by a long period of fire exclusion in the early part of the twentieth century (Garren, 1943). Characteristic shrubs include saw palmetto, gallberry (*Ilex glabra*), coastalplain staggerbush (*Lyonia fruticosa*), and fetterbush (*Lyonia lucida*). Rhizomatous dwarf shrubs, usually less than two feet tall, are common. The herbaceous layer is predominantly grasses plus a large number of showy forbs.

Many rare plants endemic to Florida are found in mesic flatwoods in the Panhandle including pine-woods aster (*Aster spinulosus*), scare-weed (*Baptisia simplicifolia*), telephus spurge (*Euphorbia telephioides*), white birds-in-a-nest (*Macbridea alba*), narrow-leaved phoebanthus (*Phoebanthus tenuifolius*), pine-woods bluestem (*Andropogon arctatus*), many-flowered grass-pink (*Calopogon multiflorus*), and Florida beargrass (*Nolina atopocarpa*).

Rare animals that can be found in mesic flatwoods include the frosted flatwoods salamander (*Ambystoma cingulatum*), eastern diamondback rattlesnake, Bachman's sparrow (*Aimophila aestivalis*), red-cockaded woodpecker (*Picoides borealis*), and Florida black bear (*Ursus americanus floridanus*).

Mesic flatwoods require frequent fire (two to four year intervals) to control hardwood and off-site pine invasion. Red-cockaded woodpeckers, which nest in cavities in mature living pines, will abandon a nesting site if the midstory becomes too tall and dense when fire is excluded for too long (Conner & Rudolph, 1989). The flatwoods salamander prefers a grassy border to its breeding ponds which is maintained against encroaching shrubs by frequent fire (Drewa et al., 2002b). Fire stimulates flowering in many flatwoods herbs and frequent fire (1-3 years) increases species richness and abundance of herbs (Lemon, 1949).

Wiregrass often does not withstand ground disturbance associated with planting pine plantations for commercial purposes. In some cases where the goal is to restore pine plantations to mesic flatwoods, there may not be enough wiregrass remaining to restore the herbaceous ground cover by frequent fire and natural seeding (Platt, 1999; Kirkman et al., Coffey, Mitchell, & Moser, 2004). In such cases direct seeding



may be required to restore the wiregrass ground layer. Care should be taken so that the wiregrass and other seed used for restoration is not only from the same geographic area but also the same habitat type as the restoration site to maintain geographic genetic diversity (Walters, Decker-Walters, & Gordon, 1994) and to improve chances of survival (Kindell, Winn, & Miller, 1996; Gordon & Rice 1998).

Invasive exotic plants that may cause problems in mesic flatwoods include cogon grass, Japanese climbing fern (*Lygodium japonicum*), camphor tree (*Cinnamomum camphora*), and rose natal grass (*Melinis repens*); all listed as Category I exotics (capable of displacing native species) by the Florida Exotic Pest Plant Council.

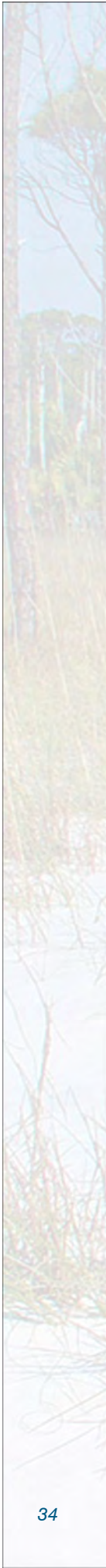
On Little St. George Island, mesic flatwoods is often located in transitional areas between scrub or scrubby flatwoods and coastal interdunal swales. It often has inclusions of wet flatwoods, scrubby flatwoods and coastal interdunal swale due to variations in the microtopography. Mesic flatwoods on Little St. George Island lacks a well-developed herbaceous layer that is more common to inland flatwoods where soils are typically spodosols and fire intervals are likely shorter.

**Wet Flatwoods** - Wet flatwoods are pine forests with a sparse or absent midstory and a dense groundcover of hydrophytic grasses, herbs and low shrubs. The pine canopy typically consists of one or a combination of longleaf pine, slash pine or pond pine (*Pinus serotina*). The subcanopy, if present, consists of scattered sweetbay (*Magnolia virginiana*), swamp bay (*Persea palustris*), loblolly bay (*Gordonia lasianthus*), pond cypress (*Taxodium ascendens*), dahoon (*Ilex cassine*), titi (*Cyrilla racemiflora*), and/or wax myrtle. Shrubs include large gallberry (*I. coriacea*), fetterbush, titi, black titi (*Cliftonia monophylla*), sweet pepperbush (*Clethra alnifolia*), red chokeberry (*Photinia pyrifolia*), and azaleas (*Rhododendron canescens*, *R. viscosum*). Saw palmetto and gallberry species found in mesic flatwoods sites, may be present. On calcareous sites, cabbage palm is common, both in the subcanopy and shrub layers. Herbs include wiregrass (*Aristida stricta* var. *beyrichiana*), blue maidencane (*Amphicarpum muhlenbergianum*), and/or hydrophytic species such as toothache grass (*Ctenium aromaticum*), Curtiss' sandgrass (*Calamovilfa curtissii*), cutover muhly (*Muhlenbergia expansa*), coastalplain yellow-eyed grass (*Xyris ambigua*), Carolina redroot (*Lachnanthes caroliniana*), beaksedges (*Rhynchospora chapmanii*, *R. latifolia*, *R. compressa*), and pitcher plants (*Sarracenia* spp.), among others.

Wet flatwoods often occur in the ecotones between mesic flatwoods and shrub bogs, wet prairies, dome swamps, or strand swamps. Wet flatwoods also occur in broad, low flatlands, often in a mosaic with these communities. The relative density of shrubs and herbs varies greatly in wet flatwoods. Shrubs tend to dominate where fire has been absent for a long period or where cool season fires predominate; herbs are more abundant in locations that are frequently burned. Soils and hydrology also influence relative density of shrubs and herbs. Soils of shrubby wet flatwoods are generally poorly to very poorly drained sands and include such series as Rutledge/Osier; these soils generally have a mucky texture in the uppermost horizon (Gilbert et al., 1995). Examples of typical soils in grassy wet flatwoods are loamy sands of the Leefield and Plummer Series (USFS, 1984).

**Floodplain Swamp** – (synonyms: southern floodplain forest, cypress swamp, river swamp, bottomland hardwoods, seasonally flooded basins or flats, oak-gum-cypress, cypress-tupelo swamp). Floodplain swamp is a closed-canopy forest of hydrophytic trees occurring on frequently or permanently flooded hydric soils adjacent to stream and river channels and in depressions and oxbows within floodplains. Trees are often buttressed, and the understory and groundcover are sparse. The canopy is sometimes a pure stand of bald cypress (*Taxodium distichum*), but more commonly with one or more of the following tupelo species: water tupelo (*Nyssa aquatica*), swamp tupelo (*N. sylvatica* var. *biflora*), or ogeechee tupelo (*N. ogeche*). The “knees” arising from the root systems of both cypress and tupelo are common features in floodplain swamp. Other canopy trees capable of withstanding frequent inundation may be present but rarely dominant. A groundcover of flood tolerant ferns and herbs are found in some floodplain swamps. Swamps with stagnant water typically have a mixture of floating aquatics. Eastern poison ivy (*Toxicodendron radicans*) is a frequent vine.

Rare plants found in floodplain swamp include Curtiss' loosestrife (*Lythrum curtissii*). Rare animal species include one-toed amphiuma (*Amphiuma pholeter*), American alligator (*Alligator mississippiensis*), spotted turtle (*Clemmys guttata*), green water snake (*Nerodia cyclopion*), Barbour's map turtle (*Graptemys barbouri*), limpkin (*Aramus guarana*), swallow-tailed kite (*Elanoides forficatus*), wood stork (*Mycteria americana*), yellow-crowned night-heron (*Nyctanassa violacea*), black-crowned night-heron (*Nycticorax nycticorax*), big brown bat (*Eptesicus fuscus*), southeastern bat (*Myotis austroriparius*), gray bat (*Myotis grisescens*) and Florida black bear. Floodplain swamp is usually too wet to support fire; however, large cypress trees are somewhat fire-resistant, and thus infrequent fires during very dry conditions may contribute to cypress dominance (Conner & Buford, 1998). Fires may greatly damage the understory (Wharton, Kitchens, Pendleton, & Sipe, 1982).



Floodplain swamp communities provide important wildlife habitat, contribute to flood attenuation, and help protect the overall water quality of streams and rivers. Artificial water impoundments on rivers can severely limit the effects of seasonal flooding that maintain the health of these systems, including the stabilization of deposits and flushing of detritus (Wharton et al., 1982). Alteration of the hydroperiod by impoundments or river diversions and the conversion of floodplain communities to forestry or agriculture uses have devastating consequences to river and bay systems. Virtually all cypress/tupelo stands are second growth, having been intensively logged by the first half of the 20th century. Several invasive exotic plants have encroached into floodplain swamp including Japanese climbing fern, alligator weed (*Alternanthera philoxeroides*), water hyacinth (*Eichhornia crassipes*) and wild taro (*Colocasia esculenta*).

**Variant: Freshwater Tidal Swamp** – As a river approaches the coast, increasing stresses from daily tidal-driven inundation and occasional saltwater intrusion gradually influence vegetation structure. At the lower end of this gradient, cypress becomes much less dominant, replaced by stunted tupelo, pumpkin ash (*Fraxinus profunda*) and sweetbay. The landward extent of this community is difficult to determine but it is roughly defined as occurring between the head of the tide, where the bottom of the stream channel is higher than the mean tide range, and the point of tide reversal, where water flow is always downstream, even during high tide (Day et al., 2007).

**Depression Marsh** – (synonyms: isolated wetland, flatwoods pond, St. John's wort pond, pineland depression, ephemeral pond, seasonal marsh). Depression marsh is characterized as a shallow, usually rounded depression in sand substrate with herbaceous vegetation zones or bands of vegetation that are related to length of the hydroperiod and depth of flooding. They form when the overlying sands slump into depressions dissolved in underlying limestone. These marshes also frequently form an outer rim around swamp communities such as dome swamps. The outer, or driest, zone is often occupied by sparse herbaceous vegetation. Floating-leaved plants, such as white waterlily, may be found in open water portions of the marsh. Depending on depth and configuration, depression marshes can have varying combinations of these zones and species within each zone. Depression marshes often burn with the surrounding landscape and are seasonally inundated.

Rare plant species found in depression marshes include: Elliott's croton (*Croton elliotii*), karst pond xyris (*Xyris longisepala*), small-flowered meadowbeauty (*Rhexia parviflora*), and panhandle meadowbeauty (*R. salicifolia*), all endemic to the Panhandle.

Rare animal species include several amphibians, particularly those that require breeding sites that are free of predatory fishes (Moler & Franz, 1987); these include the frosted flatwoods salamander, reticulated flatwoods salamander (*Ambystoma bishopi*), tiger salamander (*A. tigrinum*), striped newt (*Notophthalmus perstriatus*), and gopher frog (*Rana capito*). More than a dozen other species of frogs and salamanders also breed regularly in depression marshes, and these constitute an important part of the food supply of wading birds and snakes, including the rare eastern indigo snake and southern hognose snake (*Heterodon simus*) (Moler & Franz, 1987). Other rare species using this habitat include the round-tailed muskrat. Wading birds, in addition to feeding in depression marshes, use clumps of willows or other trees in the center for roosting or nesting (NeSmith, 2008).

Depression marshes are generally thought to be maintained as herbaceous communities against woody invasion by hydrologic fluctuations or by fire or by both (Kirkman, Goebel, Drew, & Palik, 2000; Casey & Ewel, 2006). Fires in surrounding communities should be allowed to burn into depression marshes and extinguish naturally or burn through them. Physical disturbance, particularly from hog rooting, livestock, or vehicles (e.g., "mud bogging") can cause serious damage in marshes; these activities can destroy native species and churn the soil which is often then colonized by pure stands of weedy species. Such physical disturbances can allow invasive exotic plants to get a foothold.

**Floodplain Marsh** - Floodplain marsh is a wetland community found along rivers and streams from just below the headwaters to the tidally influenced river mouths and dominated by herbaceous vegetation and/or shrubs. Sand cordgrass, sawgrass, and maidencane (*Panicum hemitomon*) are common dominants, but a variety of other herbs may be found distributed along a hydrologic gradient. Broadleaf emergents and floating plants occupy the deepest, most frequently flooded sites, and mixed herbaceous stands are found in the somewhat higher portions of the marsh (Toth, 1993). In wetter sites, coastal plain willow or common buttonbush (*Cephalanthus occidentalis*) may form shrub thickets. The highest part of the marsh is often a drier, wet prairie-like zone with a large diversity of graminoids and forbs. While the progression from high to low marsh occurs generally from the upland edge to the river edge, these vegetation patches may also be scattered throughout the marsh.

Freshwater tidal marsh is a variant of the floodplain marsh that occurs in river mouths that receive pulses of freshwater in response to tides. Salt and freshwater marsh species intermingle as saltwater is diluted



by freshwater inflow and tidal fluctuation is damped (Thompson, 1977; Clewell, 1977). These marshes are occasionally influenced by salt water during storms, seasonal high tides, and periods of low river flow. Sawgrass is dominant, forming large stands either directly adjacent to the river, or just behind slightly raised levees of floodplain swamp or hydric hammock vegetation. Most floodplain marshes are freshwater (salinity less than 0.5 parts per thousand); however, saltwater may influence marshes near the mouths of rivers in this freshwater tidal marsh variant. In these situations, dominant species are those tolerant of brackish conditions, particularly sawgrass, sand cordgrass, needle rush, perennial glasswort (*Sarcocornia perennis*), seashore dropseed (*Sporobolus virginicus*), giant cutgrass (*Zizaniopsis miliacea*), and shoreline sea purslane (*Sesuvium portulacastrum*). The rare plant corkwood (*Leitneria floridana*) is found in the freshwater tidal marsh variant where sawgrass marsh grades into low levees of floodplain swamp.

Floodplain marshes are an important habitat for black rail, limpkin, bald eagle, and wading birds, particularly great egret (*Ardea alba*), white ibis (*Eudocimus albus*), little blue heron (*Egretta caerulea*), snowy egret (*Egretta thula*), tricolored heron (*Egretta tricolor*), black-crowned night-heron, yellow-crowned night-heron, and glossy ibis (*Plegadis falcinellus*).

The characteristic herbaceous species re-sprout vigorously following burns, and there is evidence that frequent fire helps to limit shrub invasion (Miller, Ponzio, Lee, Keenan, & Miller, 1998; Lee et al., 2005). Prescribed fire, in addition to maintenance or restoration of natural hydrology, may aid in reducing shrub cover in floodplain marsh. Maintenance or restoration of natural hydrology is an important consideration for floodplain marsh management. Off-road vehicle use for recreation and hunting is a common occurrence in floodplain marshes, and can cause alteration of the natural vegetation, particularly in sawgrass-dominated marshes (Girardon & Lowe, 1986). These and other disturbances, particularly ditching and draining, can facilitate the establishment of invasive exotic plants in the marsh.

At ANERR the last category of non-forested floodplain is marsh, which covers approximately 11 percent of the lower floodplain or approximately 9,030 acres. Most of this is tidal fresh water marsh, located in areas where water movement is influenced by tidal fluctuations, and salinity levels are lower than 0.5 ppt. The lower marsh, closer to the bay, is a mixture of fresh and brackish water species. All of the marsh area is restricted to the lower 10 miles of the floodplain where it accounts for 51 percent of the floodplain area. Tidal freshwater marsh provides a very diverse wetland community compared to salt marsh areas. Sawgrass is the predominant species although bullrushes, cattails, big cordgrass, softrush, giant cutgrass, and phragmites are also present in the freshwater areas of the river and distributaries (Edmiston, 2008). The most developed marsh systems are found in the lower reaches of the Apalachicola River and East Bay, where brackish water species such as *Spartina* and *Juncus* appear and mix with freshwater species (Leitman, 1983; Livingston, 1984). An extensive system of tidal creeks and bayous extends northward, increasing shoreline area and suitable regions for marsh development. The Lower River Marshes support predominantly fresh to brackish water vegetation consisting primarily of bulrushes, cattails and sawgrass.

**Blackwater Stream** – (synonyms: blackwater river, blackwater creek). Blackwater streams are characterized as perennial or intermittent seasonal watercourses originating deep in sandy lowlands where extensive wetlands with organic soils function as reservoirs, collecting rainfall and discharging it slowly to the stream. The tea-colored waters are laden with tannins, particulates, and dissolved organic matter and iron derived from drainage through swamps and marshes. They generally are acidic (pH = 4.0 - 6.0), but may become circumneutral or slightly alkaline during low-flow stages when influenced by alkaline groundwater. The dark-colored water reduces light penetration and inhibits photosynthesis and the growth of submerged aquatic plants. Emergent and floating aquatic vegetation may occur along shallower and slower moving sections, but is often reduced because of typically steep banks and considerable seasonal fluctuations in water level. Typical plants include goldenclub (*Corontium aquaticum*), smartweed (*Polygonium spp.*), sedges, and grasses. Typical animals include gizzard shad (*Dorosoma cepedianum*), threadfin shad (*D. petenense*), redbelly pickerel (*Esox americanus*), chain pickerel (*E. niger*), ironcolor shiner (*Notropis chalybaeus*), weed shiner (*N. texanus*), blacktail shiner (*Cyprinella venustus*), chubsucker (*Erimyzon sucetta*), channel catfish (*Ictalurus punctatus*), flier (*Centrarchus macropterus*), banded sunfish (*Enneacanthus obesus*), redbreast sunfish (*Lepomis auritus*), dollar sunfish (*L. marginatus*), spotted bass (*Micropterus punctulatus*), black crappie (*Pomoxis nigromaculatus*), darters (*Etheostoma spp.*), Alabama waterdog (*Necturus alabamensis*), river frog (*Rana heckscheri*), alligator, snapping turtle (*Chelydra serpentina*), alligator snapping turtle (*Macrochelys temminckii*), river cooter (*Pseudemys concinna*), stinkpot (*Sternotherus odoratus*), red-belly watersnake (*Nerodia erythrogaster erythrogaster*), beaver (*Castor canadensis*), and river otter (*Lutra canadensis*).

Very few blackwater streams have escaped disturbances and alteration. Clearcutting in adjacent forested lands is one of the more devastating alterations for this community. Additionally, the limited buffering





*A stand of cypress and tupelo trees.*

capacity of Blackwater Streams intensifies the detrimental impacts of agricultural and industrial effluents.

**Alluvial Stream** - (synonyms: alluvial river, slow flowing river, deep river, muddy stream). Alluvial streams are characterized as perennial or intermittent seasonal watercourses originating in high uplands that are primarily composed of sandy clays and clayey-silty sands. Alluvial stream waters are typically turbid due to a high content of suspended particulates, including clays, silts, and sands, as well as detritus and other organic debris. Water temperatures and other water quality parameters vary substantially and generally fluctuate with seasonal rainfall patterns.

Very few rooted plants occur within the main channel of alluvial streams, largely because the high natural turbidity reduces available light for photosynthesis. Water lilies, spatterdocks (*Nuphar polysepala*), and other floating-leaved plants occasionally occur along quiet stretches, while pickerelweed, cattails, and other emergents may fringe the banks. Willows (*Salix* spp.), cottonwood (*Populus* spp.), river birch (*Betula niger*), silver maple (*Acer saccharinum*), and other trees typically occur along the banks and natural levees. Typical animals include the American eel (*Anguilla rostrata*), gizzard shad (*Dorosoma cepedianum*), madtom (*Notropis* spp.), pirate perch (*Aphredoderus sayanus*), striped bass (*Morone saxatilis*), redbreast sunfish (*Lepomis auritus*), warmouth (*L. gulosus*), bluegill (*L. macrochirus*), crappie (*Pomoxis* spp.), darter (*Etheostoma* spp.), Alabama waterdog, river frog (*Rana heckscheri*), American alligator, snapping turtle (*Chelydra serpentina*), alligator snapping turtle (*Macrochelys temmincki*), river cooter (*Pseudemys concinna*), Barbour's map turtle, mud turtle (*Kinosternon subrubrum*), stinkpot (*Sternotherus odoratus*), kingfisher (*Ceryle alcyon*), Louisiana waterthrush, beaver (*Castor canadensis*) and river otter (*Lutra canadensis*).

The most important characteristics of alluvial streams are the large range of flow rates and sediment loads encountered. Water depth fluctuates substantially and is generally separated into a normal or low flow stage and a flood or high flow stage. During the normal low flow stage the water is confined within the stream banks, while during flood stage the water overflows the banks and inundates the adjacent floodplain communities. The flood waters transport detritus, minerals and nutrients from the surrounding uplands to the floodplain communities and beyond. This flushing action removes biological waste materials and simultaneously renourishes the floodplain communities. Most important, however,

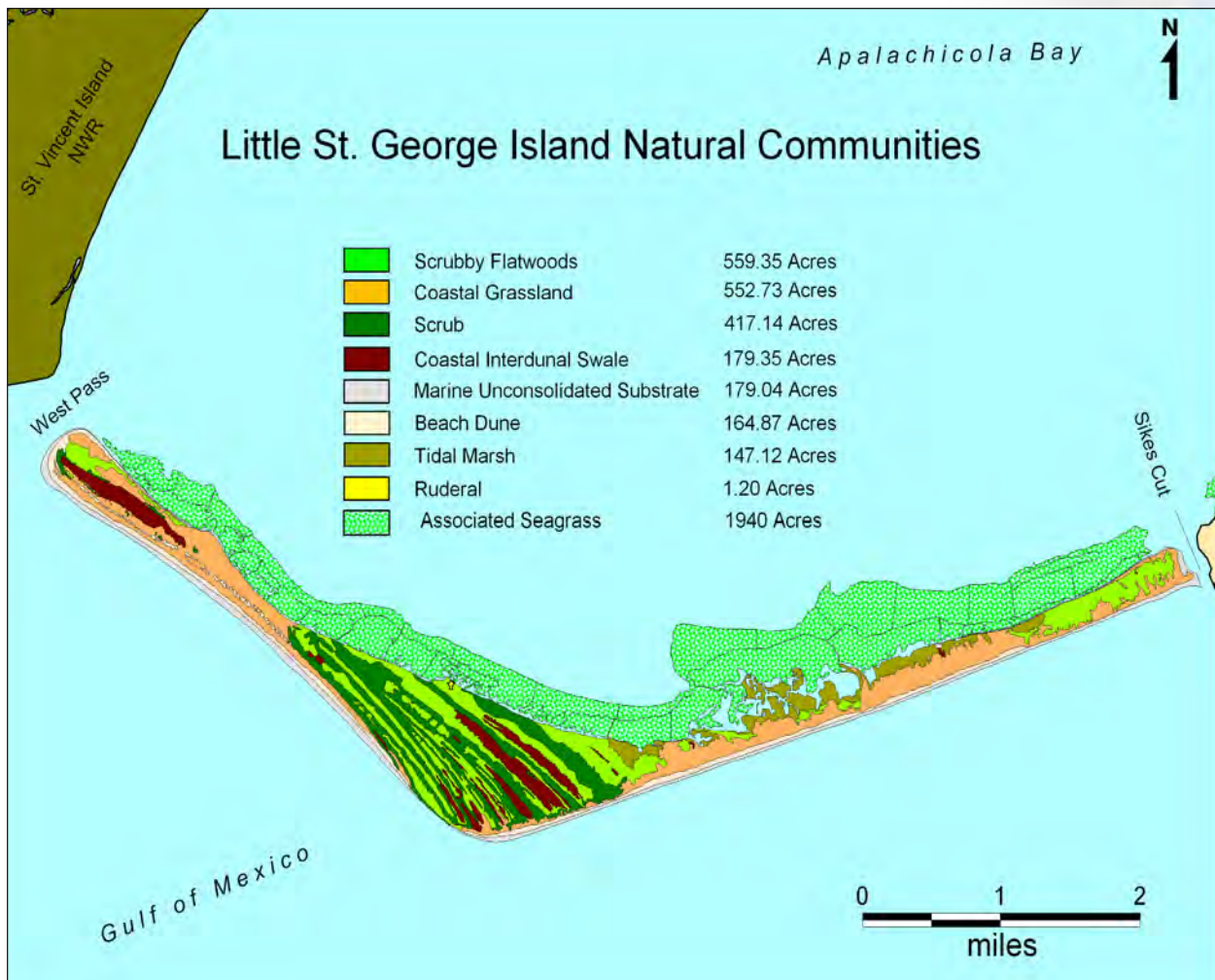


it provides a pulse of nutrient-rich water to the estuarine communities which occur where the water empties into the sea.


Nearly all alluvial streams have been degraded to some degree by disturbances within their watersheds. More serious damage can occur through physical alterations of their main channels, such as dredging, filling or damming. Damming poses the most serious threat, because it disrupts the natural flood cycle, traps upstream nutrients, and can lead to permanent loss of the floodplains due to long-term flooding of areas upstream of the dam. The adjacent floodplain communities are an essential and interrelated component of a viable alluvial stream community.

The Apalachicola River floodplain encompasses approximately 15 percent of its drainage area in Florida - about 144,000 acres. Alluvial river floodplains, like the Apalachicola, have broad flat floodplains due to their annual high water levels.

**Salt Marsh** – (synonyms: tidal marsh, saltmarsh, coastal wetlands, tidal wetlands, saltern), Salt marsh is a largely herbaceous community that occurs in the portion of the coastal zone affected by tides and seawater and protected from large waves, either by the broad, gently sloping topography of the shore, by a barrier island, or by location along a bay or estuary. The width of the intertidal zone depends on the slope of the shore and the tidal range. Salt marsh may have distinct zones of vegetation, each dominated by a single species of grass or rush. Saltmarsh cordgrass (*Spartina alterniflora*) dominates the seaward edge and borders of tidal creeks, areas most frequently inundated by the tides. Needle rush dominates higher, less frequently flooded areas (Eleuterius and Eleuterius, 1979). Other characteristic species include Carolina sea lavender (*Limonium carolinianum*), perennial saltmarsh aster (*Symphotrichum tenuifolium*), wand loosestrife (*Lythrum lineare*), marsh fimbry (*Fimbristylis spadicosa*) and shoreline sea purslane (*Sesuvium portulacastrum*). The landward edge of the marsh is influenced by freshwater influx from the uplands and may be colonized by a mixture of high marsh and inland species, including needle rush, sawgrass, saltmeadow cordgrass, Gulf cordgrass (*Spartina spartinae*) and sand cordgrass among others. A border of salt-tolerant shrubs, such as groundsel tree (*Baccharis halimifolia*), saltwater false willow (*Baccharis*



Map 10 | Natural Communities of the Little St. George Island Subunit



*angustifolia*), marsh elder (*Iva frutescens*), and christmasberry (*Lycium carolinianum*), often marks the transition to upland vegetation or low berms along the seaward marsh edge (Clewell, 1997). Salt marsh soils range from deep mucks with high clay and organic content in the deeper portions to silts and fine sands in higher areas. The organic soils have a high salinity, neutral reaction, and high sulfur content; soil properties of salt flats on higher portions of the marsh are little studied (Coultas, 1997).

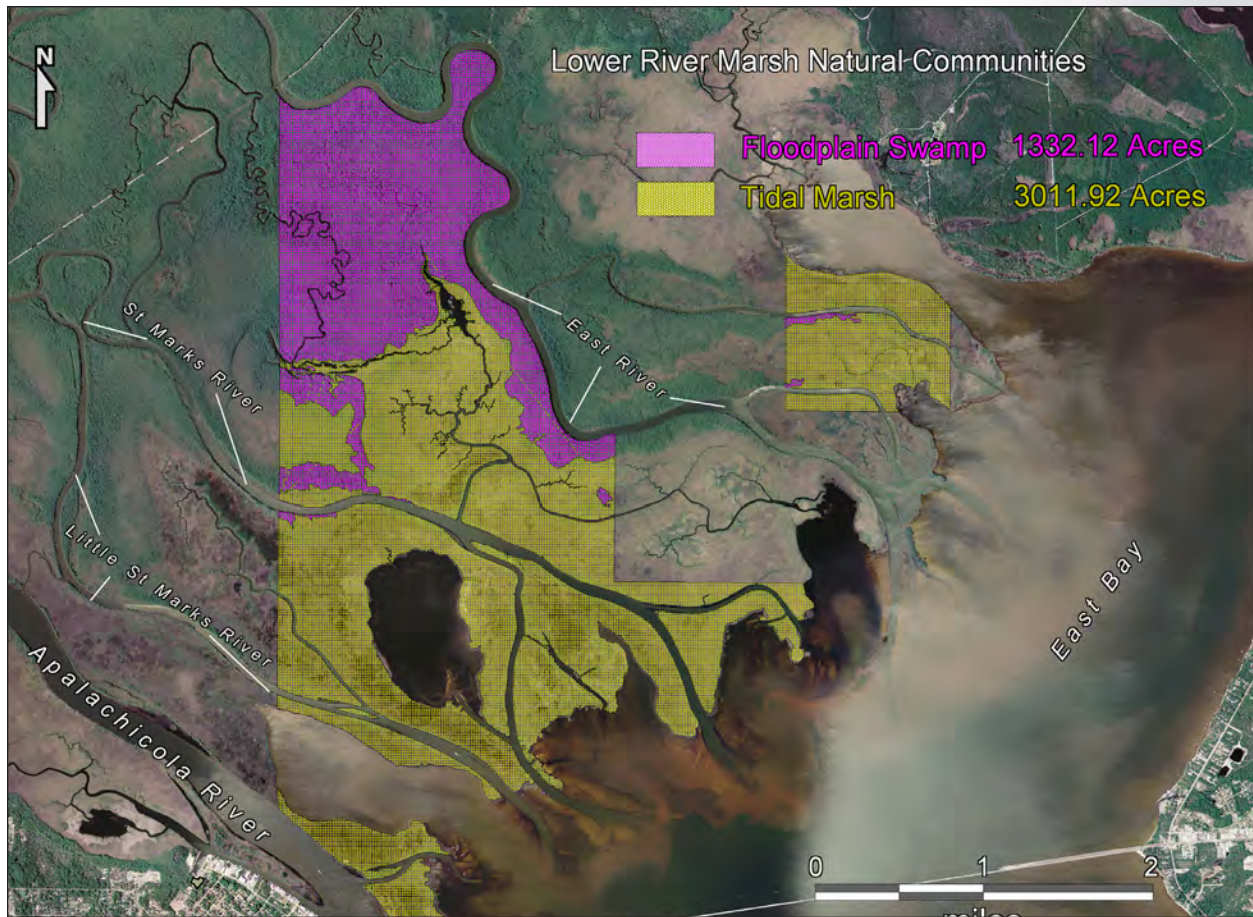
Salt marshes are found on the bay side of ANERR where they are protected by the barrier islands and are associated with the shallow, low-energy (wave, tide, etc.) areas (Livingston et al., 1975). Sloughs gradually merge with the salt marsh on the bay side of St. George Island. Livingston and Thompson (1975) attribute plant zonation of such marshes to salinity gradients due to differential evaporation. Brackish or landward areas of marshes are dominated by black needlerush. Needlerush is joined by saltmeadow cordgrass, perennial glasswort, three-square bulrush, sand sedge, and the shrubs, sea myrtle and groundsel, in the high brackish or transitional zone (Edmiston, 2008). Waterward of the transitional zone, needrush dominates exclusively to an elevation near mean high water. Waterward of the mean high water line and the brackish zone lies an area dominated exclusively by smooth cordgrass. This community requires regular tidal inundation and attains its best development on Little St. George Island behind protective sand/oyster bar barriers which have been deposited by bay wave action offshore in the Pilot Cove's area (FDNR, 1983). The most landward extent of smooth cordgrass is in the margins of small tidal creeks meandering into the needlerush marsh. On Little St. George Island, as the marsh reaches its most inland extent, the dominant vegetation often changes from needlerush to cordgrass, and then to sawgrass, in distinct but narrow bands. The smooth cordgrass of Little St. George marshes is short and lacks vigor. Mesohaline estuarine waters of Apalachicola Bay account for this contrast in community vigor, as smooth cordgrass prefers tidal environments approaching sea water salinity (FDNR, 1983). Within the salt marshes of Little St. George Island are also small salt flats; slightly higher areas flooded only by storm tides or extreme high tides, and isolated from freshwater influx coming from the surrounding uplands. These flats become very saline and desiccated due to evaporation, and are dominated by species that can tolerate high salinities, such as saltwort (*Batis maritima*), perennial glasswort (*Sarcocornia ambigua*), bushy seaside oxeye (*Borrchia frutescens*) and saltgrass (*Distichlis spicata*).

**Seagrass Bed** - (synonyms: seagrass meadows, grass beds, grass flats). Marine and estuarine seagrass beds are floral based natural communities typically characterized as expansive stands of vascular plants. This community occurs in subtidal (rarely intertidal) zones, in clear, coastal waters where wave energy is moderate. Seagrasses are not true grasses. The three most common species are turtle grass (*Thalassia testudinum*), manatee grass (*Syringodium filiforme*), and shoal grass (*Halodule wrightii*). Nearly pure stands of any one of these species can occur but mixed stands are also common. Species of *Halophila* may be intermingled with the other seagrasses but species of this genus are considerably less common than turtle grass, manatee grass and shoal grass. Widgeon grass (*Ruppia maritima*) can also be found occurring with the previously listed seagrasses although they occur primarily under high salinities while widgeon grass occurs in areas of lower salinity. Attached to the seagrass leaf blades are numerous species of epiphytic algae and invertebrates. Together, seagrasses and their epiphytes serve as important food sources for manatees (*Trichechus manatus latirostris*), sea turtles and many fish, including spotted sea trout (*Cynoscion nebulosus*), spot (*Leiostomous xanthurus*), sheepshead (*Archosargus probatocephalus*), and redfish (*Sciaenops ocellatus*). The dense seagrasses also serve as shelter or nursery grounds for many invertebrates and fish, including marine snails, clams, scallops (*Argopecten irradians*), worms (*Polychaete spp.*), pink shrimp (*Farfantepenaeus duorarum*), blue crab (*Callinectes sapidus*), starfish (*Luidia clathrata*), sea urchins (*Mellita quinquesperforata*), tarpon (*Megalops atlanticus*), bonefish (*Albula vulpes*), seahorses (*Hippocampus spp.*), pompano (*Trachinotus carolinus*), permit (*T. falcatus*), jack (*Caranx hippos*), snapper (*Lutjanus synagris*), pigfish (*Orthopristis chrysoptera*), mullet (*Mugil cephalus*), barracuda (*Sphyraena spp.*), filefish (*Stephanolepis hispidus*), and cowfish (*Lactrophrys quadricornis*).

The shallow, bayside regions of St. George Island and Little St. George Island support the largest assemblages of submerged vegetation in the estuarine system. Shoal grass is the dominant species in these areas. Seagrass habitat is also found along the northern shoreline of the bay extending from Eastpoint (St. George Sound) to Alligator Harbor.

Seagrass beds are extremely vulnerable to human impacts. Many have been destroyed through dredging and filling activities or have been damaged by sewage outfalls and industrial wastes; either physically or as a result of decreased solar radiation resulting from increased water turbidity. Seagrass beds are susceptible to long term scarring from boat propellers, anchors and trawls. Such gouges may require many years to become revegetated. When protected from disturbances, seagrasses have the ability to regenerate and recolonize areas. Additionally, some successful replanting of seagrass beds has been conducted.





Map 11 | Natural Communities of the Lower Marshes Areas of the Apalachicola River and Delta.

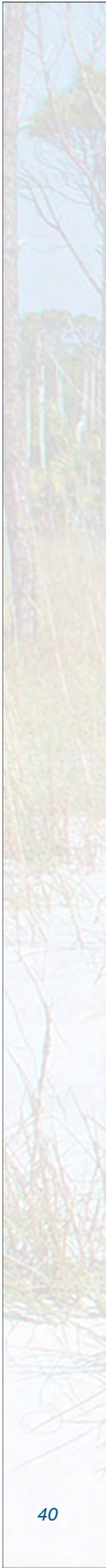
**Unconsolidated Substrate** – (synonyms: beach, shore, sand bottom, shell bottom, sand bar, mud flat, tidal flat, soft bottom, coralgal substrate, marl, gravel, pebble, calcareous clay). Marine and estuarine unconsolidated substrates are mineral based natural communities generally characterized as expansive, relatively open areas of subtidal, intertidal, and supratidal zones which lack dense populations of sessile plant and animal species. Unconsolidated substrates are unconsolidated material and include coralgal, marl, mud, mud/sand, sand or shell.

This community may support a large population of infaunal organisms as well as a variety of transient planktonic and pelagic organisms (e.g., tube worms, sand dollars, mollusks, isopods, amphipods, burrowing shrimp, and an assortment of crabs). Unconsolidated sediments can originate from organic sources, such as decaying plant tissues (e.g., mud) or from calcium carbonate depositions of plants or animals (e.g., coralgal, marl and shell substrates). Four kinds of unconsolidated substrate, mud, mud/sand, sand, and shell, are found throughout the coastal areas of Florida. While these areas may seem relatively barren, the densities of infaunal organisms in subtidal zones can reach the tens of thousands per meter square, making these areas important feeding grounds for many bottom feeding fish, such as redfish, flounder (*Paralichthys spp.*), spot, and sheepshead. The intertidal and supratidal zones are extremely important feeding grounds for many shorebirds and invertebrates.

Unconsolidated substrate communities which are composed chiefly of sand (e.g., sand beaches) are the most important recreational areas in Florida, attracting millions of residents and tourists annually. This community is resilient and may recover from recreational disturbances. However, this community is vulnerable to compaction associated with vehicular traffic on beaches and disturbances from dredging activities and low dissolved oxygen levels, all of which can cause infaunal organisms to be destroyed or to migrate out of the area. Generally these areas are easily recolonized either by the same organisms or a series of organisms which eventually results in the community returning to its original state once the disturbance has ceased. In extreme examples, such as significant alterations of elevation, there is potential for serious long-term impacts from this type of disturbance.

**Mollusk Reef** - (synonyms: oyster bar, oyster reef, oyster bed, oyster rock, oyster grounds, mussel reef, worm shell reef, vermetid reef). Marine and estuarine mollusk reefs are faunal based natural





communities typically characterized as expansive concentrations of sessile mollusks occurring in intertidal and subtidal zones to a depth of 40 feet. In Florida, the most developed mollusk reefs are generally restricted to estuarine areas and are dominated by the eastern oyster (*Crassostrea virginica*). Numerous other sessile and benthic invertebrates live among, attached to, or within the collage of mollusk shells. Most common are boring sponge (*Cliona spp.*), anemones, mussels (*Brachidontes spp.*), clams, boring clam (*Martesia smithi*), oyster drill (*Urosalpinx cinerea*), lightning whelk (*Busycon contrarium*), mud worms, oyster leech (*Stylochus sp.*), barnacles (*Cirripedia sp.*), blue crab, mud crab (*Xanthidae spp.*), stone crab (*Menippe mercenaria*), pea crab (*Pinnotheres pisum*), amphipods and starfish. Several fish also frequently occur near or feed among mollusk reefs, including cownosed ray (*Rhinoptera bonasus*), menhaden (*Brevoortia spp.*), lizardfish (*Synodus foetens*), pinfish (*Lagodon rhomboides*), sea trout, spot, black drum (*Pogonias cromis*), and mullet. Mollusk reefs that are exposed during low tides (e.g., coon oysters) are frequented by a multitude of shorebirds, wading birds, raccoons (*Procyon lotor*), and other vertebrates.

Reef-building mollusks require a hard (consolidated) substrate on which the planktonic larvae (i.e., spat) settle and complete development. Hard substrates are often limited in estuarine natural communities because of the large amounts of silt, sands and muds that are deposited around river mouths. Oyster mollusk reefs, occur in water salinities from just above fresh water to just below full strength sea water, but develop most frequently in estuarine water with salinities between 15 and 30 ppt. Their absence in marine water is largely attributed to the many predators, parasites, and diseases of oysters that occur in higher salinities. Prolonged exposure to low salinities (less than 2 ppt.) is also known to be responsible for massive mortality of oyster reefs. Thus, significant increases or decreases in salinity levels through natural or unnatural alterations of freshwater inflow can be detrimental to oyster mollusk reef communities. Another threat to mollusk reefs is pollution and substrate degradation due, in large part, to upland development. Substrate degradation occurs when silts, sludge and dredge spoils cover and bury the mollusk reefs.

The entire Apalachicola Bay system provides many of the necessary requirements for mollusk reef establishment, as evidenced by the fact that approximately ten percent of the entire aquatic area in the estuary is covered by oyster bars (Livingston, 1984). Approximately forty percent of the aquatic area has been estimated as suitable for oyster bar development with substrate type being the limiting factor (Whitfield and Beaumariage, 1977).

**Ruderal** - areas impacted by development measures such as roadways, drainage ditches, and navigational channels or are considered hydrological alterations. Developed land within ANERR consists of the maintenance and office facilities, parking lots, trails, roads, nature centers, restrooms and other structures found within the boundary.

### **ANERR Ecosystems and Natural Community Distribution**

ANERR includes barrier islands, estuarine, riverine, floodplain, and upland environments which are closely interrelated and influenced by each other. To understand how each component functions, it is necessary to understand all the various parts of the system and the habitats that make this system unique. The natural communities form a mosaic within the five major ecosystems, as discussed below. Refer to the site profile for further details.

#### **Barrier Island System**

A well developed barrier island complex, composed of St. Vincent Island, Little St. George Island, St. George Island, and Dog Island, lies roughly parallel to the mainland. Part or all of these islands are located within ANERR, except Dog Island which lies to the east of ANERR boundaries.

Primary dunes or the foredunes are the first dunes on the seaward side of the islands. The predominant plant found in the dune plant community is sea oats. They are very effective in building and stabilizing dunes. Other plants of the dune community include the railroad vine (*Ipomoea pes-caprae*), beach morning glory (*I. imperati*), evening primrose (*Oenothera spp.*), little bluestem (*Schizachyrium scoparium*), and sand coco-grass (*Cyperus rotundus*) (Florida Department of Natural Resources [FDNR], 1983; White, 1977; Livingston et al., 1975). Behind the primary dune is usually a wide, relatively flat sandy plain, containing some small windblown dunes. This interdunal zone is mostly devoid of larger woody plants found in more established scrub areas towards the interior of the island. Plant species of this zone include saw palmetto, yaupon holly (*Ilex vomitoria*), wax myrtle, salt myrtle (*Baccharis halimifolia*), goldenrod (*Solidago canadensis*), marsh elder (*Iva frutescens*) and saltmeadow cordgrass (White, 1977). Dunes of the older, stabilized strand are larger than those of the overwash dune field and tend to align in a continuous ridge form. With the stabilizing of the seaward ridge, succession is allowed to proceed behind the dune with scrub thickets replacing grasslands (FDNR, 1983).



Behind the dune system a zone of more dense vegetation can be found. The understory vegetation of this zone includes mostly scrub species with a few scattered slash pines occurring. This scrub community is generally found on higher, well-drained sites corresponding to old dune ridges (White, 1977) and is excellent for stabilizing dunes. Dominant plant species found in this zone are saw palmetto, rosemary, buckthorn, staggerbush, Chapman oak, myrtle oak, sand live oak, and live oak. Various herbs, lichens and grasses often cover the open areas (Livingston et al., 1975).

Slash pine scrub grades into a broad vegetation zone with a more dense cover of slash pine and an understory consisting of scrub species. This slash pine-scrub community generally occupies flat ground on drier sites. Myrtle oaks and sand live oaks also form large patches as they do in the scrub on dunes. Chapman oak and rosemary are present but are not as common as in the dune scrub communities. The open areas located in the slash pine-scrub communities are also covered with herbs, grasses, lichens or low, semi-woody species such as bottlebrush threeawn (*Aristida spiciformis*), beakrush (*Rhynchospora spp.*), October-flower (*Polygonella polygama*), and St. John's wort.

Extensive fresh, brackish, and salt marshes can be found in various areas on all the barrier islands, depending on development, alteration, and the hydrodynamics of the area. Scrub, flatwoods, tidal marshes, and freshwater habitats on the islands provide feeding and resting areas for important resident and migratory bird species such as the peregrine falcon, southeastern American kestrel (*Falco sparverius paulus*), southern bald eagle, osprey (*Pandion haliaetus*), great egret, snowy egret, tricolored heron, and black-crowned night heron. Wildlife found on these barrier islands include American alligators, white-tailed deer (*Odocoileus virginianus*), red wolves (*Canis rufus*) (currently being bred on St. Vincent Island), water moccasin (*Agkistrodon piscivorus conanti*), eastern glass lizard (*Ophisaurus ventralis*), and the southern toad (*Bufo terrestris*).

St. Vincent Island is approximately nine miles long and four miles wide. It is somewhat atypical of the other barrier islands found along the northeast Gulf of Mexico coast. Instead of a simple beach and dune structure, a highly complex topographic and physiographic system of ridges and swales, many of which are truncated to form ponds and sloughs, can be found (Thompson, 1970; Miller, Griffin, Fryman, & Stapor, 1980). A variety of xeric communities, such as oak scrub and live oak hammock are found on the island ridges. Interspersed between these ridges are xeric to hydric communities consisting of pine flatwoods, hammocks, marshes, ponds, and sloughs (Edmiston & Tuck, 1987). The interspersed flatwoods and hardwoods as well as abundant freshwater on the island provides a habitat more favorable for wildlife than any of the other barrier islands in the system. Dominant habitats on the 11,938 acre island include: slash pine flatwoods (4,700 acres); tidal marshes (2,900 acres); scrub and hardwood hammocks (2,200 acres); and freshwater marshes and ponds (1,700 acres).

Little St. George Island, managed by ANERR, is approximately nine miles long and varies from 1/4 mile to 1 mile wide. The 2,300 acre island is a coastal dune/dune flat/washover barrier formation of recent geologic origin. The eastern and western sections of the island are narrow terraces subject to occasional overwash by storm surges. The dominant habitats on these sections are overwash zones and grassland communities. Mesic and scrubby flatwoods are located at either end of the island. Most of the tidal marsh is located bayward of the overwash zone on the eastern section of the island. The central, wider part of Little St. George Island is dominated by slash pine flatwoods, scrub, and small swale wetlands (FDNR, 1983).

St. George Island, approximately twenty miles long and averaging less than one-third of a mile wide, has been sparsely settled in the past but has recently been developed more rapidly. This is the only barrier island within ANERR with a bridge connecting it to the mainland. It consists of approximately 7,340 acres of land and an additional 1,200 acres of marsh. Only the eastern end, covering 1,883 acres, is within

Water Body	Area	Oysters	Grassbeds	Marshes
St. Vincent Sound	13,683	2,708		4,463
Apalachicola Bay	51,771	4,096	2,778	1,737
East Bay	9,832	165	3,541	11,377
St. George Sound (West)	36,425	3,677	1,542	1,857
<b>Total</b>	<b>111,711</b>	<b>10,646</b>	<b>7,861</b>	<b>19,434</b>
<b>Percent of total Water area</b>	<b>100</b>	<b>10</b>	<b>7</b>	<b>17</b>

Table 4 | Distribution and area (in acres) of major bodies of water within the Apalachicola National Estuarine Research Reserve boundaries, with areas of oysters, grassbeds, and contiguous marshes (modified from Livingston, 1984).

the boundaries of ANERR because of its designation as a state park. The rest of the island, with the exception of a few parcels owned by the state, is privately owned and outside of ANERR boundaries. On the gulf side of the island is a narrow band of beaches and low-lying sand dunes that grade into mixed grassland, scrub, mesic and scrubby flatwoods and bayside marshes (Livingston et al., 1975).

The relatively undisturbed miles of Gulf beach and dunes of the barrier islands provide essential habitats for a number of endangered and rare birds. Beaches provide nesting sites for species such as the threatened least tern, royal tern, sandwich tern, as well as black skimmers and American oystercatchers, also species of special concern. All of these plus the Caspian tern (*Hydroprogne caspia*), and the eastern brown pelican (*Pelecanus occidentalis*), a species of special concern, use sand spits and beach bars for loafing and roosting (FDNR, 1983; Livingston et al., 1975). The threatened southeastern snowy plovers and least terns are present on St. George and Cape St. George. Snowy plovers require expansive open, dry, sandy beaches for breeding, and both dry and tidal sand flats for foraging. They are the only Florida bird species which feeds and breeds on open, dry sandy beaches. The beaches and berms of the barrier islands are also used in the summer as some of the most important rookery grounds for the threatened Atlantic loggerhead turtle (FDNR, 1983).

### Apalachicola Bay System

The Apalachicola Bay system is a wide, shallow estuary that covers an area of approximately 210 square miles behind a chain of barrier islands (Gorsline, 1963). Its primary source of fresh water is the Apalachicola River. The estuarine system may be divided into four sections based on both natural bathymetry and man-made structural alterations; East Bay, St. Vincent Sound, Apalachicola Bay, and St. George Sound.

Major estuarine habitats found within ANERR include oyster bars, submerged vegetation, tidal flats, soft sediment, tidal marshes, and open water habitats (Edmiston & Tuck, 1987). Oyster bars cover over 10,600 acres of submerged bottom within ANERR boundaries. The Eastern oyster is the dominant component on the bars which cover approximately 10% of ANERR bay bottom (see Map 12).

The submerged vegetation found in the system includes freshwater, brackish, and marine species. Their distribution is confined to the shallow perimeters of the system (Livingston, 1980; Continental Shelf Associates, Inc., 1985) because of high turbidity, which limits the depth of the photic zone. Submerged vegetation covers approximately 7% of ANERR bay bottom (Table 4), with the majority of it located in regions of high salinity and low turbidity. The shallow bayside regions of Little St. George, St. George, and the mainland areas of St. George Sound support the largest assemblages of true seagrasses (Map 12), with shoal grass being the dominant species. Turtle grass and manatee grass are also found in deeper, higher salinity waters in the eastern reaches of the system. Widgeon grass and tapegrass (*Vallisneria americana*) are found near the mouth of the river and in the upper reaches of the bay.

FNAI Natural Community Type	# Acres	Federal Rank	State Rank
Floodplain Marsh	3,034	G3	S3
Floodplain Swamp	1,332	G4	S4
Scrubby Flatwoods	589	G2	S2?
Coastal Grasslands	557	G3	S2
Scrub	427	G2	S2
Costal Interdunal Swale	179	G3	S2
Shell Mound	2	G2	S2
Marine Unconsolidated Substrate	179	G5	S5
Beach Dune	165	G3	S2
Salt Marsh	204	G5	S4
Wet Flatwoods	99	G4	S4
Mesic Flatwoods	14	G4	S4
Ruderal	7	Not classified a natural community	
Estuarine Unconsolidated Substrate (tidal)	4	G5	S5
Depression Marsh	2	G4	S4
Mollusk Reef	12,335	G3	S3
Seagrass Meadow	4,418	G3	S2
Estuarine Unconsolidated Substrate (subtidal)	93,558	G5	S5
Alluvial Stream	6,887	G4	S4
Blackwater Stream	287	G4	S3



Tidal marshes found within the boundaries of ANERR include freshwater, brackish, and salt marshes and cover approximately 17% of the total aquatic area (Table 4). The most extensive marsh systems are found in East Bay, along the lower reaches of the Apalachicola River, and in the Big Bayou portion of St. Vincent Island (Map 12). An extensive system of tidal creeks and bayous extends northward thereby increasing the shoreline area and regions suitable for marsh development. These marshes support predominantly fresh to brackish water vegetation consisting primarily of sawgrass, cattails, and bulrushes. The dominant species found in the higher salinity regions behind St. Vincent, St. George, Cape St. George islands, and in St. George Sound are black needlerush (*Juncus roemerianus*), cordgrasses, and saltgrass (*Distichlis spicata*) (Livingston, 1984a). ANERR estuarine salt marsh (3,048 acres) occurs in the Lower River Marshes and Cat Point units.

The largest benthic habitat type found in the Apalachicola Bay system is soft sediment, comprising approximately 70% of the estuarine area (Livingston, 1984a). Its composition varies considerably depending on location in the bay (see Map 12). Many of the commercially important benthic invertebrates are harvested from this habitat.

The simplest habitat to physically define and one of the most difficult to measure is the open water. Organisms associated with this habitat include planktonic and nektonic forms. The major component of the nekton in Apalachicola Bay is dominated by estuarine dependent fish. Menzel and Cake (1969) estimated that three-fourths of the commercial catch in Franklin County is dependent on the estuarine habitat and condition of the bay. Important finfish within ANERR include mullet, spotted seatrout, flounder, black drum, spot, croaker, and redfish.

### **Apalachicola River System**

The Apalachicola River is the largest in Florida and ranks 21st in the United States in terms of flow, as well as being one of the last remaining undammed large rivers left in the country. The lower 52 miles of the river is also a part of ANERR, as are most of the distributaries which branch off the lower portion of the river and empty into East Bay. The middle and lower river (river mile 78 to river mile 0) flow through lowlands with a maximum land elevation less than 100 feet, and is characterized by a floodplain which varies from 2 to 5 miles wide (Leitman et al., 1983).

Six distinctive shoreline habitat types have been located within the Apalachicola River along its entire 215 mile shoreline (Ager et al., 1984). These have been catalogued and divided into steep natural bank, gently sloping natural bank, dike field, sandbar, rock, and submersed vegetation. All of these habitat types except rock are found in the middle and lower river sections within ANERR. Mid-river habitat, which accounts for a significant portion of the riverine habitat, is less well known but the substrate generally consists of clam shells, clay, detritus, or sand, depending on location (USFWS, 1986; Ager et al., 1987).

### **Apalachicola River Floodplain System**

The floodplain of the Apalachicola River is the largest in Florida and one of the larger floodplains on the Gulf Coast. It encompasses approximately 15 percent of the river's drainage area in Florida, about 144,000 acres (Wharton et al., 1977; Elder & Cairns, 1982). The lower river floodplain, within ANERR, ranges from two to four and a half miles across (Leitman et al., 1983).

The natural riverbank levees vary from two to eight feet higher than the surrounding floodplain and average 50 to 150 feet wide. Six forest types and several other categories have been identified on the Apalachicola River floodplain using color infrared photographs and cruise transect data (Leitman, 1983; Leitman et al., 1983). The dominant and associated species found with them are the distinguishing characteristics used to separate these types. Compared to the upper river, the lower 42 miles of the river floodplain is dominated by wet-site species with fewer pine and mixed hardwood types.

The tupelo-cypress with mixed hardwoods forest type dominates the lower river, covering 38% of the floodplain. Occupying low flats, sloughs, and hummocky areas which provide small variations in elevations, this is mostly a wet-site forest. Areas occupied by this forest type are inundated or saturated from 50% (hummocks) to 100% (sloughs and pools) of the year. The tupelo-cypress forest type, which covers 21% of the lower river floodplain, is found in areas where the soil is poorly drained, such as backswamps and low flats. Areas in which this forest type is found usually have heavy clay soils which are inundated more than 50% of the year and saturated continuously (Leitman, 1983; Leitman et al., 1983).

Mixed hardwood forest type covers 22% of the lower 42 miles of the floodplain but is primarily found in the upper 20 miles of this section. Predominant species are water hickory, sweetgum, overcup oak (*Quercus lyrata*), green ash, and sugarberry. All these species are usually associated with levees, terraces, and areas that are inundated only about 5 to 30 percent of the year. The mixed hardwood forest and tupelo-cypress with mixed hardwoods association, which are normally referred to as bottomland

hardwoods, combined make up approximately 60% of the lower 42 miles of floodplain, almost all of which are managed by other agencies, but are included within ANERR boundaries.

Marsh, which is restricted to the lower ten miles of the river, covers 11% of the lower river floodplain. The marsh actually covers almost 100% of the last several miles of floodplain, occupying most of the lower river birds-foot delta. Open water accounts for most of the remaining habitat of the lower river floodplain (Leitman, 1983; Leitman et al., 1983).

### Upland System

Uplands within ANERR boundaries, except for the barrier island uplands, are generally managed by other agencies. The two primary upland habitats on the mainland within ANERR boundaries are sand pine scrub and pine flatwoods, both of which are located in the northern and eastern areas of East Bay and along the middle and lower river.

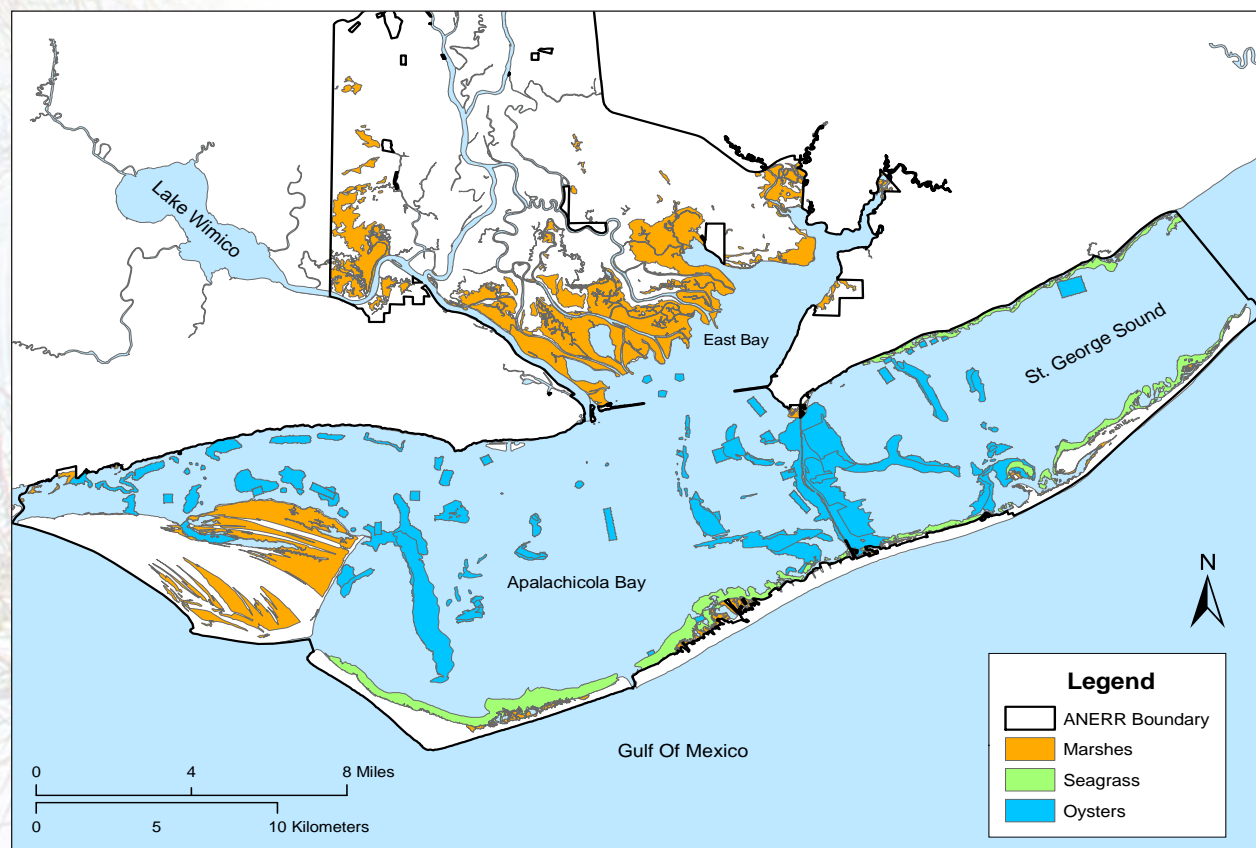
Sand pine scrub exists on the eastern side of East Bay. Within Franklin County, scrub occurs on dune and beach ridges near the coast with small isolated stands existing inland on relic shorelines. A dense stand of sand pine forms the overstory while the understory is usually limited to myrtle oak, sand live oak, and rosemary. There is usually little or no herbaceous ground cover and little or no organic matter in the upper soils (Clewell, 1986).

Pine flatwoods dominate the narrow band of uplands north of East Bay and within the ARWEA and lands managed by the NFWFMD. Wet flatwoods or boggy flatwoods are particularly characteristic of the Tate's Hell region of Franklin County (Clewell, 1986).

Slash pine usually dominates pine flatwoods in this area. The slash pine-scrub community usually grades into pine flatwoods which tend to occur on poorly drained or wet sites. The major associates include a dense understory of fetterbush, saw palmetto, gallberry, maleberry (*Lyonia ligustrina*), and large-flowered staggerbush (*L. lucida*) (Little St. George). Palmettos form a more dense cover than in the scrub communities. Pine flatwoods bordering salt marshes take on a tall understory of live oaks and occasional cedars and cabbage palms (FDNR, 1983).

### Native Species

ANERR and the surrounding drainage basin contain barrier islands, as well as estuarine, riverine, floodplain, and upland environments. The many habitats found within these environments support a





wide range of plant and animal species. An inventory of species, including threatened and endangered species, mentioned in the management plan, can be found in Appendix B. A more detailed inventory of species found within ANERR can be found in ANERR's site profile, which is also located at the following website: [www.dep.state.fl.us/coastal/downloads/management\\_plans/A\\_River\\_Meets\\_the\\_Bay.pdf](http://www.dep.state.fl.us/coastal/downloads/management_plans/A_River_Meets_the_Bay.pdf).

More than 1300 plant species have been identified within the Apalachicola drainage basin with 103 of them listed as threatened or endangered. Also, the largest stand of tupelo trees in the world is found in the lower Apalachicola River floodplain (Apalachicola National Estuarine Research Reserve [ANERR], 2008).

The Apalachicola River drainage basin contains more than 40 species of amphibians and 80 species of reptiles. This is the highest diversity of these animal groups in the United States and Canada. Among these many species are the southern dusky salamander, the gopher frog, Barbour's map turtle, Atlantic loggerhead turtle, Apalachicola kingsnake (*Lampropeltis getula meansi*), and eastern indigo snake (ANERR, 2008).

Mammals also abound within ANERR. More than 50 species, including the threatened Florida black bear, the endangered West Indian manatee, the Indiana bat, and the gray bat are found in the Apalachicola basin (ANERR, 2008).

ANERR and surrounding drainage basin are among the most important bird habitats in the southeastern United States. This area lies on the eastern fringe of the Mississippi flyway, thus receiving large numbers of birds from both the Midwest and Atlantic Seaboard during migratory periods. Approximately 300 species of birds have been documented within ANERR or adjacent to ANERR, with several being designated as endangered, threatened, or species of special concern by the FWC (ANERR, 2008).

More than 270 species of fish have been documented from the Apalachicola River and Bay system, of which approximately 90 are strictly freshwater species. The rest utilize the estuary during part or all of their life cycle. There are eight diadromous species, four endemic species, and thirteen introduced species that are commonly found throughout the Apalachicola River system. Among these are the Gulf sturgeon (*Acipenser oxyrinchus desotoi*), American eel, striped bass, bluestripe shiner, and shoal bass. Common estuarine and marine species that are of local importance commercially include striped mullet, speckled trout, menhaden, red drum, flounders, and sharks (ANERR, 2008).

### Listed Species

Listed species are those which are listed by the USFWS, National Marine Fisheries Service (NMFS), FWC and FNAI as endangered, threatened or of special concern. Specific management strategies will be addressed later in this plan. All management actions will be in compliance with the recovery plans for these species.

Many plant and animal species inhabiting ANERR have been listed as either federal or state endangered, threatened or of special concern. For a complete list see Appendix B.4. The following abbreviations are indications of the federal or state status of a particular species: SLE - state-listed endangered, SLS – state-listed species of special concern, SLT – state-listed threatened, FLT – federally-listed threatened, FLE – federally-listed endangered. Management activities for listed species at ANERR are two-fold. First ANERR identifies, acquires and maintains habitats that support some or all life stages of listed species. Second, ANERR documents the occurrence and abundance of these species through regular surveys and map creation in a Geographic Information System.

Listed species management within ANERR focuses on four areas: Bird Island, a dredge spoil island located just south of the Apalachicola Bridge; the old St. George Island Bridge Causeway; and the beaches of St. George Island and Little St. George Island. The first two are important shorebird and seabird nesting habitats for species such as the American oystercatcher (SLS), black skimmer (SLS), least tern (SLT), Caspian tern, royal tern, sandwich tern and the brown pelican (SLS). Gull-billed terns (*Sterna nilotica*) and sooty terns (*Onychoprion fuscatus*) have also been documented on these islands. Habitat management includes the periodic resurfacing of the substrate of Bird Island and the old St. George Island Causeway. Many of the species prefer sandy soil, rocky or shell substrates, so these areas are disked using a tractor to remove vegetation down to bare soil or shell hash. Since the Gulf Inter-Coastal Waterway continues to be dredged, and Bird Island is an active spoil site, ANERR works with the USACOE to add material to the island, maintaining the best substrate and habitat for the species utilizing that area. Before nesting season, ANERR places precautionary signs around the two areas, notifying potential users that those areas are closed for the nesting season. The old St. George Island bridge causeway is also designated as a FWC Critical Wildlife Area. ANERR surveys these areas at the height of nesting season; recording the total number of adult individuals and eggs associated with them. The beach of Little St. George Island is also an important habitat for the nesting least terns, snowy plovers (SLT) and Wilson's plovers (FLT, SLT). The island is home to four pairs of actively nesting bald eagles.

The beaches of St. George Island and Little St. George Island are also important nesting habitats for the loggerhead sea turtle (FLT, SLT). Leatherback sea turtles (FLE, SLE, *Dermochelys coriacea*) and green turtles (FLE, SLE) have nested in these areas on rare occasions. The Kemp's ridley turtle (FLE, SLE) and hawksbill turtle (FLE, SLE, *Eretmochelys imbricata*) are also found in the bay and nearshore waters, but do not nest along the beaches. No habitat management is required for these species, however on Little St. George Island, the turtle eggs are subjected to high predation pressure from coyotes (*Canis latrans*) and raccoons (see section below on Nuisance Species). St. George Island and Little St. George Island are monitored at regular intervals for the presence of new nests between the months of May and September. New nests are confirmed by ANERR staff and marked with signage provided by FWC. On Little St. George Island, the nests are screened to deter predators. After the incubation period and hatching, the nests are evaluated for hatch success. Since Little St. George Island is uninhabited, anthropogenic influence is minimal. Because dogs may be attracted to sea turtle nests (as well as bird nests and adults), ANERR requests that dogs be leashed if they visit the island. On St. George Island, the turtle population is somewhat impacted by the human population. The issue of greatest concern is the amount of light pollution on the island. Turtles require a light cue (the moon reflecting off the water) to navigate to the ocean after hatching. When there are brighter lights from behind the dune, the turtles will disorient away from the water and are likely not to survive. Franklin County has a lighting ordinance (Franklin County Ordinance # 98-11), but it is rarely enforced and often the brightness of the light is due to the cumulative effect of several lights and not a single individual or business. People walking on the beach with flashlights add additional light pollution and cause disorientations as well. The lighting problem has been addressed through various public education campaigns including billboards, public service announcements, presentations by ANERR staff, literature placed in rental houses and the distribution of red filter flashlight covers. Various other natural and anthropogenic stressors affecting the sea turtle population include natural and domesticated predators, obstructions such as chairs and umbrellas left on the beach overnight and well-meaning individuals on the beach disrupting nesting and hatching activities.

ANERR staff coordinates with several agencies to manage listed species within the boundaries and adjacent areas such as St. Joseph Bay and Alligator Harbor. ANERR staff monitors marine mammals to some extent. Live sightings are recorded and strandings are reported to the National Marine Fisheries Service and FWC. Live and dead stranded sea turtles are reported to FWC. ANERR assists other agencies and entities with monitoring listed species in the area. This includes providing boat time and vehicle use for accessing remote areas within ANERR. ANERR also assists other agencies with listed species outreach and education by facilitating events such as workshops, seminars and booths at festivals.

While not monitored or managed by ANERR, sightings of the federally-endangered Gulf sturgeon are reported to USFWS. The Apalachicola River, south of the Jim Woodruff Dam is an important spawning site for the sturgeon and both the river and bay are important habitats for this species.

### **Invasive Non-native Species**

Invasive, non-native plant and animal species are present within the bounds of ANERR, but at present none are a major threat to existing resources. The most common plant species in this category include Chinese tallow, camphor tree, giant cane (*Arundo donax*), Japanese climbing fern and the common reed (*Phragmites australis*). There have also been a few records of Brazilian pepper (*Schinus terebenthifolium*) on St. George Island in areas that border ANERR. In those instances ANERR was alerted, the staff contacted the land owner and with permission, eradicated the plant. Of the plants listed, it is the Chinese tallow that is spreading most rapidly. It occurs at several locations on lands managed directly by ANERR, and the stewardship program actively treats it to contain its spread.

Wild hogs (*Sus scrofa*) are sometimes found within ANERR. They can be problematic as their rooting can disturb acres of soil in varied habitat types. This disturbance can sometimes lead to the introduction of invasive, non-native plant species. These hogs are especially hard on ground-nesting birds (they consume the eggs) and snakes. Another non-native mammal found in ANERR is the feral house cat (*Felis catus*). Since both Apalachicola and Eastpoint are harbor towns, there are numerous feral house cats that survive on scraps and are prolific breeders. They are very efficient predators and routinely prey upon migratory song birds and the native rodent population.

While the possibility for marine invasive, non-native species is a potential threat to the ecological balance of Apalachicola Bay, ANERR's monitoring programs have not discovered any of these species. Species like the green mussel (*Perna viridis*), green crab (*Carcinus maenas*) and Australian jellyfish (*Phyllorhiza punctata*) are worrisome, and ANERR keeps vigilant watch for their appearance.



## **Problem Species**

The management of Little St. George Island by ANERR staff includes the removal of problem species such as the raccoon and coyote. Both species prey upon the federally-listed loggerhead sea turtle that utilizes the beaches of Little St. George Island for nesting. Raccoons and coyotes will harass mother turtles as they are depositing their eggs and will feed upon the eggs after they have been buried. In the past, feral hogs have been a significant predator of turtle nests but are currently under control. Nests on the island are screened upon discovery by the staff with self-release screening. The screening is effective in reducing raccoon predation; however coyotes are able to dig under the screen and access the nest cavity. Once the turtles hatch, they are again susceptible to predation as they make their way to the water.

The staff has been trapping nuisance raccoons and removing them from the island for several years. In 2006, coyotes were discovered on the island. It is not the first time that coyotes were located on the island; however it has been several years since the last time that they were found there. Most likely the coyotes immigrated to the island by swimming either from St. George Island or St. Vincent Island. Since the coyotes have been located on the island, they have decimated the turtle population. In 2007, 19.5% of the nests on Little St. George Island were partially or totally predated. In 2008, 55% of the nests were predated and 52% in 2009. Efforts have been made by the staff and by professional trappers from the US Department of Agriculture's Animal and Plant Health Inspection Service group to remove the coyotes. Two coyotes have been removed by three separate trapping events; but it is apparent that two coyotes still reside on the island. Efforts were made again in 2011 by the professional trappers, but no animals were removed.

## **Forest Resources**

Sustainable forestry is an important component of Florida's economy and can provide funds for management of lands. Chapter 253, Florida Statutes, requires that plans for 1,000+-acre parcels contain an analysis of multiple-use potential, to include a professional forester's assessment of the resource conservation and revenue-producing potentials of the tract's forests. CAMA considers forest management consistent with the purposes for acquisition of this property when the activities contribute to restoration management. A Timber Management Assessment has not been conducted for this site. The Lower River Marshes, consisting of marshes and alluvial forest, contain no known quantities of harvestable timber. Little St. George Island contains slash pine of harvestable quantity and size. Most all the harvestable sized trees show "catface" scars from turpentine operations during the early to mid 20<sup>th</sup> century. Considered cultural artifacts, these trees remain protected from commercial harvest. The remainder of ANERR managed lands, mostly residential building lots, is embedded in private residential areas.

## **Archaeological and Historical Resources**

### *History*

The Apalachicola River Valley has been occupied by humans for over 12,000 years (Dunbar & Waller, 1983; Tyler, 2008) and is believed to have been an ideal environment for large prehistoric human populations comprised of small hunting-gathering-fishing groups, and later large villages of farming people or aquatic species-based hunter-gatherers on the coast. Paleo-Indian through Mississippian cultural sites are represented, as are protohistoric (Contact and Mission-period) and historic settlements, structures and occupational sites (Henefield & White 1985; White, 1981, 1994a, 1996, 1999). The Archaic cultural period (8000-1000 B.C.) is slightly better known than the earlier Paleo-Indian period (Tyler, 2008) of habitation in the Apalachicola River Valley. Several middle to late archaic sites have been found in the region (Bullen, 1950 & 1958; Kurjack, 1975; Huscher, 1964; White, 1986, 1994a, 2003a, 2003b; White & Estabrook 1994). The type of tools used during this period indicates an increasing adaptation to post-Pleistocene climates and newly forming estuarine environments, as well as reliance on smaller game animals. Human populations may have become more sedentary by 1000 B.C., engaging in hunting and foraging, as well as possibly the beginnings of plant cultivation. Many large shell midden sites began to be occupied during this time, building up higher ground in the wetlands that was more attractive for human occupation.

The next cultural period, known as the Woodland, lasted from 1000 B.C. to 1000 A.D. The hunter-gathering lifestyle was changing to more dependence on cultivated plants and settlements were becoming more permanent (White, 2003a, 1994a). In Northwest Florida, the early Woodland adaptation is known as the Deptford Period. Deptford components, once assumed to be mostly associated with coastal swamps and estuaries (Milanich, 1994), have been located at numerous inland sites in the region (Bullen, 1950; Huscher, 1964; White, 1986). One site in particular on the Apalachicola River suggests more than an occasional occupation with the Deptford component extending several hundred meters along the riverbank (Ward, 1989). Deptford components are also prevalent at estuarine shell mounds (White, 1986, 1987, 1991, 1994a, 1994b, 1994c).



*Florida Black Bear*

During the Middle Woodland period, the Swift Creek-early Weeden Island cultural adaptation, developed in the basin by A.D. 200 and lasted until about A.D. 700. Construction of burial mounds and elaborate mortuary rituals characterized this time period, when the honored dead were buried with beautiful pottery of many types and other grave goods of exotic raw materials such as mica and copper; there are also humble campsites and shell middens (Frashuer, 2006; Milanich, 1994; White, 1981, 1992, 1994a).

By Late Woodland or late Weeden Island times (A.D. 700-1000), burial mounds had mostly disappeared, and people continued obtaining wild resources of the interior and the coast, but also began to intensify food production. Sites are characterized by linear riverine or estuarine shell middens with mostly plain pottery. The Fort Walton cultural adaptation, the Apalachicola Valley variant of southeastern Mississippian culture, developed by A.D. 1000. It was characterized by large villages with flat-topped temple mounds, as well as remote farmsteads and continued production of shell mounds in coastal and estuarine areas. Individual societies were true chiefdoms; complex political systems supported by maize agriculture and interacted widely with other groups across the Southeast while maintaining a distinctive material culture and identity (Marrinan & White, 2007).

These Fort Walton populations were the first to have contact with Spanish explorers, who did not reach the Apalachicola valley in the sixteenth or early seventeenth century, but their artifacts, accompanying germs, and Indian slave hunters did. There is evidence that the Fort Walton people hung on and added a few Spanish items to their material culture until they disappeared in the late 1600s or early 1700s. The Spanish had organized a chain of missions from 1670 to 1685, but barely reached the Apalachicola and did not last long in the valley nor travel far below the forks of the Flint and Chattahoochee (Jones, 1973; Marrinan & White, 2007). By the mid-seventeenth century, native cultures were disrupted and populations had declined severely, mostly because of the introduction of European diseases and the destruction of the Spanish missions by British and Creek Indian forces from Georgia in 1704. Indigenous populations were either killed off or absorbed by the invaders or dispersed westward to Alabama and Louisiana. As they departed, Creeks and other Native Americans began moving downriver from Georgia to settle, bringing their distinctive Lamar culture, now dated to the early 1700s.

By the later eighteenth and early nineteenth century, Creeks were changing to Florida's Seminole Indians, were living in the valley and dealing with American aggression. The First Seminole War centered on the Apalachicola valley; ultimately all these natives were removed to Indian Territory west of the Mississippi in the 1830s.



Several types of significant early historic Euro-American and African-American sites in the valley include: Seminole War and Civil War remains (White, 1999), sawmills, turpentine camps and stills, shipwrecks, and other standing structures such as the Cape St. George Lighthouse.

### *Conservation and Research Activities*

The Apalachicola River and Bay Drainage Basin, which includes ANERR, contains over 1,000 archaeological sites and numerous historic structures. Dredge-and-fill activities and shoreline erosion associated with coastal navigation projects pose a threat to some of these cultural resources. Likewise, silvicultural practices, such as streamside cutting and clearcutting, cause erosional problems which disturb site integrity. Staff review and comment on permit applications adjacent to or within ANERR. In addition, staff works with other agencies on best management practices to minimize site disturbance.

Several systematic intensive surveys have been accomplished or are ongoing within the boundaries of ANERR. An archaeological study funded by the Department of State's Division of Historical Resources (DHR) investigated the impact of record 1994 flooding on 24 newly located and 67 previously located sites within the Apalachicola River Drainage Basin (White, 1996). Several sites exposed by flooding, hurricane-generated wave action or coastal erosion were surveyed within ANERR. Staff assisted in the logistics required for this survey, helped record sites, and conducted educational programs in conjunction with this survey. In 1998 another DHR-funded survey of remote areas within ANERR was conducted (White, 1999), locating more previously unknown sites and recording adverse impacts to them, as well as to known sites.

The general locations of two known cultural sites within the boundaries of ANERR can be seen in Map 12. However, this represents only a small percentage of all the archaeological sites that may be present in the area (N. White, per comm.).

### **Sites**

The following general site descriptions are for recorded archaeological and historical sites on lands that ANERR manages (White, 1996).

**8FR24**, Cape St. George Island Site No. 2 or St. George West, late Fort Walton Midden, recorded by Glenn T. Allen in 1952. This site has been heavily eroded since its discovery.

**8FR69**, currently, the 1852 Cape St. George Lighthouse site includes a .08 acre outparcel on the cape of Little St. George Island. Ownership of this site was transferred from the U.S. Coast Guard to ANERR in 2004. The lighthouse succumbed to erosional processes and fell on October 21, 2005. The St. George Lighthouse Association raised more than \$100,000 in donations and financed recovery efforts for the lighthouse. The structure has since been rebuilt and relocated to St. George Island with the state maintaining ownership. On December 1, 2008 the lighthouse was open to public. There is a lease agreement in place with Franklin County for the present location and the St. George Lighthouse Association manages the site for tourist visitation as a 501C3 organization affiliated with ANERR.

**8FR745**, Hendrix #2, prehistoric occupation, dating to possibly late Weeden Island or Fort Walton.

**8FR746**, Pilot's Cove, Prehistoric Shell Midden, time period unrecorded.

**8FR747**, lighthouse keeper's house and outbuildings. A single-story wood frame house was built for the caretaker in 1880 and several small outbuildings including a generator building, an oil building, a storeroom, a stable, a privy, several underground cisterns and a pump house were built between 1890 and 1939. In 1961 many of these structures were destroyed in a fire. Only the lighthouse tower, the walls of a brick storage building, the caretaker's house and an adjacent storage building remained standing at that time. The latter two structures collapsed during Hurricane Opal in October 1995. Some historic brick material from the site has been collected as required by DHR and stored away from the beach to avoid its loss to erosional processes. At present, no significant evidence of previous structures is evident.

**8FR748**, the Government dock, a 19th - 20th Century restored standing structure of historical interest. This dock is currently used by ANERR staff for ingress/egress and by recreational visitors to the Cape.

**8FR749**, the Turpentine Camp, early 20th Century standing structures (houses and other buildings) and probably archaeological remains. This has great potential for documentation of a poorly represented segment of society for this period. Emphasis should be placed on obtaining funding for a survey.

**8FR804**, Hendrix #1, Fort Walton midden, a bayshore late prehistoric site probably representing repeated, intermittent occupations -- likely for shellfish collecting (A.D. 1000-1500).

**8FR857**, Cape St. George Shipwreck, a post-1830s seagoing vessel discovered in late winter-early spring by ANERR staff. The possible identity of the approximately 100 foot ship has been researched but so far no record correlates with this time period. At the time of initial investigation (July 21, 1996) less

than fifteen feet of the wreck was visible. One plank located perhaps one quarter mile farther west was brought to ANERR for curation. Earlier, ANERR personnel recovered a sample of the metal pins. The wreck was videotaped and photographed. A later visit revealed that 43 feet of the wreck was exposed following a July 1996 storm. More photographic evidence was taken and samples were removed by underwater archaeologist Roger Smith for inspection. Within a couple years of its exposure, the wreck was gone, either buried again or floated out to sea (White, 2006).

Should any of it become extant again, ANERR staff will stress education and preservation of the vessel concurrent with other duties to try and prevent people from removing pieces of it whenever possible. Though the island is remote and accessible by boat only, many visitors put in there so the potential for vandalism exists.

**8FR888**, Cape St. George East Site, a Fort Walton, late Weeden Island prehistoric shell midden.

A comprehensive field survey has not been done so most recorded sites are probably those located in more accessible locations, areas attractive to visitors or visited by ANERR staff in conjunction with research projects. In addition to the above recorded sites, three others of historic interest are known to exist including an 1843 gravestone at the west end of the Cape, a historic stormhouse and a possible extension of FR27 listed as being on the west end of St. George Island across the artificially created Sike's Cut.

No sites are currently identified for the Magnolia Bluff, Rodrique and Millender Tracts (White & Yuellig 2004) in Eastpoint or for Unit 4 on St. George Island. Nick's Hole on St. George Island has one identified site in the Florida Master Site File.

If the remaining ANERR properties, Pelican Point, Williamson, East Bay and Lower Apalachicola River are not surveyed as part of ongoing research, ANERR staff will, upon discovery or informant information abide by the guidelines in the **Management Procedures for Archaeological and Historical Properties on State-owned or Controlled Land** (Revised February, 2007) by DHR (Appendix 5).

### **Protection**

An assessment and delineation of known/suspected sites will be undertaken to prioritize sites for survey/information recovery. The majority of sites appear to be adjacent to shorelines (fresh or salt water) and are being degraded by flooding or coastal erosion. Some sites have been, or will be, nominated to the National Register of Historic Places. Other sites may need to have GIS locations documented and site file forms submitted to DHR, although White and the University of South Florida students have submitted many and are currently working on more. A list of real and potential threats to historical resources should be developed to assist in prioritizing sites for research requests and to implement protection or recover plans for them. Techniques for halting or slowing bank/shore erosion will not normally be considered in natural coastal shoreline areas.

ANERR staff includes at least two archaeological monitors, certified by DHR. Staff training will include site conservation and salvage using criteria acceptable to DHR in order to protect known sites and to document newly discovered sites. Cultural site physical changes from flooding, vandalism and natural disasters will be documented whenever possible.

Florida Statutes, Chapters 872 and 267, which affect land management decisions for ANERR lands, are on file. All projects involving land clearing ground disturbing activities, new construction, renovations or alterations involving or that may involve historic structures will require review of the DHR Compliance Review Checklist. DHR will be contacted to see if review is required when proposed ground disturbances are minimal or if the project involves routine maintenance of a historic structure. Rules found in the Florida Administrative Code (1A-44 and 1a-32) will guide ANERR activities when unmarked human burials are discovered or when submitting/evaluating archaeological research requests.

Management action will include notifying the appropriate law enforcement personnel, impact assessment and testimony in the event looting is noted on ANERR lands.

### **Other Associated Resources**

#### **Big Bend Scenic Byway**

A portion of the 220 mile Big Bend Scenic Byway borders ANERR along Highway 65 as it extends north from the coastal Highway 98.

#### **The Apalachicola River Paddling Trail System**

This paddling trail system was designated as a National Recreation Trail in 2008. Excellent opportunities for canoeing and kayaking entice paddlers with all levels of ability to enjoy a variety of scenic waterways along the lower estuary of the Apalachicola River. Eleven trails totaling about 100 miles in distance range from short, easy trips meandering through tupelo swamps to a variety of multi-day river trips flowing into open bays embracing the Gulf of Mexico.



## Great Florida Birding Trail

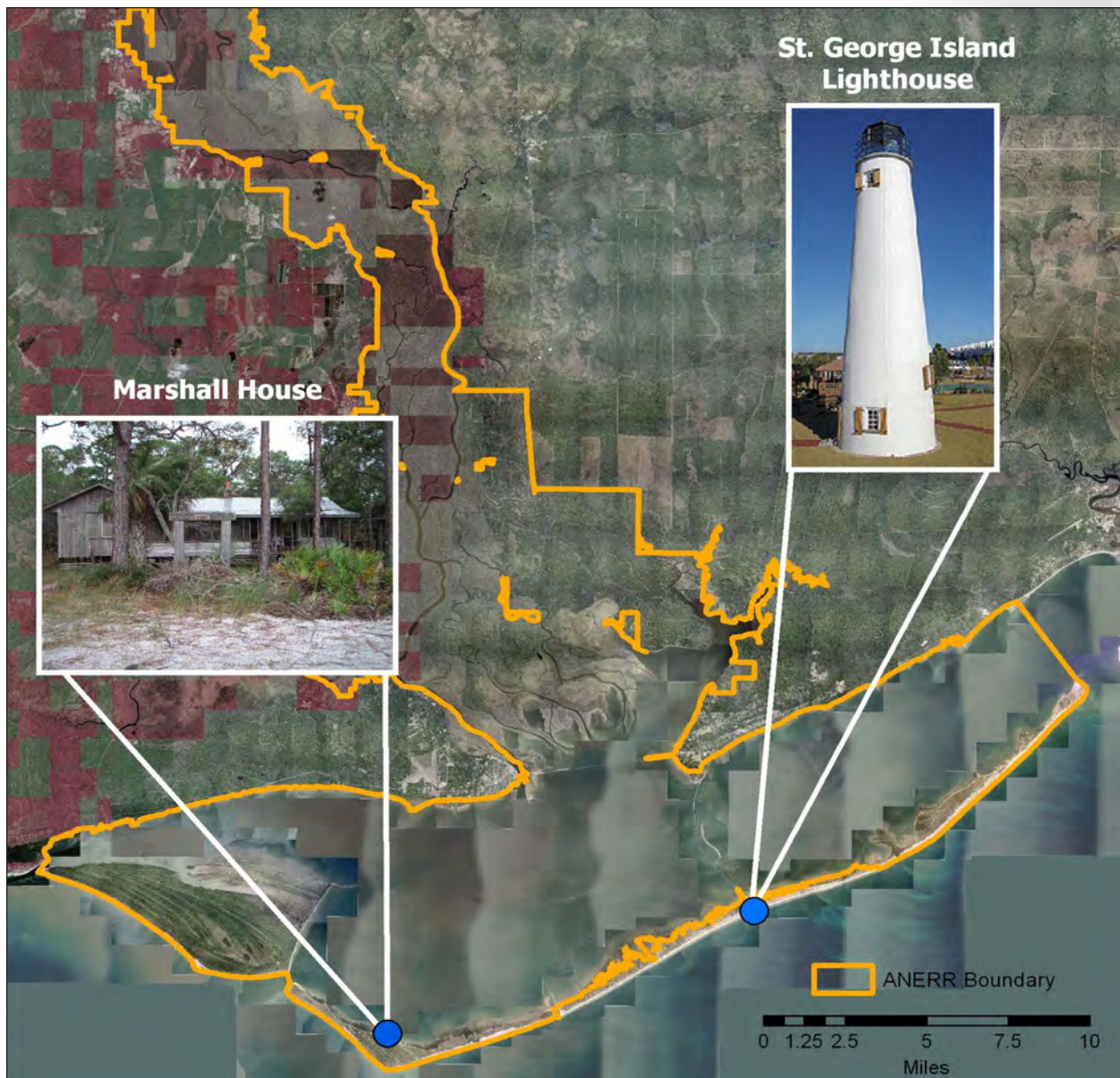
Several locations within ANERR have been designated as sites within the Great Florida Birding Trail. These currently include: St. Vincent National Wildlife Refuge, Apalachicola River, ARWEA Cash Bayou, ARWEA Sand Beach Area, ARWEA old agricultural fields (Gulf County), ARWEA Bloody Bluff Tract, Apalachicola National Forest Fort Gadsden, St. George Island State Park, and St. George Island Unit 4.

**T.H. Stone Memorial St. Joseph Peninsula State Park** (Gulf County, DEP-Division of Recreation and Parks (DRP), 2,716 acres)

The park contains the western end of the St. Joseph barrier spit and includes white sand beaches, well-developed dunes, sand pine scrub, and pine flatwoods. There are also areas of coastal hammocks. This is an important site for migratory birds. St. Joseph Bay Aquatic Preserve borders the park's eastern bay-side boundary and western Gulf-side boundary. For more detailed information visit: [www.floridastateparks.org/stjoseph/default.cfm](http://www.floridastateparks.org/stjoseph/default.cfm).

**Apalachicola National Forest** (Liberty, Wakulla, Leon and Franklin Counties, U.S. Forest Service, 567,742 acres)

One of Florida's premier conservation areas, this forest includes vast expanses of longleaf pine sandhills and flatwoods, and harbors the largest population of red-cockaded woodpeckers in the state. Wet prairies, seepage slopes, ravines, numerous blackwater creeks, and swamplands are also found here. For more detailed information visit: [www.fs.fed.us/](http://www.fs.fed.us/).



Map 13 | Select Cultural Resources of the Apalachicola National Research Reserve



**Tate's Hell State Forest** (Franklin and Liberty counties, FDACS- Florida Forest Service, 202,437 acres)

This land was purchased as forested watershed protection for Apalachicola Bay and for rare species protection, particularly the Florida black bear. Twenty-nine active red-cockaded woodpecker clusters have been found on site since purchase, in addition to several rare plant populations. The majority of the land was drained, and planted to slash pine in the 1960s and 1970s and is now undergoing restoration to a more natural condition. This area also contains some native slash and longleaf pine forests. For more detailed information visit: [www.fl-dof.com/state\\_forests/tates\\_hell.html](http://www.fl-dof.com/state_forests/tates_hell.html).

**Bald Point State Park** (Franklin County, DEP, 4,859 acres)

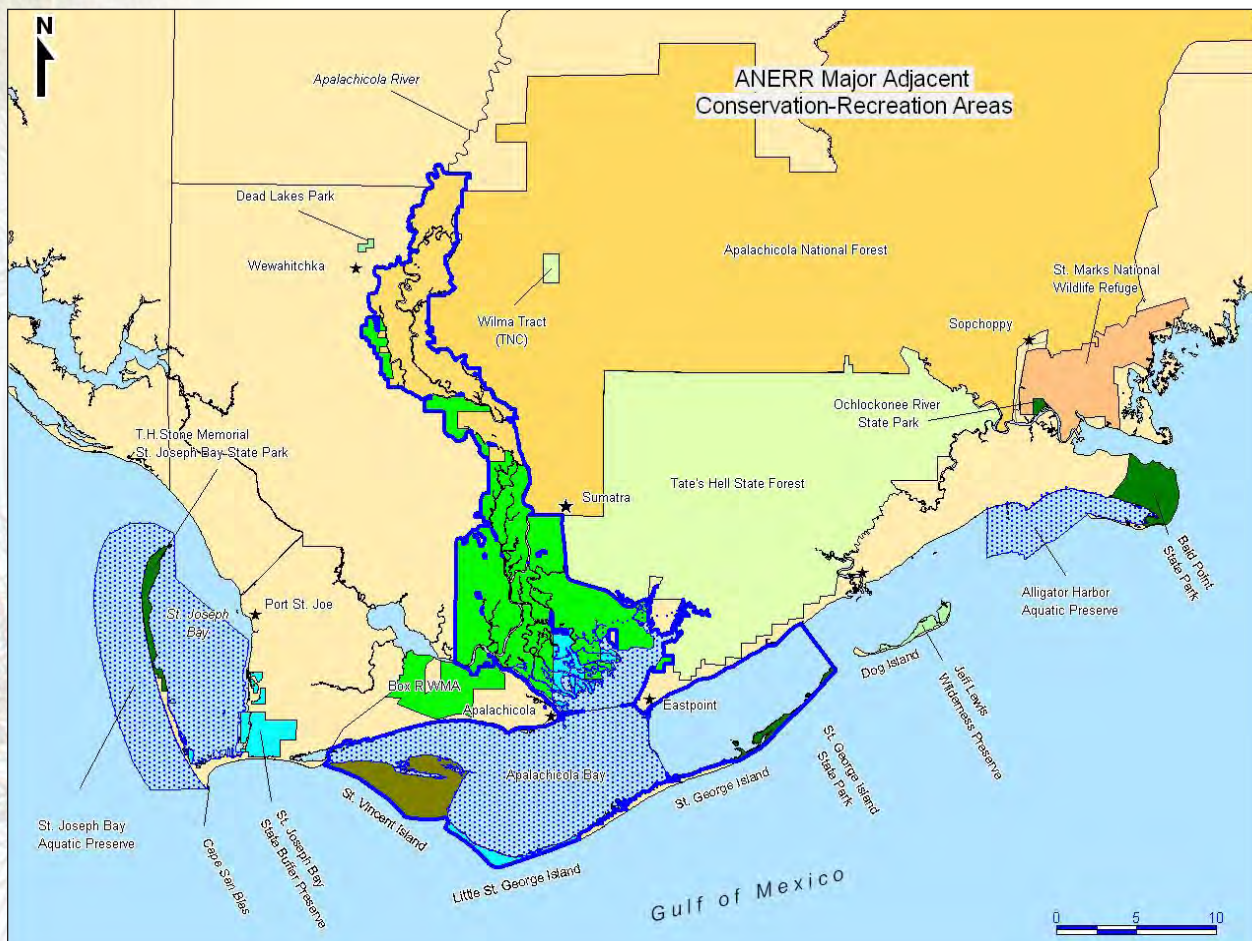
This site is important for migratory shorebirds and songbirds. Located on Alligator Point where Ochlockonee Bay meets Apalachee Bay, Bald Point offers a multitude of land and water activities. Coastal marshes, pine flatwoods, and oak thickets foster a diversity of biological communities that make the park a popular destination for birding and wildlife viewing. Every fall, bald eagles, other migrating raptors, and monarch butterflies are commonly sighted as they head south for the winter. Bald Point offers access to two Apalachee Bay beaches for swimming, sunbathing, and fishing. Other activities include canoeing, kayaking, windsurfing, and hiking. Facilities include a fishing dock and picnic pavilions. For more detailed information visit: [www.floridastateparks.org/baldpoint/default.cfm](http://www.floridastateparks.org/baldpoint/default.cfm).

**John S. Phipps Preserve** (Franklin County, The Nature Conservancy, 40 acres)

Located on the west end of a small, rapidly changing peninsula known as Alligator Point, this preserve includes marsh, pine forest, and beach dune. It is an important stop-over point for migrating birds. For more information visit: [www.nature.org/florida/](http://www.nature.org/florida/).

**Ochlockonee River State Park** (Wakulla County, FDEP-DRP, 543 acres)

Picnic facilities and a swimming area are located near the scenic point where the Ochlockonee and Dead rivers intersect. Ochlockonee, which means "yellow waters," is a mix of brackish, tidal surge, and fresh water. Pristine and deep, the river empties into the Gulf of Mexico. Trails allow visitors to explore the park and see the diverse wildlife, including the red-cockaded woodpecker, and natural



Map 14 | Publicly Owned Property Adjacent to the Apalachicola National Estuarine Research Reserve Utilized for Conservation and Recreational Opportunities



communities such as pine flatwoods and oak thickets. A boat ramp provides easy access to the river. Both freshwater and saltwater fish inhabit the waters around the park, including largemouth bass, bream, catfish and speckled perch. For overnight visitors, there are full-facility campsites with access to restrooms and showers. Youth group camping is also available. For more detailed information visit: [www.floridastateparks.org/ochlockoneeriver/default.cfm](http://www.floridastateparks.org/ochlockoneeriver/default.cfm).

**Jeff Lewis Wilderness Preserve** (Franklin County, TNC, 1,103 acres)

The Nature Conservancy ownership covers 60 percent of Dog Island - primarily the east end. The area is a vitally important nesting area for shorebirds. For more information visit: [www.nature.org/florida/](http://www.nature.org/florida/).

**Wilma Tract** (Liberty County, TNC, 1,365 acres)

This tract is an important inholding within the Apalachicola National Forest. The tract will ultimately be sold to the US Forest Service. For more information visit: [www.nature.org/florida/](http://www.nature.org/florida/).

**Dead Lakes Park** (Gulf County, Gulf County, 83.5 acres)

This county park (formerly a state park) was named after the Dead Lakes, which were formed when the Apalachicola River blocked the Chipola River downstream, flooding the river swamp and eventually killing trees. The park contains longleaf pine-wiregrass areas and offers picnicking and camping.

**St. Joseph Bay State Buffer Preserve** (Gulf County, ANERR-CAMA-DEP, 5,018 acres)

The property lies along the east and southwest coasts of St. Joseph Bay and consists of three tracts. Highway 30 bisects the southeastern tract. West of Highway 30 the land is mostly slash pine flatwoods and black needlerush marsh, while east of the highway the land rises onto old dunes with sandhill and scrub, lower areas are occupied by cypress swamps and bogs. Many rare plants are found on the preserve including telephus spurge (*Euphorbia telephoides*), panhandle spiderlily (*Hymenocallis henryae*), thick-leaved water-willow, and bog tupelo. For more information visit: [www.dep.state.fl.us/coastal/sites/apalachicola/stjoseph\\_buffer.htm](http://www.dep.state.fl.us/coastal/sites/apalachicola/stjoseph_buffer.htm).

**Box R Wildlife Management Area** (Franklin, FWC, 11,216 acres)

Box R Wildlife Management Area, (Formerly Box R Ranch) is located to the northwest of the City of Apalachicola, with nearly 6,000 feet of frontage along the Jackson and Apalachicola rivers and south of Lake Wimico. Box R's tidal marshes, creeks, floodplain swamps, hammocks and pine uplands are essential components of a complex ecological system that accounts for the productivity of Apalachicola Bay to the south. The area is critical to the health of recreational and commercial fisheries, a major component of the local culture and economy. For more detailed information visit: <http://myfwc.com/viewing/recreation/wmas/lead/box-r/>.

**St. Marks National Wildlife Refuge** (Jefferson, Taylor and Wakulla counties; USFWS, Suwannee River Water Management District, US Forest Service, 69,197 acres)

This refuge represents a large area of protected coast from the Aucilla River to Ochlockonee Bay. Natural communities include estuarine salt marsh, coastal hammock, wet flatwoods, dome swamps, depression marshes and others. The refuge has extensive artificial impoundments managed for waterfowl and used by many other bird species. For more detailed information visit: [www.fws.gov/southeast](http://www.fws.gov/southeast).

**Surrounding Land Use**

There are no conflicting land uses on adjacent properties that are of substantial concern. From time to time the airport located within the Plantation on St. George Island will request that some of the trees on the Nick's Hole parcel are cut so as not to interfere with the approach and take off of aircraft.

**4.1.4 / Values**

The economic base of the eight Florida counties in the watershed is primarily agriculture, forestry, commercial fishing, recreational fishing and hunting (Starnes-Smith, Tonsmeire, & Wagner, 1991). These activities are dependent on the natural resources that support them. Much of the land away from the coast, both inside and outside ANERR boundaries is owned and managed by the state or federal government. Large areas of public lands provide long term protection of the resources that support the local economy, as well as valuable recreational opportunities.

Commercial and recreational fisheries in the area have been critical to the local economy. Historically more than 65 percent of the Franklin County work force has been employed by the commercial fishing industry, although this has been changing with the increasing importance of tourism to the area. Oysters, shrimp, blue crab and finfish continue to make up the bulk of the catch with an estimated value of more

than \$134 million in economic output annually and an additional \$71 million in value-added benefits (Crist, 2007). Up to 90 percent of Florida's oyster harvest and 10 percent of the United States' total harvest comes from the Apalachicola Bay system (FWC, 2012; NMFS, 2012).

Recreational fishing along the Apalachicola River annually contributes \$35,280,000 to the surrounding six counties' economy and provides 655 jobs. This translates to about 4% of the total retail sales in the surrounding counties. (Calhoun-5%; Gadsden-1%; Gulf-11%; Franklin- 4%; Jackson-3%; Liberty-14%) Recreational freshwater and saltwater fishermen contribute an estimated 14% of the total retail sales in the six county regions. As the charter boat industry has grown over the years its importance to the local economy has also increased. Recreational saltwater fishing in Apalachicola Bay annually contributes approximately \$155,924,000 to the local economy with a corresponding 1,960 jobs. This translates to about 11% of the total retail sales in the surrounding counties (Ted Hoehn, FWC-pers.comm; Site Profile).

Recreation contributes to the social well-being of the local residents and also to the local economy through tourism. Recreational activities within ANERR include boating, fresh and saltwater fishing, camping, nature study and birding, canoeing, kayaking, hiking, picnicking, shelling and other beach activities, swimming, sailing, and hunting. Fresh and salt water fishing are the primary activities of many visitors. Hunting opportunities during winter and spring are available on all ANERR uplands, State Wildlife Management Areas, in the National Forest, and on St. Vincent Wildlife Refuge.

#### 4.1.5 / Citizen Support Organizations

**Friends of the Reserve (FOR)** is ANERR's primary citizen support organization. Through the years FOR has provided excellent support to ANERR by assistance with hosting meetings, providing food for myriad outreach and training events, and acting as the fiscal agent for sector meetings that ANERR has hosted. In May of 1988, FOR was formally incorporated "...for the advancement of the ANERR and to promote the purposes of ANERR and to provide citizen support for resource protection, education and research..." (Articles of Incorporation, FOR). Today FOR continues to be active. FOR's board of directors is particularly active in supporting ANERR. It has seven seats including a president, vice-president, treasurer, secretary and three at-large positions.

Each year the board takes applications for, and awards a number of scholarships to Franklin County high school seniors who are making plans to attend college. This scholarship typically supports students



Map 15 | Apalachicola National Estuarine Research Reserve Managed Parcels in Relation to Each Other, Aquatic Resources and Other Conservation Lands.





Map 16 / Marshes and forests between river distributaries are actually islands accessible by boat only.



Map 17 / Cat Point parcels and new facility location. Access will be from Island Drive in Eastpoint.



going into the biological sciences. The Friends support ANERR's annual National Estuaries Day event. Estuaries Day is one of the most popular and best attended events ANERR does all year, and FOR is an important factor in its success.

**The St. George Island Lighthouse Association (SGLA)**, ([www.stgeorgelight.org/](http://www.stgeorgelight.org/)), serves as a Citizen Support Organization for ANERR, in managing the operation of the recently re-located Cape St. George Light. SGLA was established in 2004 following the acquisition of the Light by the state. The Light collapsed in 2005 mostly due to erosion caused by numerous and recent tropical events. SGLA, an entirely volunteer organization, provided labor and administrative support recovering artifacts and obtaining grants for historic preservation of the Light. The Light, now open for public visitation, has been completely restored. Detailed information regarding the SGLA and the Cape St. George Light may be found at the SGLA website listed above.

#### 4.2 / Coastal and Aquatic Managed Areas Managed Parcels within the Apalachicola National Estuarine Research Reserve Boundary

The following describes subunits and individual parcels under lease to and managed by CAMA within the ANERR boundary.

**Summary** - With the exception of the Lower River Marshes and Little St. George Island (both accessible by boat only), ANERR managed lands are small, *highly fragmented*, individual parcels, embedded or adjacent to residential communities in Franklin County. Their primary value and value for being in public ownership is a reduction of runoff pollutants impacting nearby aquatic resource; most importantly oyster bars. They also serve as public access points to ANERR managed lands and open water for pedestrian or other mainland visitors. Total Geographic Information System (GIS) acreage for CAMA managed lands is 6,794 acres.

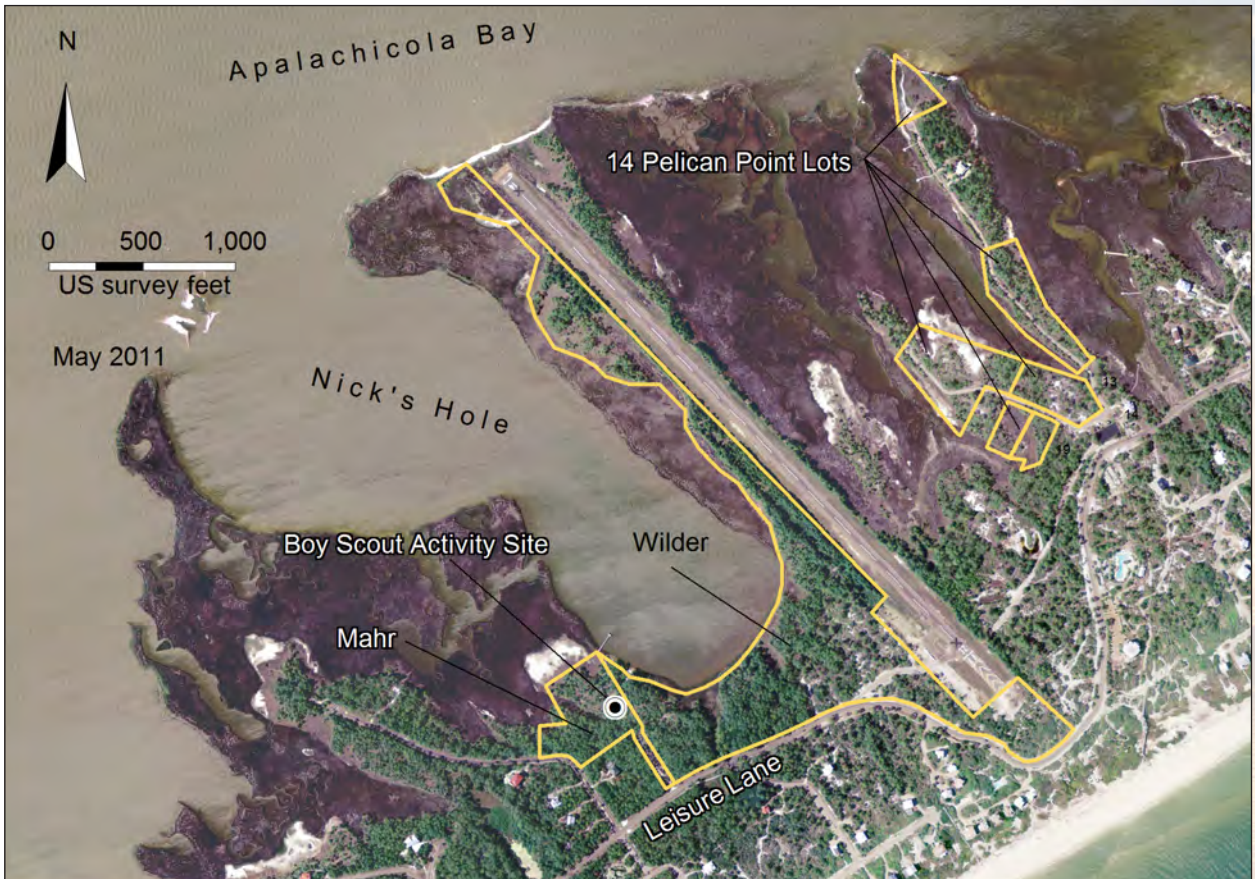
**Lower River Marshes** - This fragmented subunit lies approximately one to five miles northeast from the City of Apalachicola within the distributary system of the lower Apalachicola River. Most of the subunit falls within the Apalachicola Bay Aquatic Preserve. Emergent natural communities include alluvial forest (dominated by bald cypress, tupelo, sweetgum, water hickory and black willow) and estuarine salt marsh (dominated by sawgrass, bulrush, cattail, needle rush, *Spartina* and *Phragmites*). The open marsh and alluvial forest hydrology fluctuates with both river flow and tide effects. Those portions of the marsh subject to greater marine influence are dominated by salt tolerant plants such as black needlerush.







Map 19 / Williamson Subunit



Map 20 / Boy Scout camp location near St. George Island Plantation Airport.



Interior portions of the marsh contain a higher proportion of less salt tolerant species. Sawgrass is found in upper interior regions, less affected by tidal flow, where salinity is very low and the marsh begins to grade into the adjacent floodplain swamp community.

This parcel was a single purchase from the St. Joe Land and Development Company. The subunit is in mostly pristine condition with few human impacts visible. The distributary shorelines surrounding the individual pieces suffer from some minor erosion exacerbated by boat wakes. Myriad river distributaries and tidal creeks occur within the subunit. The area is immensely popular with fishermen and pleasure boaters. ANERR staff burns this subunit cooperatively with FWC, while they burn adjacent managed marshes. The staff also monitors the area for hazards and removes trash and other debris.

Kayaking is popular within the subunit. Future plans may include development of a designated kayak trail throughout the subunit. Few exotic species occur on the property. Although not included on the Florida Exotic Pest Plant Council's 2009 List of Invasive Plant Species (Category I or II), the common reed has the potential to impact natural communities within the subunit. ANERR acquired high resolution digital imagery in 2000 to begin a long term comparative observation of *Phragmites* spp. colonies.

**Cat Point** – The Cat Point subunit contains eight individual parcels (the largest < 29 acres) separated by roads, private property and marsh and is located in the Town of Eastpoint to the Northwest and Northeast of the mainland foot of the St. George Island Bridge. Natural communities include: estuarine salt marsh (dominated by black needle rush and *Spartina*), mesic and scrubby flatwoods (dominated by slash pine, live oak and saw palmetto) and basin marsh (dominated by cattail, sawgrass and bulrush. ANERR's largest established public use area (Millender Picnic Site) is located on this subunit. The site provides public access to picnic pavilions, a manicured playground area, and has potable water available. Exotic species known to occur on the site include Chinese tallow and *Sesbania*. Staff treats exotics as found and monitors the parcels intermittently. No listed plant species are known to occur there. The subunit suffers from long term fire exclusion, resulting in poor ground cover, excessive canopy and loss of wildlife habitat value. The subunit was purchased from four separate owners (Bush, Hunter, Rodrigue and Millender) and contains eleven parcels. The primary resource value of this subunit is protection of adjacent and nearby aquatic resources. This subunit is adjacent to the nearby Cat Point



Map 21 | Little St. George Island with historic Cape St. George lighthouse site. The lighthouse has been relocated to (big) St. George Island.

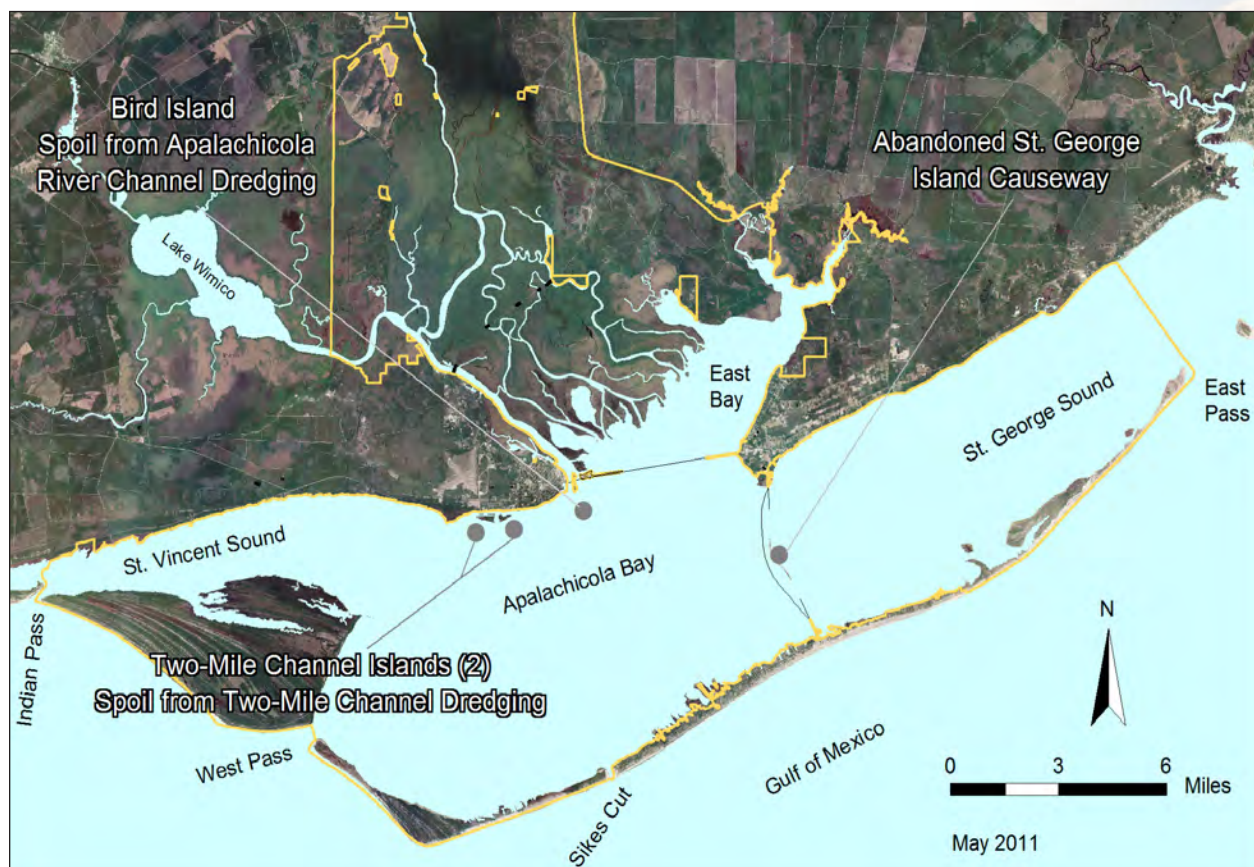


Oyster Harvest Area, one of the most productive approved oyster harvest areas in the entire Apalachicola Bay system. A fishing pier, remnant from the now replaced old St. George Island Bridge and causeway, is located centrally near the subunit. The pier attracts many visitors and has a paved parking area near its landward base. This property is near ANERR's new headquarters, which relocated in 2011.

**Unit Four** – The Unit 4 subunit consists of a single parcel of 7.2 acres (mostly marsh) and 251 individual residential building lots. Natural communities include estuarine salt marsh (dominated by needle rush and *Spartina*) and wet flatwoods (dominated by slash pine, wax myrtle and saw palmetto). The site contains a small parking area and pavilion and provides visitor access to St. George Sound, and is included in the Great Florida Birding Trail. Exotic species known to occur on the site include Brazilian pepper and Chinese tallow. Staff treats exotics as found and monitors the parcels intermittently. The 251 residential lots are fragmented via platted county roads, alleys and canals. Most of the slightly elevated roads appear to have been constructed from a now-flooded borrow pit located on site. The fragmentation of the subunit is compounded by Franklin County ownership of the platted rights-of-way. The roads have resulted in disruption of sheet flow drainage across the unit and flooding problems for nearby residents. Attempts to have Franklin County abandon the rights-of-way have not been successful. In 2010, two lots were donated by the Benda family and added to this holding. They are located on E. Pine St.

**Williamson Donation** - This small subunit (< 2 acres) consists of a five lot donation on St. George Island with an Apalachicola Bay shoreline. The platted lots are mostly submerged. The lots provided ANERR a location for a demonstration shoreline stabilization project constructed in 1993. The basic project consisted of a low-profile, fragmented breakwater constructed parallel to the shoreline and back planted with smooth cordgrass on 24" centers. The successful project remains intact today near the bayside terminal end of Nedley Street on St. George Island, providing protection from erosion and providing habitat for aquatic marine species. The site is popular with kayakers and fishermen.

**Nick's Hole/Pelican Point** - The subunit consists of 14 residential building lots in the "Pelican Point" subdivision of the "St. George Island Plantation" and two larger parcels near the adjacent Nick's Hole embayment. The St. George Island Plantation is a private gated community. Natural communities include scrubby flatwoods, mesic flatwoods and tidal marsh. The natural communities of this subunit are in fair condition, but are beginning to suffer from fire exclusion. The subunit has remained mostly exotic species free with the exception of the occasional Chinese tallow. The St. George Island Plantation airport



Map 22 | Dredge Spoil Island subunits



is located adjacent to the property. ANERR has a cooperative agreement with the Boy Scouts of America which allows them to use the site for “no impact” scout related activities. The scout “camp” is home base for an annual regatta featuring sailboating for scouts throughout the region.

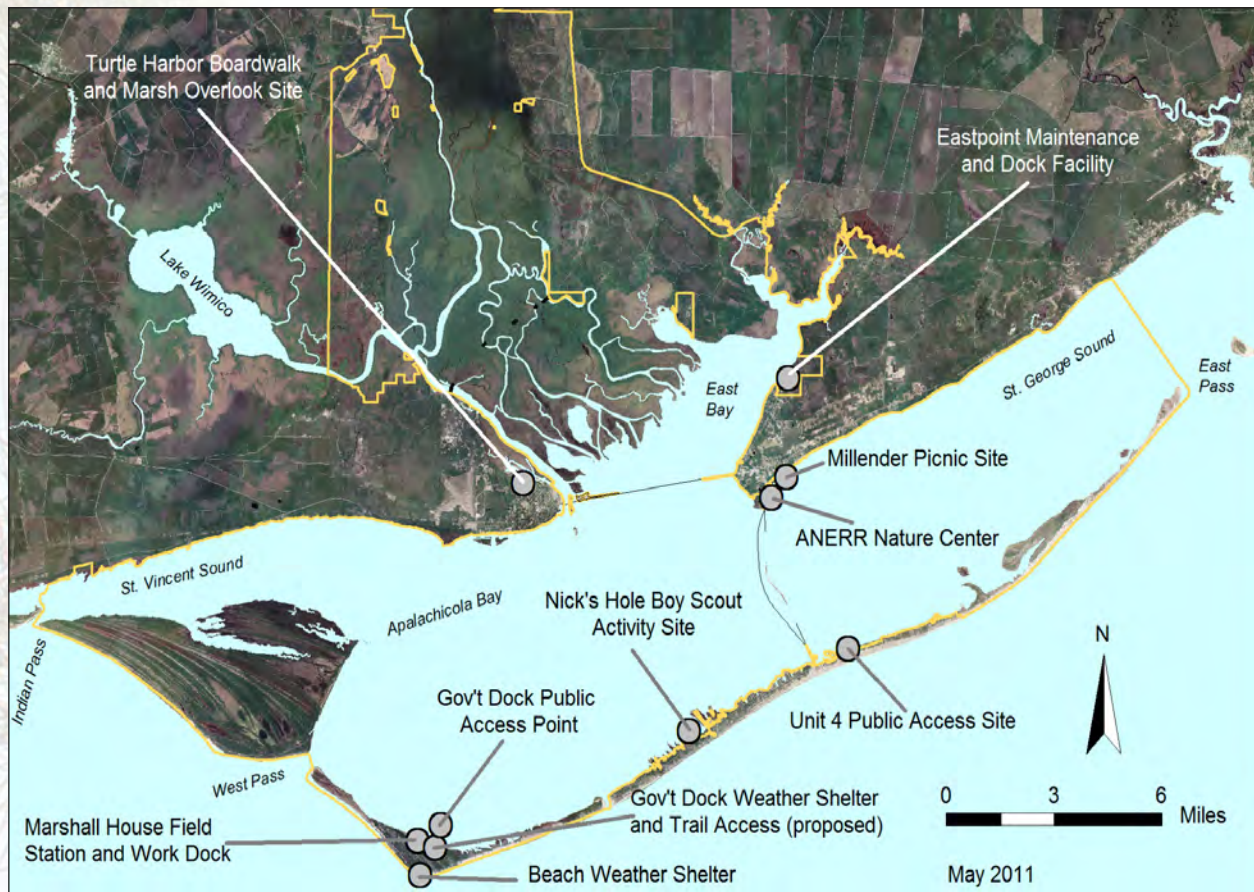
**Little St. George Island** - Little St. George Island was acquired by the State of Florida in 1977 through the Environmentally Endangered Lands Program of Florida’s Conservation Act of 1972. This purchase was made in order to protect the island from development and to contribute to the protection of Apalachicola Bay. The island consists of approximately 2,300 acres at mean high tide with an additional 400 acres of perimeter tidal marshlands and lower beach areas which are inundated by high tidal waters. Disturbance to the island has been minimal. Various Indian cultures occupied the island for hundreds of years. Pottery shards dating from A.D. 750 to 1450 are occasionally found on portions of the island. Turpentine operations occurred from 1910-1916 and again from 1950-1956. Many of the pine trees on the island are cat-faced from these operations. Typically ignited by lightning strikes, fires are allowed to burn regularly throughout the island. The staff maintains fire breaks around the Marshall House Field Station and outbuildings, protecting these structures during fires.

**Dredged Spoil Islands** – Although not specifically leased to ANERR, three major dredged spoil sites warrant mention in this plan.

Two islands dredged to facilitate boat traffic from the southern Apalachicola waterfront (“Two-Mile Channel”) provide a study site for ANERR cooperative wetlands training with the USACOE. ANERR monitors the site for exotics and also removes derelict crab traps from along its shoreline.

A single spoil site (known locally as “Bird Island”) established for placement of river channel dredge material exists just south from the Apalachicola Bridge and east of the river channel. The site has evolved into a major seabird nesting site. ANERR staff routinely post the site during nesting season, conduct detailed surveys of nesting species and mechanically reduce vegetation to facilitate nesting. The site location was established with input from ANERR staff working with USACOE. Dredge operations are monitored by ANERR staff to insure proper spoil placement.

The now abandoned causeway portion of the old St. George Island Bridge remains a major seabird nesting site. ANERR staff has historically monitored the site for predators, posted nesting bird areas and conducted detailed annual surveys at the site.

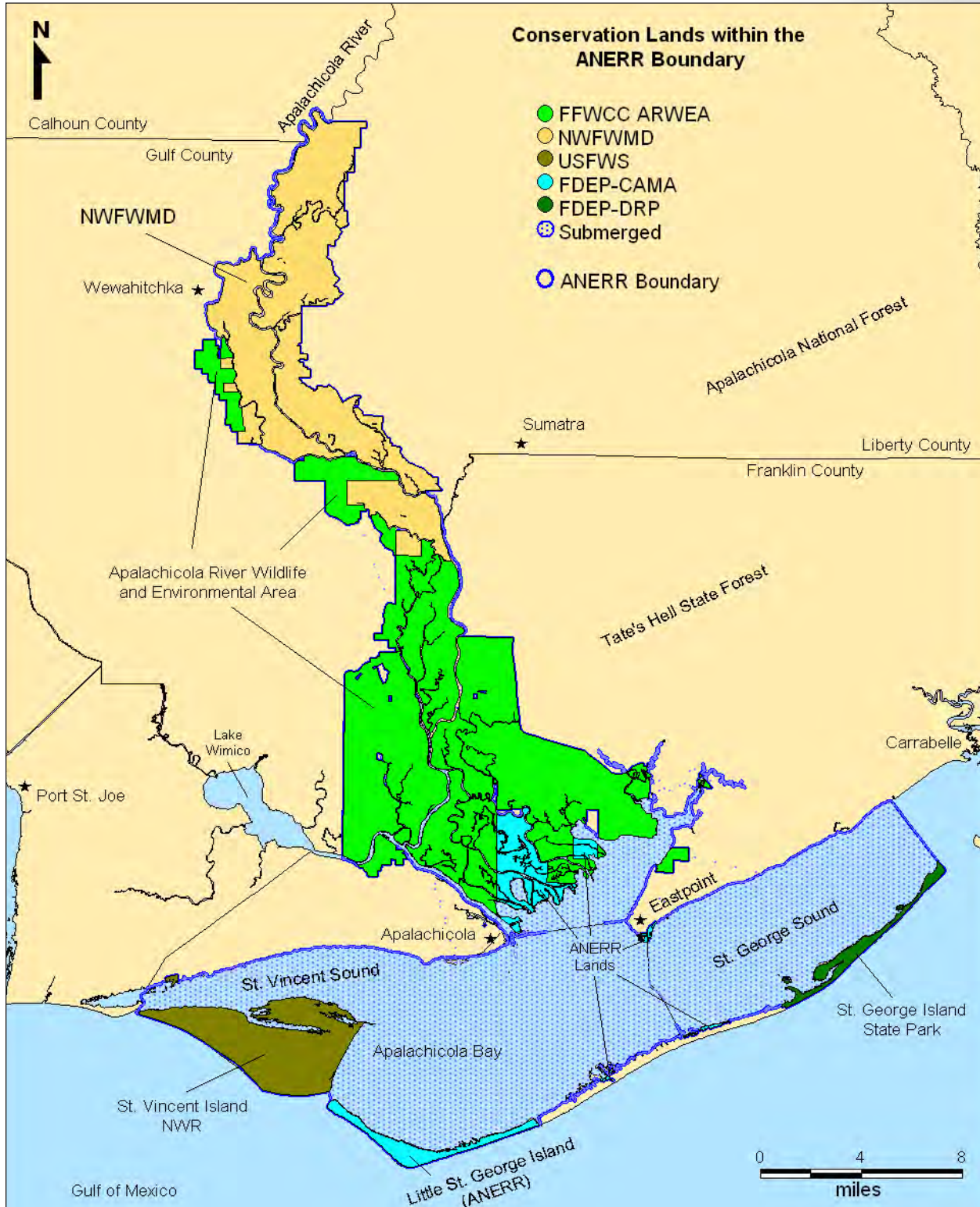




#### 4.3 / Non-CAMA Managed Public Lands within the Apalachicola Research Reserve Boundary

**Dr. Julian G. Bruce St. George Island State Park** (Franklin County, DEP-DRP, 1,807(GIS) acres)

This barrier island located at the east end of (Big) St. George Island contains more than nine miles of beaches and dunes. Other natural communities include slash pine forests, oak-magnolia hammocks, freshwater ponds, sloughs, and salt marsh. Its location on a bird migration route makes the island an important stop-over for many passerine and shorebird species. Camping, hiking, fishing, beach-use and nature study are available at the park. For more detailed information visit: [www.floridastateparks.org/stgeorgeisland/default.cfm](http://www.floridastateparks.org/stgeorgeisland/default.cfm).



Map 24 / Relationship of Various Agencies' Managed Lands within the Apalachicola National Estuarine Research Reserve

### **St. Vincent National Wildlife Refuge** (Franklin and Gulf counties, USFWS, 11,858(GIS) acres)

This is an undeveloped barrier island, with an extensive beach dune and swale system. The island supports coastal grassland and scrub, slash pine flatwoods, freshwater lakes, and tidal marsh. The refuge hosts an experimental introduction and breeding program of the red wolf. Hiking, hunting, bird-watching, fishing and boating are activities at the island. For more detailed information visit: [www.fws.gov/saintvincent/](http://www.fws.gov/saintvincent/).

### **Apalachicola River Wildlife and Environmental Area** (Franklin and Gulf counties, FWC, 63,814 (GIS) acres)

These lands surround eleven miles of the Apalachicola River, the majority of the Brothers River, and the junction of the Jackson and Apalachicola Rivers. Hunting, fishing and boating are activities available at the Wildlife and Environmental Area. For more detailed information visit: <http://myfwc.com/viewing/recreation/wmas/lead/Apalachicola-River>.

### **Box-R Wildlife Management Area** (Franklin County, FWC, 901 acres)

A total of 901 acres within the Box-R WMA south of the Jackson River is included within the ANERR boundary.

### **Apalachicola River Water Management Area** (Gulf and Liberty counties, NFWFMD, 34,949(GIS) acres)

These alluvial forests along 19 miles of the Apalachicola River contain more reptile and amphibian species than any comparably sized area in the U.S. Hunting, fishing and boating are available at the Water Management Area. For more detailed information visit: [www.nfwfmd.state.fl.us/recreation/apalachicolariver.html](http://www.nfwfmd.state.fl.us/recreation/apalachicolariver.html).

## **4.4 / Planned Expansion of the Apalachicola Research Reserve Boundary**

At this time ANERR does not intend to pursue a boundary expansion. However, there are several parcels, mentioned in Chapter 9, that would be beneficial to acquire and would help protect resources adjacent to and within the ANERR boundary. If these lands were acquired by the state and given to ANERR to manage, ANERR would pursue an amendment to this plan, which would include a boundary expansion. Any future boundary expansion would be added during the next management plan revision and would be subject to public review and approval by NOAA.

### **St. Joseph Bay State Buffer Preserve** (DEP-CAMA-ANERR)

St. Joseph Bay State Buffer Preserve is managed by staff working through the ANERR. ANERR's Stewardship Coordinator oversees the manager of the buffer preserve. ANERR provides additional equipment and staffing needs for special projects and resource management. The buffer preserve works closely with a variety of researchers and students on projects ranging from the effects of climate change to fire ecology to listed species protection. ANERR Coastal Training Program and the Buffer Preserve staff routinely cooperate in on-site training and public outreach activities.

The property lies along the east and southwest coasts of St. Joseph Bay and consists of three major tracts. Highway 30 bisects the southeastern tract. West of Highway 30 the land is mostly slash pine flatwoods and black needlerush marsh, while east of the highway the land rises onto old dunes with sandhill and scrub, lower areas are occupied by cypress swamps and bogs. Many rare plants are found on the preserve including; Chapman's rhododendron, telephus spurge, panhandle spiderlily, thick-leaved water-willow, and bog tupelo. The Buffer Preserve provides protection for the Apalachicola River and Bay watershed, St. Joseph Bay and the Gulf of Mexico. Additionally, ANERR will pursue acquiring uplands property along western St. Vincent Sound which would make the boundaries of ANERR and Buffer Preserve contiguous.

### **Indian Lagoon**

Indian Lagoon is the westernmost area of Apalachicola Bay, and is bounded by the Indian Pass peninsula to the south, the St. Vincent Sound mainland to the north, and the Bay itself to the east. The lagoon is very shallow and consists of finer, organic sediments which are largely derived from the surrounding salt marsh and creek systems, as well as mesic pine-dominated forests. Expanding ANERR boundary to include Indian Lagoon would act to include a small, but productive part of Apalachicola Bay, and help make the connection to the other area of expansion (St. Joseph Bay State Buffer Preserve).





*The historic vessel Governor Stone, built in 1877, at her moorings in Apalachicola, Florida.*

## *Part Two*

# Management Programs and Issues

## *Chapter Five*

### **The Office of Coastal and Aquatic Managed Areas' Management Programs**

The work performed by the Office of Coastal and Aquatic Managed Areas (CAMA) is divided into components called management programs. In this management plan all site operational activities are explained within the following four management programs: Ecosystem Science, Resource Management, Education and Outreach, and Public Use.

#### **5.1 / The Ecosystem Science Management Program**

The Ecosystem Science Management Program supports science-based management by providing resource mapping, modeling, monitoring, research and scientific oversight. The primary focus of this program is to support an integrated approach (research, education and stewardship) for adaptive management of each site's unique natural and cultural resources. Adaptive management, as defined by the U.S. Department of the Interior, is a decision process that promotes flexible decision making that can be adjusted in the face of uncertainties as outcomes from management actions and other events become better understood (Williams, Szaro, & Shapiro, 2009). CAMA ensures that, when applicable, consistent techniques are used across sites to strengthen the State of Florida's ability to assess the relative condition of coastal resources. This enables decision-makers to more effectively prioritize restoration and resource protection goals. In addition, by using the scientific method to create baseline conditions of aquatic habitats, the Ecosystem Science Management Program allows for objective analyses of the changes occurring in the state's natural and cultural resources. The Ecosystem Science Program encompasses the components of the National Estuarine Research Reserve (NERR) System Research and Monitoring Program.

### **5.1.1 / National Estuarine Research Reserve System Research and Monitoring Plan (\$921.50, Code of Federal Regulations)**

The NERR system provides a mechanism for addressing scientific and technical aspects of coastal management problems through a comprehensive, interdisciplinary and coordinated approach. Research and Monitoring Programs, including the development of baseline information, form the basis of this approach. NERR research and monitoring activities are guided by the NERR system research and monitoring plan 2006-2011 which identifies goals, priorities and implementation strategies. This approach, when used in combination with the education and outreach programs, will help ensure the availability of scientific information that has long-term, system-wide consistency and utility for managers and members of the public to use in protecting or improving natural processes in their estuaries. Research within the NERRs is designed to fulfill the NERR system goals as defined in program regulations. These include:

- Address coastal management issues identified as significant through coordinated estuarine research within the NERR system;
- Promote federal, state, public and private use of one or more NERRs within the NERR system when such entities conduct estuarine research; and
- Conduct and coordinate estuarine research within the NERR system, gathering and making available information necessary for improved understanding and management of estuarine areas.

#### **National Estuarine Research Reserve System Research Funding Priorities**

Federal regulations, 15 Code of Federal Regulations (C.F.R.) Part 921.50(a), specify the purposes for which research funds are to be used:

- Support management-related research that will enhance scientific understanding of the NERR ecosystem,
- Provide information needed by NERR managers and coastal ecosystem policy-makers, and
- Improve public awareness and understanding of estuarine ecosystems and estuarine management issues.

The NERR system has identified the following five priority research areas to complement the funding priorities outlined above:

- Habitat and ecosystem processes
- Anthropogenic influences on estuaries
- Habitat conservation and restoration
- Species management
- Social science and economics

#### **National Estuarine Research Reserve System Research Goals**

The NERR System research goals are embedded in Goal 2 of the NERR System Strategic Plan 2011-2016, 'NERRS scientific investigations improve understanding and inform decisions affecting estuaries and coastal watersheds' and are outlined in the 2006-2011 NERR System Research and Monitoring Plan. They include:

- Expand capacity to monitor changes in water quality and quantity, habitat and biological indicators in response to land use and climate change drivers
- Improve understanding of the effects of climate change and coastal pollution on estuarine and coastal ecology, ecosystem processes, and habitat function.
- Characterize coastal watersheds and estuary ecosystems and quantify ecosystem services to support ecosystem-based management of natural and built communities.
- Increase social science research and use of social information to foster coastal stewards that value and protect estuaries.

Currently, there are two NERR system-wide efforts to fund estuarine research. The Graduate Research Fellowship Program supports students to produce high quality research in the NERRs. The fellowship provides graduate students with funding for 1-3 years to conduct their research, as well as an opportunity to assist with the research and monitoring program at a reserve. Projects must address coastal management issues identified as having regional or national significance; relate them to the NERR system research focus areas; and be conducted at least partially within one or more designated NERR sites. Proposals must focus on the following areas: 1) Eutrophication, effects of non-point source pollution and/or nutrient dynamics; 2) Habitat conservation and/or restoration; 3) Biodiversity and/or the effects of invasive species; 4) Mechanisms for sustaining resources within estuarine ecosystems; or 5) Economic, sociological and/or anthropological research applicable to estuarine ecosystem management.



Students work with the research coordinator or manager at the host NERR to develop a plan to participate in the NERR 's research and/or monitoring program. Students are asked to provide up to 15 hours per week of research and/or monitoring assistance to the reserve; this training may take place throughout the school year or may be concentrated during a specific season.

Secondly, research is funded through the NERR Science Collaborative. The Reserve System Science Collaborative is a program that focuses on integrating science into the management of coastal natural resources. Currently administered through the University of New Hampshire, the program integrates and applies the principles of collaborative research, information and technology transfer, graduate education, and adaptive management with the goal of developing and applying science-based tools to detect, prevent, and reverse the impacts of coastal pollution and habitat degradation in a time of climate change. The program is designed to enhance the reserve system's ability to support decisions related to coastal resources through collaborative approaches that engages the people who produce science and technology with those who need it. In so doing, the Science Collaborative seeks to make the process of linking science to coastal management decisions, practices, and policies more efficient, timely and effective. (For more information go to [www.nerrs.noaa.gov/ScienceCollaborative.aspx](http://www.nerrs.noaa.gov/ScienceCollaborative.aspx).)

### **System-Wide Monitoring Program**

It is the policy of ANERR to implement each phase of the System-Wide Monitoring Program (SWMP) initiated by the Estuarine Reserves Division in 1989, and as outlined in the ANERR system regulations and strategic plan:

- **Phase I:** Environmental Characterization, including studies necessary for inventory and comprehensive site descriptions;
- **Phase II:** Site Profile, to include a synthesis of data and information; and
- **Phase III:** Implementation of the System-Wide Monitoring Program.

The SWMP provides standardized data on national estuarine environmental trends while allowing the flexibility to assess coastal management issues of regional or local concern. The principal mission of the monitoring program is to develop quantitative measurements of short-term variability and long-term changes in the integrity and biodiversity of representative estuarine ecosystems and coastal watersheds for the purposes of contributing to effective coastal zone management. The program is designed to enhance the value and vision of the NERRs as a system of national references sites. The program also takes a phased approach and focuses on three different ecosystem characteristics.

- **Abiotic Variables:** The monitoring program currently measures pH, conductivity, salinity, temperature, dissolved oxygen, turbidity, water level and atmospheric conditions. In addition, the program collects monthly nutrient and chlorophyll a samples and monthly diel samples at one SWMP data logger station. Each NERR uses a set of automated instruments and weather stations to collect these data for submission to a centralized data management office.
- **Biotic Variables:** The NERR system is focusing on monitoring biodiversity, habitat and population characteristics by monitoring organisms and habitats as funds are available.
- **Watershed and Land Use Classifications:** This component attempts to identify changes in coastal ecological conditions with the goal of tracking and evaluating changes in coastal habitats and watershed land use/cover. The main objective of this element is to examine the links between watershed land use activities and coastal habitat quality.

These data are compiled electronically at a central data management "hub," the Centralized Data Management Office (CDMO) at the Belle W. Baruch Institute for Marine Biology and Coastal Research of the University of South Carolina. They provide additional quality control for data and metadata and they compile and disseminate the data and summary statistics via the internet (<http://cdmo.baruch.sc.edu>) where researchers, coastal managers and educators can readily access the information. The metadata meets the standards of the Federal Geographical Data Committee.

Currently ANERR is in full implementation of SWMP including functional water quality monitoring stations, a weather station and monthly water nutrient sampling. ANERR is in compliance by having completed the site profile, or resource inventory, in the fall of 2008. ANERR has strong biological monitoring programs, which are outlined in more detail below. ANERR is also in the process of completing the Habitat Mapping and Change Plan, which will highlight land use throughout ANERR.

The Protected Areas Geographic Information System (PAGIS) Project was an initiative to develop fully integrated Geographic Information Systems (GIS), spatial data management, and internet capabilities within the NERRs. A tribute to the success of this project is each NERR's current reliance on GIS in their management, stewardship, research and education programs. It enabled each site to set up a GIS with equipment, basic data layers, and the ability to substantially increase their capabilities to utilize this important management tool. PAGIS was initiated in 1998 by the Coastal Services Center.

### 5.1.2 / Background of Ecosystem Science at the Apalachicola National Estuarine Research Reserve

A research and monitoring program is an essential element in any successful effort to manage and protect complex environments such as estuarine ecosystems. The Apalachicola River and Bay system, because of its size, the diversity of species and habitats present, and its ownership patterns, represents an especially difficult task. Therefore, it is especially important to have a research and monitoring program that can provide a base of support for in-house monitoring as well as visiting researchers; provide clear, concise scientific information and expertise to other programs, both within and outside ANERR; provide information to help in coastal decision-making, including local, state, regional, and national entities; and provide information to address important management issues and threats that may affect the resources not only of ANERR but estuarine and coastal areas nation-wide. The Ecosystem Science program at ANERR is implemented by the Research Coordinator, four full time research assistants and one seasonal employee. The Research Coordinator and two full time employees are funded by the state. One full time employee is contracted with Florida Agriculture and Mechanical University (FAMU) as part of the Environmental Cooperative Science Center. The other full time employee and seasonal employee are federally-funded through the NERR operations grant.



*An oyster bar in the Apalachicola Bay.*

#### **Research and Monitoring Program**

In order to establish an efficient research and monitoring program that provides the information necessary for natural resource protection, it is essential to have a good understanding of the resources that have made reserve designation so important, as well as the issues and problems that affect them. ANERR has utilized national regulations and guidelines as well as local needs, issues, and budget restraints to develop an ambitious program designed to address issues, data gaps, and threats to the system.

*ANERR Research and Monitoring Program Components - ANERR has developed research*

priorities based on specific threats that currently confront ANERR and the Apalachicola River and Bay system. The two main threats to the bay system and their potential impacts include:

- The upstream diversion of fresh water with the potential for productivity impacts, biodiversity impacts (river, floodplain and bay), habitat loss, species loss and economic impacts.
- Increasing local coastal development and land use changes with the potential for nutrient enrichment, biological/chemical contaminant increase and habitat/species loss.

#### **ANERR Research Program Priorities**

Research priorities developed, based on the above threats, are utilized by ANERR to help guide the research and monitoring program and also focus outside researchers on appropriate and applicable project ideas. These priority research topics include:

- Environmental effects on habitats and populations, abundance, distribution, recruitment, predation, and mortality of ecologically, recreational and commercially important species of the Apalachicola River and Bay system
- Examination of the morphology and hydrology of the river and bay system and identification of the variables that are important forcing functions in the system
- Effects of historic, current and proposed upstream water reductions and uses on the hydrodynamics and natural resources of the Apalachicola River and Bay system
- Assessment of the effects of man-made alterations such as Sike's Cut, dredge and fill activities, shoreline stabilization, dock construction and development activities on the hydrodynamics, sediment regime, and natural resources of the Apalachicola River and Bay system



- Assessment of the role of marshes and seagrass beds in nutrient cycling, estuarine productivity, and as nursery areas for important commercial and noncommercial species of the Apalachicola Basin
- Ecology, development, and effectiveness of management strategies for threatened and endangered species found within the boundaries of ANERR
- Assessment of the importance of upstream activities, local development and land use changes, and marine activities on the nutrients and contaminant loading of the bay system
- Cultural and economic implications of past, present, and future uses of the natural resources of the system
- Ecological effects of climate change, particularly sea level rise, sea surface temperature and ocean acidification.

All nine of these research priorities are related to and depend upon the development of a comprehensive monitoring program. This monitoring program, combined with a successful outside researcher program, allows ANERR to address many of the resource management issues currently confronting it.

### **5.1.3 / Current Status of Ecosystem Science at Apalachicola National Estuarine Research Reserve System-Wide Monitoring Program (SWMP)**

The staff has maintained four YSI 6600 EDS multi-parameter programmable dataloggers in the bay on a continuous basis since 1995. The dataloggers measure temperature, specific conductivity, salinity, dissolved oxygen (percent and mg/l), pH, water level and turbidity every fifteen minutes. The dataloggers are located at three separate locations, East Bay, Cat Point and Dry Bar (Map 25). The Cat Point and Dry Bar sites are located on two of the most productive oyster bars in the bay and have been monitored since May, 1992. These sites were originally chosen to study the effects of changing river flow on environmental variables over these commercially important oyster bars. The East Bay site was chosen to look at potential changes in water quality in the upper bay related to a large-scale restoration effort planned within the Tate's Hell State Forest. One datalogger at each location is deployed approximately 0.3 meters (one foot) off the bottom. At the East Bay site a second datalogger is deployed at the same location but at the surface. The dataloggers are deployed and retrieved every two weeks due to fouling concerns. Pre-calibration, programming, post-calibration, and cleaning and maintenance of the instrument also occurs at these intervals. Since 2006 the East Bay bottom datalogger has been telemetered. (These data can be accessed at <http://cdmo.baruch.sc.edu/get/export.cfm>.) The data from all these sites are being used for ANERR's research and monitoring studies as well as being provided to researchers working within the system.

Weather conditions can have a strong influence on water quality. SWMP requires the monitoring of meteorological conditions at each NERR. The ANERR maintains a weather station in the upper Easy Bay marshes (Map 25). This weather station measures air temperature, relative humidity, wind speed and direction, barometric pressure, rainfall, and photosynthetically active radiation. Data are stored every fifteen minutes and downloaded monthly. The weather station has been in operation since late 1999. The site has also been telemetered, providing real-time data since 2006.

Nutrient and chlorophyll a monitoring has been an integral part of SWMP since 2002. Water samples are collected monthly at the four datalogger sites and nine additional stations to characterize the spatial coverage of important nutrients including nitrate, nitrite, ammonium, ortho-phosphate and chlorophyll a. Two additional stations are located in the lower river and outside Sikes Cut in order to provide information on the contribution from the river and offshore areas. At the same time diel samples are collected every 2.5 hours by an automated sampler over a complete tidal cycle (25 hours) at the East Bay location.

All SWMP data are collected and processed utilizing NERR Standard Operating Protocols; reviewed for Quality Assurance and Quality Control (QA/QC'd) and submitted to the CDMO annually. Federal Guidance Data Content compliant metadata are created and submitted with the data as well. The data goes through another QA/QC review and is then posted to the web where it is available to any researcher or agency that requests it.

#### **Other Long-term Monitoring Programs**

In addition to SWMP, ANERR has set up numerous other monitoring programs to monitor the health and status of the bay and relate this to changes occurring both locally and in the watershed far upstream.

ANERR began a long-term trawling program in 2000 and now has ten years of monthly fish and benthic macro-invertebrate data at twelve sites. The sampling program mimics the gear and procedures of a long-term study done in the bay by FSU researchers from 1972 to 1984. Many of the same sampling

locations are utilized in the current work. Sixty trawls are performed monthly at these stations that have various habitat and salinity regimes associated with them (five replicates at each site). Fish species and number are determined from each site, along with water quality measurements.

A long-term monitoring and management program for listed species has been in effect since the early 1990's. Sea turtle nests are monitored and protected on beaches within and adjacent to ANERR by staff, volunteers, and other agencies, most of which is coordinated by ANERR. Management of the nests includes predator control, fencing nests, working with the County on a lighting ordinance, monitoring lighting violations, and working with a local non-governmental organization on correcting lighting problems. ANERR also monitors and manages colonial migratory bird species including least terns, black skimmers, Caspian terns, royal terns, brown pelicans, gull-billed terns, American oystercatchers and sandwich terns on various man-made causeways and islands (both natural and man-made) within ANERR in association with the FWC, Franklin County and USACOE.

After Hurricane Opal impacted this area in 1995, a shoreline erosion and dune recovery study was instituted to monitor changes in local shorelines, dune and vegetation loss and recovery, as well as impacts from natural events such as hurricanes. The research section monitors beach and bay shorelines on Cape St. George Island quarterly at six locations to determine shoreline changes. Other monitoring trips are planned during hurricane season to monitor specific changes due to hurricane events.

The research section maintains a GIS database containing over 1500 data layers covering natural resource information (habitats, estuarine species, listed species), research information, land use and cover maps, etc. of areas both within and adjacent to ANERR. This information, developed under an earlier grant, has been updated and maintained for use by other sections, programs, and agencies. The research section works closely with the resource management section on GIS information and projects. Currently the two sections are working to develop a habitat mapping and habitat change plan for ANERR. Important natural communities will be delineated and quantified on a regular interval.

An oyster growth and spatfall monitoring study, started in March 2004, has become another long-term project. Oyster growth and spatfall are monitored monthly at two of the most productive oyster bars in the bay, Cat Point and Dry Bar. Mesh bags containing three size classes of oysters are deployed at two of the SWMP datalogger locations. Differences in growth and spatfall can then be compared to different environmental conditions on either side of the bay. Currently this project has been stopped to analyze growth data.

Started as a SWMP biomonitoring project and continued after the funding ended, the submerged aquatic vegetation (SAV) study continues. This project is designed to detect changes in fresh and brackish SAV species and their distribution in East Bay caused by changes in the salinity regime. These changes could be due to natural events such as droughts or floods or man-made alterations to the historic flow regime caused by proposed upstream water diversions or changing reservoir operations. In 2005, the East Bay area was impacted by Hurricane Dennis and most of the SAV was lost due to inundation by high-salinity waters. It has taken several years for the vegetation to come back to the levels seen before Hurricane Dennis. Presence/absence of SAV is still recorded on a yearly basis at the four locations.

A new monitoring project was started in 2011 looking at the rates of erosion and accretion in the freshwater tidal marshes of the lower Apalachicola River. Surface Elevation Tables (SETs) were installed in the fall of 2011 and will be monitored on a regular basis to determine erosion and accretion rates. At the same time, vegetation monitoring transects will be established adjacent to the SETs to record changes in vegetative communities related to inundation patterns and erosion/accretion due to water level changes.

In 2002, the Apalachicola Bay Aquatic Preserve began a seagrass monitoring project at specific sites to determine seagrass distribution and abundance, trends in seagrass conditions to determine ecosystem health, and to provide insight on any increase/decline in the habitat. Survey methods have changed over the years to develop a more precise monitoring program and ANERR is currently monitoring ten fixed sites (40 quads) within the bay twice a year, at the beginning and end of the growing season. At each location, seagrass species are identified and the percent coverage of each species is determined using Braun-Blanquet coverage estimates. Blade lengths are measured and epiphyte coverage is classified as clean, light, medium or heavy. At specific sites, cores are taken to determine above and below ground biomass and a sediment and epiphyte sample is also collected for lab analysis. In addition, water quality information, including, dissolved oxygen, salinity, temperature, turbidity, pH and photosynthetic active radiation is collected and weather, wind and tide conditions are recorded. In addition, each location where data is collected is mapped on a Trimble GeoXT Geographic Positioning System (GPS) unit.

The aquatic preserve's objectives focus on management issues regarding the seagrass communities



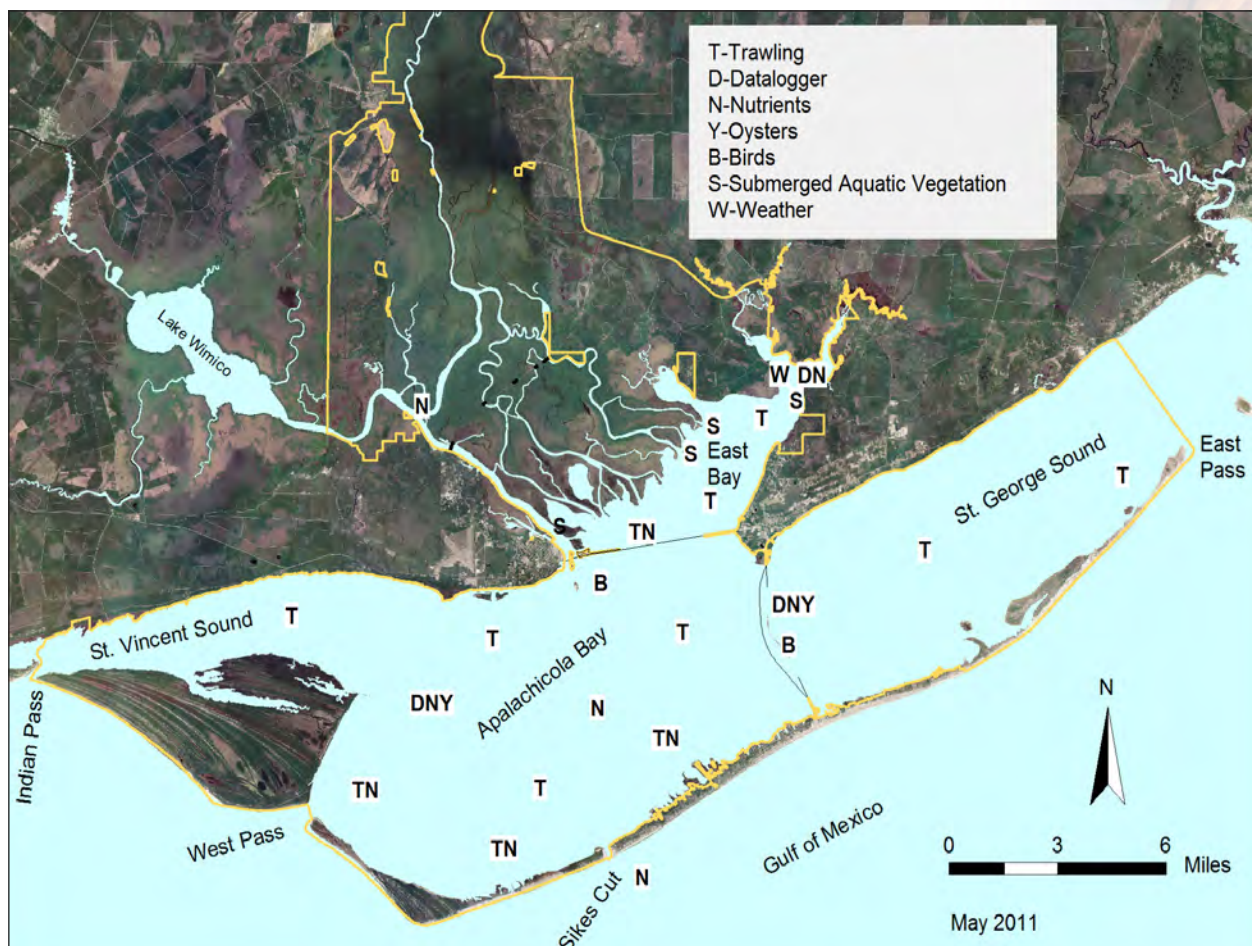
in Apalachicola Bay and the environmental and human surroundings that impact them. As human populations concentrate along our coastlines, anthropogenic impacts to seagrass habitats increase through nutrient loading from runoff, light reduction from increased turbidity and phytoplankton blooms, increased boat traffic, and more direct vessel impacts such as propeller scarring (Fonseca et al. 1998). Future needs include the necessity to analyze 2007 digital ortho quarter quads to map seagrass habitat to compare with historical maps/data. This will be a joint effort between the Aquatic Preserve and the NERR in order to provide an approximate acreage of habitat in the bay.

### Short-term Monitoring Programs

Numerous other studies occur over shorter time periods ranging from 6-months to several years but have defined ending dates. These are generally associated with visiting researchers, grant funded research, graduate student projects, partnerships with other agencies, or state required studies and projects. Examples of a few of these projects over the last several years or to be started within the next year include:

- A two-year continuing oyster bar mapping and detailed bathymetric survey project with NOAA's CSC and USGS Coastal and Marine Geology Program
- A five-year continuing project with FAMU Environmental Sciences Institute as part of the Environmental Cooperative Science Center established to help train under-represented minorities in marine science, develop a conceptual model of Apalachicola Bay to help in management decisions, and fill in data gaps about the system
- A two-year project to develop a GIS project that includes natural resource data layers as well as county permitting and zoning data and train Franklin County planners in its applicability for land-use planning and permitting decisions

In addition, numerous Cooperative Institute for Coastal and Estuarine Environmental Technology funded projects, Graduate Research Fellowship funded projects, state-funded bay and river projects, and outside research projects have occurred and continue to occur with assistance from ANERR staff. All information collected and analyzed during the monitoring program is available to individual researchers for utilization in their research projects. Data will be kept in an easily retrievable database file. Monthly,



Map 25 | System-Wide Monitoring Plan Locations

seasonal, and annual analyses of the data will be available to researchers, decision-makers, school groups, and the general public. Additional stations, parameters, and projects will be added as new management concerns arise and as staff time and equipment become available.

### **Coordination with Other Agencies**

One of the primary objectives of the research program is to promote research within and adjacent to ANERR by outside investigators from universities, government agencies, and private institutions. The benefits of encouraging outside investigators include high quality research, broad and varied levels of expertise, an interdisciplinary approach, potential use of graduate students from universities, and a wide range of funding sources that are not available through NOAA or Department of Environmental Protection (DEP) sources. Agencies, universities, and institutions that have been involved heavily in research and monitoring within or in cooperation with ANERR within the past five years include:

- Florida State University (FSU): Departments of Oceanography, Biology and Geology. ANERR also works closely with researchers from FSU's Coastal and Marine Lab. The Research staff provides technical and logistical support for visiting researchers at ANERR.
- Florida Agricultural and Mechanical University: ANERR is a partner with Florida Agricultural and Mechanical University (FAMU) Environmental Sciences Institute in the Environmental Cooperative Science Center (ECSC), supported by NOAA funding, that is involved in studies in Apalachicola Bay and in training underrepresented minorities in marine and environmental sciences. One research staff member is supported by the ECSC and serves as a liaison between the two institutions.
- NOAA Coastal Services Center (CSC): ANERR has several joint projects ongoing with the CSC in Charleston, SC. The first is an oyster bar mapping and bathymetry project funded by CSC that involves the U.S. Geological Survey's Coastal Program at Woods Hole and the second is a GIS grant to ANERR to set up a GIS and train Franklin County staff to use it in permitting decisions.
- Shellfish Environmental Assessment Section (SEAS) of the Florida Department of Agriculture and Consumer Services: SEAS and ANERR share water quality data and coordinate on any issues or events that might impact oyster resources in the bay.
- U.S. Fish and Wildlife Service: Division of Ecological Services and Division of Fishery Services; and St. Vincent National Wildlife Refuge (NWR): ANERR works with the Division of Fishery Services on listed species, in particular the Gulf sturgeon in the river. ANERR provides technical input to the Division of Ecological Services on dredge and fill permit applications, habitat alteration proposals, and issues related to fresh water diversion on the river. St. Vincent NWR and ANERR coordinate on research activities that occur in or adjacent to the Refuge and provide logistical and technical support to each other whenever needed.
- Florida Fish and Wildlife Conservation Commission (FWC): ANERR works jointly with FWC staff on listed species protection and management, habitat alteration analysis, and fresh water diversion issues on the river. A FWC Fisheries Independent Monitoring program currently exists at ANERR facility with FWC staff monitoring fish and benthic macro-invertebrates in the area as part of their recreational fisheries assessment program.
- Northwest Florida Water Management District (NFWFMD): The NFWFMD is a major landowner within the boundaries of ANERR and has been active in the Apalachicola Basin since 1988. ANERR works with NFWFMD on technical issues related to fresh water diversion in the river. The NFWFMD has funded numerous projects within the bay in the past and staff is currently working with them on a marsh restoration project in the bay.
- U.S. Geological Survey (USGS): ANERR staff coordinates with USGS on issues related to impacts of fresh water diversion on species within the river as well as dredging impacts from the navigation project on the river.
- NERRS Science Collaborative (funds collaborative research within the NERRs).
- Florida Forest Service (FFS): The FFS has become a major landowner within Franklin County and the local drainage basin affecting the East Bay area of ANERR. They currently own over 80,000 acres locally, which have been incorporated into the Tate's Hell State Forest. ANERR staff provides input on matters related to their lands that may impact ANERR waters.
- Franklin County Board of County Commissioners and its Planning Office: ANERR staff works with the planning office staff on permits, grants, and monitoring plans for large-scale developments, especially at the behest of the County Commission which continually seeks input on environmental matters from ANERR staff. The GIS project funded by CSC, with Franklin County as a partner, has enabled ANERR to set up a GIS for the county and train them on its use as a planning tool.

Staff are also involved with many other agencies and universities on research and monitoring projects as well as oil spill planning, land development regulations, resource inventories, and other projects such as local science fairs, advisory committees and planning committees. These entities include but are not



limited to many of the regulatory programs within DEP, Florida Department of Transportation, Florida Coastal Management Program, Apalachee Regional Planning Council, Department of Community Affairs, U.S. Coast Guard, U.S. Army Corps of Engineers (USACOE), The Nature Conservancy, University of Florida, Auburn University, University of West Florida and the University of South Florida.

### **Research and Monitoring Program Guidelines**

Administration of the research program at ANERR is directed by the Research Coordinator, with assistance from the ANERR Manager, and in consultation with outside researchers, appropriate NOAA's Estuarine Reserves Division staff, DEP's CAMA, and other interested parties. The Research Coordinator convenes ad hoc committees as needed to review Graduate Research Fellowship proposals, advise ANERR of new techniques and technologies, and make recommendations on management strategies, etc. These committees are only convened as needed and are generally short-lived. Membership varies based on the issue addressed, type of research reviewed, or conflict of interest concerns. Research opportunities within ANERR are available to any qualified scientist without regard to manner or source of funding. However, both the Research Coordinator and the researcher are expected to follow certain guidelines designed to promote the open dissemination of research results and maintain high quality research, especially research related to current management issues.

### **Research Assets**

Field sampling gear available at ANERR includes water sampling bottles, grab sampler, handheld YSI 85 water quality meters, plankton nets, otter trawls, dip nets, seines, Li-Cor, drop camera and an underwater video camera. Handheld GPS units, including a Trimble GeoXT unit are available for use as well. The Research Section has three research vessels; a 29 foot C-Hawk, a 25 foot C-Hawk, and a 19 foot Carolina Skiff which are utilized for ANERR projects as well as visiting researcher projects. ANERR also has two laboratories, wet and dry, that are available to visiting researchers to use.

Another valuable tool available for researchers and the general public at ANERR is the research library located at the Eastpoint facility. The ANERR library consists of more than 6,000 publications pertaining to research and monitoring studies conducted within ANERR and other related topics, which are organized using a computerized bibliographic indexing system. A variety of computers are available for data storage and management. Also, a functioning GIS with pertinent data layers is available." and "Box-R Wildlife Management Area

## **5.2 / Resource Management Program**

The Resource Management Program addresses how CAMA manages the Apalachicola NERR and its resources. The primary concept of ANERR Resource Management projects and activities are guided by CAMA's mission statement: "To protect Florida's coastal and aquatic resources." CAMA's NERRs accomplish resource management by physically conducting management activities on the resources for which they have direct management responsibility, and by influencing the activities of others within and adjacent to their managed areas and watershed. These activities, and the resultant changes in environmental conditions, affect the condition and management of the resources within their boundaries. Coastal watersheds are especially sensitive to upstream activities affecting water quality and quantity. CAMA works to ensure that the most effective and efficient techniques used in management activities are used consistently within our sites, and when possible, throughout the state. Strongly-integrated Ecosystem Science, Education, Outreach and Training, and Public Use programs provide guidance and support to the Resource Management Program. These programs work together to provide direction to the various agencies that manage adjacent properties, our partners and our stakeholders. ANERR also collaborates with these groups by reviewing various protected area management plans. The sound science provided by the Ecosystem Science Program is critical in the development of effective management projects and decisions. The nature and condition of natural and cultural resources within ANERR are diverse.

### **5.2.1 / Background Status of Resource Management at Apalachicola National Estuarine Research Reserve**

The NERR's stewardship programs integrate science, monitoring and communities to protect, manage, and restore coastal habitats (NOAA, 2007). ANERR's role in resource management has been diverse due the wide range of landowner activities and managing agencies within the boundary. All facets of resource management by ANERR have been guided by the primary goal of providing protection, conservation, restoration and enhancement of habitats within ANERR, as well as those outside ANERR boundaries which may impact ANERR communities. The Resource Management Program specifically strives to have

its managed lands mimic conditions found in Florida's natural communities prior to European settlement impact. The health of Florida's ecosystems depends on dynamic natural processes associated with fire, hydrology and a delicate ecological balance between native species. Restoration and maintenance of the original landscapes of ANERR-managed lands are accomplished by re-establishing those processes. Resource management efforts at ANERR have been directed toward the following;

- Facilitating public acquisition of key lands associated with ANERR's ecosystems to help ensure long-term preservation of resources;
- Identifying essential habitats within ANERR through the application of GIS and associated technology;
- Establishing effective partnerships with local, state, and federal programs that affect ANERR including regulatory agencies to address potential impacts associated with planned development projects within ANERR's watershed;
- Re-introducing the use of prescribed fire as an effective restoration tool to re-establish native biodiversity;
- Invasive species eradication and control;
- Cultural resource identification and protection; and
- Coordination of the research, education, coastal training and resource management programs at ANERR.

### **5.2.2 / Current Status of Resource Management at Apalachicola National Estuarine Research Reserve**

ANERR's Resource Management Program is responsible for implementing science-based management strategies to conserve natural biodiversity. This strategy is accomplished through recommending and implementing approved management strategies to:

- Protect the natural, cultural and historical cultural resources of ANERR and its watershed while enhancing public use and appreciation for these resources;
- Identify needed habitat restoration within ANERR and its watershed;
- Restore natural conditions to the fullest extent possible using the best available techniques;
- Export information on management and restoration activities to environmental managers and decision makers; and
- Maintain and increase populations of listed plant and animal species occurring within ANERR.

#### **Resource Management Priorities**

##### **Maintaining effective resource management partnerships**

The Resource Management Program focuses on partnerships with other land managers and conservation groups (public and private) to accomplish common goals of conservation land restoration. ANERR has been instrumental in the development of the Apalachicola Regional Stewardship Alliance (ARSA). The ARSA Cooperative Invasive Species Management Area (CISMA) was established in 2003 by The Nature Conservancy (TNC) Northwest Florida Program and other stakeholders in the Apalachicola River region with concerns related to non-native invasive species. The primary reason for the creation of the CISMA was to facilitate a network for land managers to address the growing threat of non-native invasive species in the region. Since its inception, the CISMA has conducted semiannual meetings, implemented control projects on private lands, assisted land managers with grant writing, compiled and shared data, performed cooperative outreach and education, and participated in other activities related to non-native invasive species. Future goals include the continuation and expansion of these activities, with increased focus on private land control and public education programs. ARSA developed a Memorandum of Understanding in 2010 to facilitate these efforts. Other valuable partnerships include but are not limited to: FWC, DEP, FFS, NFWFMD, U.S. Fish and Wildlife Service (USFWS), U.S. Forest Service, Bureau of Land Management, and the National Interagency Prescribed Fire Training Center.

##### **Habitat Restoration and Conservation**

ANERR's Resource Management Program is charged with managing and monitoring ANERR habitats in order to preserve the historic natural state of our many and varied types of estuarine communities, as well as, our historic and cultural resources. Any natural systems that have become altered over time are our responsibility to restore, as close as possible, to a natural and pristine state. Habitat restoration is accomplished through the use of management tools such as surveying, monitoring, hydrologic restoration, prescribed fire, exotic/invasive species control, boundary posting and protection, and regulatory review. ANERR focuses predominantly on the science of restoration and will adopt the Society for Ecological Restoration guidelines for all restoration projects. Eight key focus areas include:

- Improving site-based restoration project planning based on historic conditions, desired outcome and a landscape scale context;
- Developing effective approaches to and testing innovative technology for restoration;



- Monitoring restoration response;
- Serving as local reference or control sites;
- Translation/transfer of restoration information;
- Scientific and technological advice to support policy and regulatory decisions;
- Constituency building for support of restoration science;
- Regional science coordination.

Because of their federally protected status, biogeographic diversity, on-site facilities, long-term monitoring programs and data, and professional staff capabilities in science and education, the reserves are excellent platforms for advancing the science of restoration, staging demonstration restoration projects, and monitoring their long-term response (NOAA, 2012).

### Fire Management

ANERR's Resource Management Program manages its land to restore and maintain natural communities in an "original" state. This is accomplished through the implementation of specific land management activities. Florida's natural areas have seen alteration and degradation from a variety of sources. The fragmentation of natural communities from roads and development, coupled with the establishment of vast timber farms, have led to extensive fire suppression; either by static artificial barriers preventing fire spread, or the active suppression of forest fires. Most of Florida's natural communities and many plant and animal species depend on recurring fire for their very survival. Restriction of periodic fires disrupts the natural fire ecology necessary to maintain biodiversity of upland habitats within ANERR. The re-introduction of fire through a complex prescribed burn program mimics naturally occurring fire on ANERR-managed lands. Periodic fires play an important role in maintaining habitat value for wildlife, and species diversity within plant communities. In addition, fires recycle nutrients to the soils, induce seed dispersal and germination in many native plants, and remove understory that can fuel dangerous wildfires that threaten residential areas.

Fire management through prescribed burns is particularly challenging on ANERR-managed lands as these areas are often located near development. ANERR staff conduct prescribed burning on ANERR-managed lands through the use of highly trained burn staff and with the help of partners. Burning is the single most effective tool for restoration of Florida's many pyrogenic natural communities.

In February 2012, ANERR partnered with FFS to burn approximately 15 acres of ANERR-managed lands at the Unit 4 parcel on St. George Island. This area was previously burned in 1999 and is in need of continued fire restoration to help prevent the spread of future wildfires in this urban interface area. Staff also cooperates with FWC to burn the Lower River Marsh parcel. This parcel is only accessible by boat and is burned in conjunction with the adjacent Apalachicola River Wildlife and Environmental Area (ARWEA) lands. In addition, ANERR has the unique opportunity to practice natural fire regime management on Little St. George Island. This 2,182 acre island consists of mostly slash pine cover and experiences occasional lightning strikes. Staff remain on the island to protect structures and insure visitor safety during fires. If severe conditions exist, action will be taken to extinguish the fire. There are no privately owned assets on the island. Dendrochronological techniques were used to precisely date fire-scars from 52 slash pines on Little St. George Island in 2004 and have provided the first step in addressing some of the questions surrounding fire management of barrier islands. This data provided



*A adult royal tern with newly hatched chick.*

information on historic fire frequency, fire season, and gave some indications of the spatial extent of fires, thus elucidating the historic role of fire on a Gulf coast barrier island (Huffman, Platt, Grissino-Mayer & Boyce, 2004).

### **Invasive Species Management**

Invasive species are species not native to an ecosystem, and whose introduction to that ecosystem can harm the environment, public health or welfare. Invasive species may constitute the largest single threat to our coastal ecosystem, our coastal economy, and human health in the coastal region. Invasive species often out-compete native species which can result in the catastrophic loss of both plant and animal diversity. ANERR's Resource Management Program continually monitors its land for invasive-species infestations. Invasive plants that are found are mapped and either chemically treated with the appropriate herbicide or physically removed by hand. Chinese tallow, cogon grass, Japanese climbing fern and Brazilian pepper are the current focus for removal. Researchers anticipate that climate change will encourage the local introduction of species otherwise found further south.

### **Protecting Cultural and Historical Resources**

The management of cultural and historical resources is often complicated because these resources are irreplaceable and extremely vulnerable to disturbances. Coastal erosion and vandalism threaten the integrity of ANERR's cultural resources. Regular monitoring of all cultural and historic sites will be implemented on a regular schedule to ensure protection of these resources. In addition, all land management activities involving ground disturbance components will undergo a cultural resources assessment using best management practices by the Florida Department of State Division of Historical Resources (DHR) and will follow Management Procedures for Archaeological and Historical Sites and Properties on State-owned or Controlled Lands (Appendix E.6).

### **Habitat and Species Monitoring**

The Resource Management Program monitors the effects of its management activities using a variety of methods. The effects of prescribed burning are monitored through the use of precise photo-points established to gather long-term visual changes to the landscape. Individual species surveys are conducted to determine changes in populations of the various listed plant species. Many of the listed plant species have shown a dramatic increase in numbers directly attributable to the correct application of fire on ANERR-managed lands. The Stewardship Coordinator will continue to coordinate with the Research Coordinator in implementing a monitoring project that will measure the quantity and quality of marsh vegetation in accordance with SWMP biological monitoring protocols for emergent vegetation as part of the NERRS Sentinel Site Program development. Stewardship staff will also assist with measuring the relative elevation of marsh sediments using Sediment Elevation Tables (SETs) at these sites.

### **Habitat Mapping**

Climate change is an important regional issue along the Gulf coast. A clear understanding of current and historic vegetation communities is important as we track ecological change associated with changes in climate. For this reason, habitat mapping remains a priority topic for the stewardship staff at ANERR. The GIS Specialist has utilized ArcGIS to identify and digitally map habitats within ANERR's 234,715 acre boundary. Groundtruthing of the habitat delineation and a written accuracy assessment are in the process of being completed. The habitat maps generated by this effort will be used to measure future change. Stewardship staff will continue to utilize ArcGIS to identify and digitally map key habitats/species on ANERR-managed lands to assist in directing management decisions for restoration, prescribed burns, stewardship and land acquisition projects.

### **Public Access/Use**

Public access to ANERR lands will continue to be improved by increasing the number of access points, installing interpretative signage and through regular trail maintenance. Specifically, a nature trail will be delineated at the new ANERR Visitor Center. The new ANERR facility is situated on approximately 26 acres of prime coastal uplands along Apalachicola Bay. While the property consists of several fragmented, modified areas, it also exhibits common natural communities found along Florida's Gulf coast. An array of wildlife utilizes the property, including several species of birds, most notably a pair of bald eagles. The shoreline of the property is susceptible to erosion and through mitigation projects, two living shoreline projects have been established to help with stabilization. A trail system at the facility will allow the public to learn more about the habitats and species that are commonly found along the Gulf coast. They would be able to learn about restoration efforts including living shorelines and prescribed burning. Interpretive signage will be installed along the trail and a spotting scope will allow visitors to view the active bald eagles nest. Other demonstration areas to be integrated into the trail system will





*A group of students participating in a field exercise.*

include xeric gardening, butterfly gardening and green building practices. Trails will be used for self-guided tours and for lectures/classes offered by ANERR (Map 27).

### **Facilities and Staffing**

Current staffing for the ANERR Resource Management Program includes a Stewardship Coordinator, GIS Specialist and a part-time Environmental Specialist II. ANERR's new facility has direct access to the bay shoreline and coastal habitats which allows for more onsite field-based activities. A trail system at the facility will allow the public to learn more about the habitats and species that are commonly found along the Gulf coast.

### **5.2.3 / Citizen Support Organization Involvement**

The Friends of the Reserve supports the Resource Management section periodically with stewardship activities. Specifically, Friends of the Reserve has supported efforts to protect nesting sea turtles on St. George Island and Little St. George Island. The Friends also support several workshops throughout the year that educate the public on best management practices for coastal upland areas.

### **5.3 / Education, Outreach and Training Program**

The Education, Outreach and Training Program components are essential management tools used to increase public awareness and promote informed stewardship by local communities. Education programs include on and off-site education and training activities. These activities include: field studies for students and teachers, the development and distribution of media, the distribution of information at local events, the recruitment and management of volunteers, and management of the new ANERR Visitor Center. The design and implementation of education programs incorporates the strategic targeting of select audiences. These audiences include all ages and walks of life; however, each represents key stakeholders and decision-makers. These efforts by the Education, Outreach, and Training Program allow ANERR to build and maintain relationships and convey knowledge to the community; invaluable components to successful management. The Education, Outreach and Training Program encompasses the components of the NERR System-wide Education Program.

**5.3.1 / National Estuarine Research Reserve System-wide Education and Training Plan (\$921.13(a)(4), Code of Federal Regulations)**

The NERR System’s mission includes an emphasis on Education and Training as defined in the regulations (15 C.F.R. Part 921 [b]).

**The National Estuarine Research Reserve System-wide Goal for Education and Training in the NERR Strategic Plan 2011-2016**

NERRS education and training increases participants’ environmental literacy and ability to make science-based decisions related to estuaries and coastal watersheds.

**National Estuarine Research Reserve System-wide Education and Training Objectives in the NERR Strategic Plan 2011-2016**

- Enhance the capacity and skills of teachers and students to understand and use NERRS data and information for inquiry-based learning;
- Increase estuary literacy and promote active stewardship among public audiences through the development and delivery of tools and programs addressing climate change, habitat protection and water quality;
- Improve the capacity and skills of coastal decision makers to use and apply science-based information in decisions that affect estuaries and coastal watersheds.

**National Estuarine Research Reserve System-wide Education Program**

The NERR System provides a vehicle to increase understanding and awareness of estuarine systems and improve decision-making among key audiences to promote stewardship of the nation’s coastal resources. Education and interpretation in the reserves incorporates a range of programs and methodologies that are systematically tailored to key audiences around priority coastal resource issues and incorporate science-based content. ANERR staff members work with local communities and regional groups to address coastal resource management issues, such as nonpoint source pollution, habitat restoration and invasive species. Through integrated research and education programs, the reserves help communities develop strategies to deal successfully with these coastal resource issues. Formal and non-formal education programs in the NERRs target K-12 students, teachers, university and college students and faculty, as well as conservation and civic organizations, youth organizations, recreational users, tourists, and the local community.

K-12 and professional development programs for teachers include the use of established coastal and estuarine science curricula aligned with state and national science education standards and frequently involves both on-site and in-school follow-up activities. ANERR education activities are guided by national plans that identify goals, priorities, and implementation strategies for these programs. Education and training programs, interpretive exhibits and community outreach programs integrate elements of NERRS science, research and monitoring activities and ensure a systematic, multi-faceted, and locally focused approach to fostering stewardship.

**National Estuarine Research Reserve System-wide Coastal Training Program**

The Coastal Training Program (CTP) provides up-to-date scientific information and skill-building opportunities to coastal decision-makers who are responsible for making decisions that affect coastal resources. Through this program, NERRs can ensure that coastal decision-makers have the knowledge and tools they need to address critical resource management issues of concern to local communities. Housed at the NERRs, which are partnerships between NOAA and a state’s environmental agency, there are 28 CTPs nationwide.

The NERR System CTPs offer programs relating to coastal habitat conservation and restoration, biodiversity, water quality and sustainable resource management and integrate NERR-based research,

YEAR	2007	2008	2009	2010	2011*	2012	2013**
Walk-in Visitors	6,694	10,726	9,819	8,340	19,330	28,897	32,400
Group Programs	2,575	2,167	2,897	1,402	2,615	2,923	1,204
Festivals & Events	1,675	2,406	2,450	330	1,500	2,078	3,046
<b>TOTAL</b>	<b>10,944</b>	<b>15,299</b>	<b>15,166</b>	<b>10,072</b>	<b>23,445</b>	<b>33,898</b>	<b>36,650</b>

\* The new ANERR visitor center opened to the public in February 2011.

\*\* projected visitor numbers based on first six months





*Educators, community decision makers, and state agencies staff participate in a Reserve Coastal Training Program field study and lecture.*

monitoring and stewardship activities. Programs target a range of audiences, such as elected officials, land use planners, regulatory personnel, coastal managers, agricultural and fisheries interests, private land development interests, volunteer boards, contractors, consultants, non-profit agencies and organizations and others who wish to make informed decisions about the nation's coasts and estuaries. These training programs provide opportunities for professionals to network across disciplines, and develop new collaborative relationships to solve complex environmental problems. Additionally, the CTP provides a critical feedback loop to ensure that professional audiences inform local and regional science and research agendas. Programs are developed in a variety of formats including seminars, hands-on skill training, participatory workshops, lectures and technology demonstrations. The CTP also provides technical assistance and support to decision-makers. Participants benefit from opportunities to share experiences and network in a multidisciplinary setting, often with a NERR-based field activity.

Partnerships are important to the success of the program. NERRs work closely with advisory committees, state coastal programs, Sea Grant college extension and education staff, and a host of local partners in determining key coastal resource issues to address, as well as the identification of target audiences. Partnerships with local agencies and organizations are critical in the exchange and sharing of expertise and resources to deliver relevant and accessible training programs that meet the needs of specific groups.

The CTP requires a systematic program development process, involving periodic review of ANERR's niche in the training provider market, audience assessments, development of a three to five year program strategy, a marketing plan and the establishment of an advisory group for guidance, program review and perspective in program development. The CTP implements a performance monitoring system, wherein staff report data in operations progress reports according to a suite of performance indicators related to increases in participant understanding, applications of learning and enhanced networking with peers and experts to inform programs.

Major goals of the CTP are to share current science regarding coastal watersheds, estuaries and nearshore waters with decision-makers and to increase understanding of the environmental, social and economic consequences of human activities and decisions on coastal ecosystems. Beyond science-based knowledge and skills, the CTP can help coastal decision-makers to make more informed decisions affecting the health of coastal resources, understand a range of perspectives in order to resolve coastal conflicts, and build broader constituencies for coastal stewardship.

### **5.3.2 / Background of Education, Outreach and Training at the Apalachicola National Estuarine Research Reserve**

#### **Background of the Education and Outreach Program**

Following, is a brief history of landmark activities that have led to the current structure and function of ANERR's Education and Outreach Program. ANERR completed and signed an Administration Agreement with its state, federal and local partners in 1986. The stated objective in this agreement is: "to establish and manage, through federal-state-local cooperation, a permanent National Estuarine Reserve to provide opportunities for long-term research and education." One of the four stated goals in the plan to achieve this objective is to: "enhance public awareness and understanding of the estuarine environment through education programs in the public school system and on-site interpretation within ANERR." To these ends, ANERR established the Reserve Advisory Council and signed its charter in April of 1987.

An Education Coordinator was also hired during this early phase of ANERR's development and community meetings were conducted to establish education program priorities. From these early guiding activities, ANERR's draft management plan was created. Revisions were made until the first approved management plan was adopted in 1993. This plan outlined educational goals, objectives, resources, implementation strategy and other area environmental education programs. The implementation strategy section outlined all active and potential future programming related to education and outreach at ANERR. This section also linked the activities with important local themes as well as themes associated with the system-wide NERR program.

Since that time, the Education, Outreach and Training Program has operated under this basic guiding structure, with minor revisions and updates as deemed appropriate. Some of the primary areas of program development have focused on field trips for groups, aquarium facilities, publications, training workshops for environmental professionals, classroom curricula, guest lectures, exhibits, and classroom educational resources. Since ANERR's last approved management plan, education staff has made substantial progress in developing some of the potential expansion activities that were listed in that plan. These include: new indoor interpretive facilities, two ANERR videos, a boater's guide, an ANERR coloring/activity book and additional curricula.

Substantive changes in the direction of ANERR's Education, Outreach and Training Program are proposed in this management plan. Opportunities have developed at both the state and national levels of ANERR's management. The next section in this plan will highlight anticipated changes and outline perceived future needs to continue providing the public with an exciting, worthwhile Education, Outreach and Training Program.

#### **Background of the Coastal Training Program**

The CTP provides a venue for coastal decision-makers to discuss their experience, expertise, opinions and available resources for priority coastal issues. ANERR has been offering coastal decision makers training for several years, primarily through 1-2 day workshops that often include a field component. In 2003 a full time CTP coordinator was hired. This enabled ANERR to move forward with implementation of the program and develop the required documents (needs assessment, market analysis, strategy document and marketing plan). An updated Strategy Document was completed and approved by NOAA in 2009. An education and training assistant was hired in 2005 to work half time with the CTP and half time with the education program, as the CTP moved into full implementation. In January 2012, the half-time assistant started working full time with the education program and the CTP acquired a new full-time assistant.

Past workshop topics have included seagrass protection; minimizing impacts, including Leave No Trace; wetland buffers and restoration; dune restoration; non-point source pollution; watershed assessment, stormwater management and low impact development; red tide; FireWise, and coastal hazards including Mapping and Modeling Coastal Inundation and ecological effects of sea level rise; and others.

In addition, ecosystem studies have included ecological restoration, the Panhandle Habitat Series and Florida Master Naturalist Program courses. The new Panhandle Habitat Series program was developed by and is taught by CTP staff based on the need for ecosystem training for environmental professionals. The classes are "Barrier Islands," "Seagrass Beds and Salt Marshes," "Estuaries," "Flatwoods and Savannahs," "Rivers and Floodplains" and "Sandhills and Ravines." Each one-day class has morning presentations and an afternoon field trip. Participants include federal, regional, state and local staff; environmental consultants; ecotour operators; green guides; environmental organization staff and board members; science educators; and volunteers. The CTP has also offered each of the three 40-hour Florida Master Naturalist Program courses (Coastal Systems, Freshwater Wetlands and Uplands) at least twice.





*The Reserve's Coastal Training Program brings together individuals and groups responsible for making decisions regarding our natural environment.*

### **5.3.3 / Current Status of Education, Outreach and Training at the Apalachicola National Estuarine Research Reserve**

#### **Current Status of the Education and Outreach Program**

At the national level, within the NERR System, an effort is being made to develop a stronger, more cohesive approach to K-12 formal education programs. NERRs around the country have been conducting diverse programs for this constituency for many years. There is now a movement to present some system-wide educational products to foster a national image that will be recognized and utilized by K-12 educators on a broad scale. The title given to this system-wide project is the K-12 Estuary Education Program (KEEP). KEEP consists of three main components that NERRs will be implementing (professional teacher development workshops using a new Estuaries 101 curriculum, K-12 field education programs, and web-based resources for educators). These components also make good use of a SWMP Education Interface tool to introduce educators and students to the importance of data collection and analysis. The ANERR Education and Outreach Program will be moving towards implementation of the KEEP program as part of the system-wide effort as funding and staffing allow. The planning phase of KEEP will involve conducting a needs assessment and a market analysis to aid in meeting site-specific educational needs. After this planning phase ANERR will begin conducting workshops for educators. Some of ANERR's existing field programs will be tailored to meet the goals of KEEP and ANERR will work with local teachers to highlight available web-based resources. This will make educational resources available to teachers and students that may not be able to come to ANERR for a field trip.

At the state level, ANERR moved into a new facility in Eastpoint during February 2011 which presented major challenges and opportunities for the Education and Outreach Program. This facility is much larger than the former location and the new site is much more visible and accessible to a higher proportion of the area visitors. ANERR is anticipating an increase in visitation to the headquarters. Table 6 highlights program numbers over the past five years compared to projected numbers at the new facility in Eastpoint. With this in mind, ANERR is planning to re-tool its educational strategy to address a higher demand for on-site programming with day-use visitors. Programming trends include less emphasis on the day-long field trips and more emphasis on using site facilities and field experiences that can be conducted



in shorter time blocks. This type of programming will encourage the use of volunteers. ANERR will be looking for ways to establish a stable core of volunteers who can aid in meeting the programmatic needs. The major opportunity for the Education and Outreach Program is in the fact that the new center is now an extremely attractive destination for groups. There is much more to see and do than at the previous facility. Another challenge facing our efforts to reach students in a small rural county comes from diminished funding available for groups to take field trips. This however, has been mitigated by a supportive “Friends” group that provides funding to the school district for local schools to come to ANERR.

### **Education Program Staffing and Support**

The Education Program currently has a full-time Education Coordinator and two full-time Education Specialists, dedicated to providing programming for selected audiences. There are also numerous other ANERR staff who support education programs through collaborations between sectors, visitor center operations and administrative functions.

To fully achieve the program directions outlined above, the Education, Outreach and Training Program will propose new staffing and funding structures. In order to move into development of KEEP, ANERR will require funding to conduct the needs assessment and market analysis. It is anticipated that this funding will be provided through a federal grant as the system-wide effort for KEEP progresses. Additional funding will be needed as ANERR begins to conduct professional teacher development workshops with the Estuaries 101 curriculum. There are also funding and staffing needs related to the new facility in Eastpoint. Existing staff will not be able to effectively absorb the additional burden for running and maintaining a public facility of this magnitude. A full time facilities manager will be needed. In order to develop and maintain a successful volunteer program hiring a half-time volunteer coordinator is recommended. Additional funding would be needed to purchase volunteer supplies, uniform shirts, awards, etc. This funding may be available through ANERR’s existing Friends group. It is important to develop outdoor interpretive facilities for the public and for the use of education staff and volunteers while conducting programs. An interpretive trail on the grounds of the new center is envisioned. Funds will be required for construction and interpretive signage. Lastly, it will be vital to maintain publication of ANERR’s newsletter, the Oystercatcher. This is a key link between ANERR and its supportive constituency. It will also be a key link with the volunteer base that we will need in order to provide the programming at the new center.

### **Education Program Coordination with Other Agencies and Groups**

On the national level, the Education Coordinator works with other ANERR and Estuarine Reserve Division staff by participating on the Evaluation Work Group and the Teachers on the Estuary Workgroup and by attending meetings as scheduled. A primary local partner for the Education and Outreach Program is the Florida Park Service which allows ANERR education groups to enter the park with no fee. ANERR staff have also worked with staff from NFWFMD to produce relevant educational publications. Annually, ANERR works with state and federal agencies in cooperative efforts at many local festivals and events, some sponsored by ANERR and others sponsored by other agencies such as FWC, USFWS and FSU. ANERR also partners in educational efforts with the privately affiliated Apalachicola Riverkeeper non-profit group.

### **Education and Outreach Goals and Objectives**

The ANERR-specific Education and Outreach Program goals are as follows:

- To develop public understanding of the estuarine, wetland, terrestrial and fresh and salt water habitats and to link these habitats as functional parts of a dynamic ecosystem; and
- To develop a sense of public responsibility for environmental conditions and instill a new ethic of resource protection and conservation.

The ANERR-specific Education and Outreach Program objectives are as follows:

- Audiences that impact ANERR resources will receive informational and educational materials supporting the goals of ANERR;
- Audiences participating in ANERR educational programs will learn about ANERR’s economic, biological, recreational, educational, cultural and intrinsic values;
- ANERR educational programs will provide first-hand field experiences with the natural systems of ANERR;
- Audiences participating in ANERR educational programs will receive instruction about personal involvement and responsibility for maintenance of ANERR’s natural systems;
- Audiences participating in ANERR educational programs will learn the purposes and benefits of environmental regulations;
- ANERR educational programs will disseminate ANERR research data and develop educational themes on research topics and management concerns.





*A public marina on Apalachicola Bay at sunset.*

### **Targeted Audiences**

Targeted audiences relate to priority issues, ANERR-specific objectives and system-wide NERR objectives. Each aspect of ANERR's Education and Outreach Program will have its own subset of these audiences listed below.

- Walk-in visitors to ANERR headquarters;
- Formal education groups (school-based);
- Informal education groups (conservation, civic, church, seniors, etc.);
- Recreational users (boaters, fishermen, hunters, nature watchers);
- Commercial users (oystermen, charter boats, fishermen, shrimpers, processors, dealers);
- Landowners;
- Policy makers;
- Tourists;
- Volunteers;
- Media; and
- Local community.

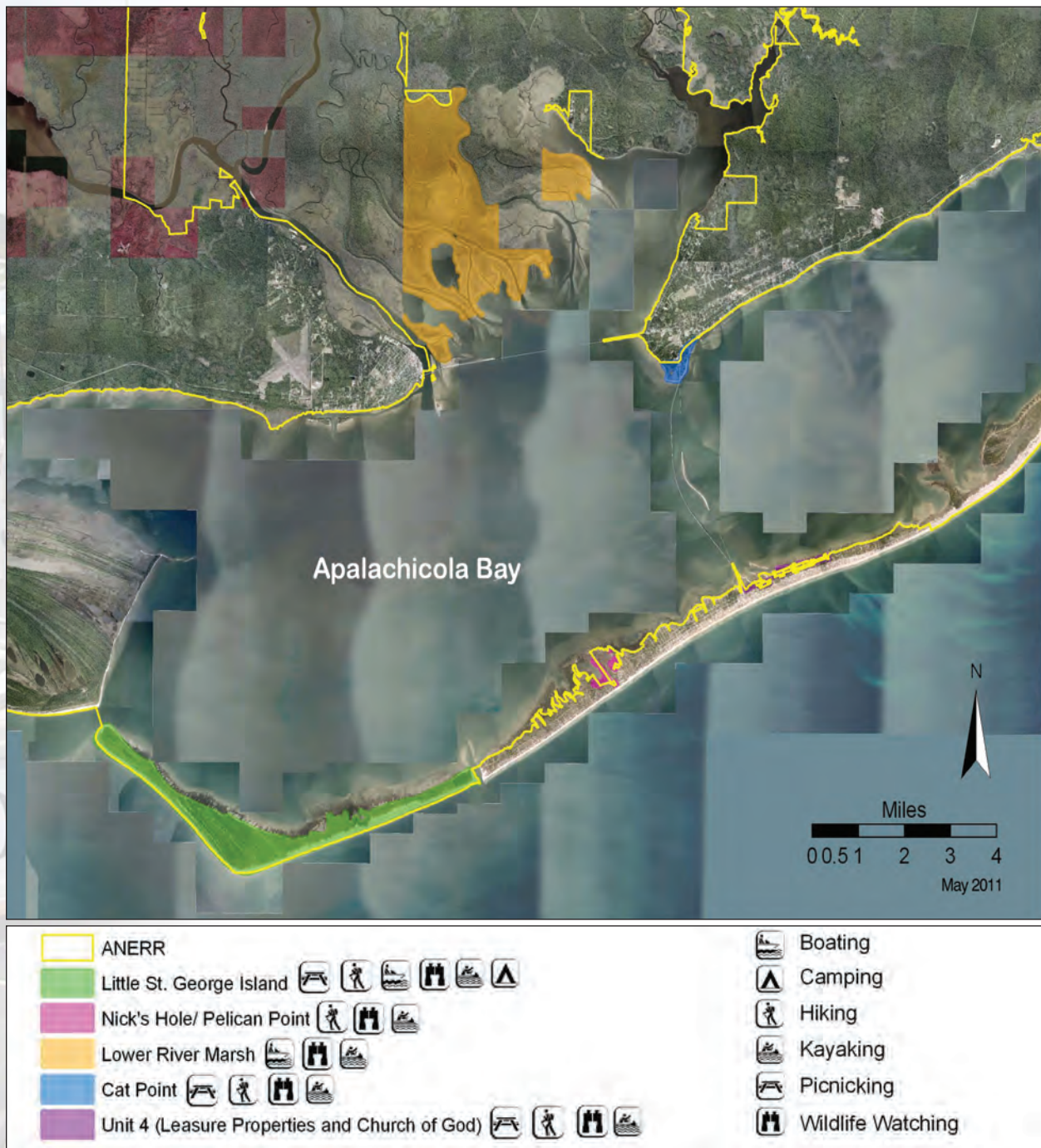
### **Current Status of the Coastal Training Program**

The CTP training programs are conducted primarily through workshops. The training programs are planned based on the results of the completed market analysis and needs assessment, the strategy document and marketing plan, input from the CTP Advisory Committee, program evaluations, additional formal and informal needs assessments and other opportunities and requests that may arise due to local needs.

The formats for delivery of CTP activities include workshops, field exercises, technology demonstration and training, technical assistance, awareness presentations to local officials, and referrals for additional resources and support. The CTP offers at least one of the 40-hour Florida Master Naturalist Program courses (Coastal Systems, Freshwater Wetlands or Uplands) each year. The new ANERR Visitor Center has larger facilities for training than the previous site. The auditorium room has new projection and sound equipment. The site also has direct access to the bay shoreline and coastal habitats which allows for more onsite field-based activities for training programs. The new office has more storage space, but is still somewhat limited because of use by other ANERR programs.

The CTP also provides technical assistance and support to and participates in committees and special programs, such as the Carrabelle Waterfronts Partnership, Living Shoreline Initiative, the Gulf of Mexico Alliance (GOMA) and the GOMA Community Resilience Priority Issue Team. A proportion of ANERR's training and technical assistance involves the Nonpoint Education for Municipal Officials (NEMO) Network efforts relating to nonpoint source pollution and low impact development. North Florida became a member of the National NEMO Network in 2006. NEMO is an educational program for local land-use officials that addresses the relationship of land use to natural resource protection on community watershed stewardship involving local elected officials.

A statewide CTP website "Florida Coastal Strategies" ([www.floridacoastalstrategies.org](http://www.floridacoastalstrategies.org)) provides easy access to science-based information, model ordinances, case studies and decision-making tools to elected and appointed officials and planners. The site is organized around the three main topics that include water quality and quantity, shoreline management and coastal erosion, and land use density and intensity. The CTPs at the three NERRs in Florida post their training activities on this site. The five Gulf Coast CTPs also utilize the [www.gulfalliancetraining.org](http://www.gulfalliancetraining.org) web site, which was created through a GOMA





regional coastal training project with a regional training coordinator. All GOMA-related CTP training is posted along with related presentations and documents. All resilience and climate related programs are also announced on the StormSmart Coast website ([www.stormsmartcoasts.org](http://www.stormsmartcoasts.org)). CTP events and articles are included in the ANERR newsletter and articles are often provided to other publications, both web-based and printed. The CTP has several versions of PowerPoint presentations that give overviews of the CTP and ANERR programs, as well as other specific subjects.

### **CTP Staffing and Support**

CTP at ANERR is in full implementation and continues to offer more programs. ANERR has had a full time CTP Coordinator since 2003. An education and training assistant was hired in 2005 to work half time with the CTP and half time with the Education and Outreach Program. In January 2012, the half time assistant started working full time with the Education and Outreach Program, and a full-time Coastal Training Specialist was hired to work with the CTP. The new full-time CTP assistant will focus on specific issues and topics, including marine fisheries, stormwater and watersheds and will be capable of conducting some programs independently of the CTP Coordinator. The new Green Industries Best Management Practice training program for landscapers and lawn maintenance workers has been expanded to the region, along with the additional position of a northwest Florida regional coordinator who was hired in 2010. The program has had a significant increase in participants and offerings since the coordinator began. The network of contacts and program services encompass the entire stretch of the northwest Florida coastline from Pensacola to Crystal River.

Participation and demand have increased steadily and new programs are anticipated. An additional part-time administrative assistant would be helpful. To address new program needs, grants and other avenues are being explored. However, the full-time CTP assistant is sharing an office with the CTP Coordinator and there are no extra offices for new staff. The increased participation in CTP programs has also fostered interest in volunteering for ANERR. The CTP does use a few volunteers occasionally to help set up for programs and help lead field trips. With the new full-time CTP assistant a small group of people who wish to volunteer could be managed. However, there is no volunteer coordinator to handle increased volunteer activities. A more robust volunteer program will require at least a half-time volunteer coordinator.

The CTP has an advisory committee made up of a permanent Steering Committee and additional annual appointments that bring in members with interests in current priority issues. Meetings are scheduled as needed, approximately once a year. Much of the committee's work is accomplished through email and telephone communications. Members may be asked to review and provide feedback on surveys, needs assessments and other data collection instruments, strategic documents and marketing plan updates; identify topics, issues, audiences, and potential presenters for CTP training programs; and act as partners and suggest other partners for specific training programs.

### **CTP Coordination with Other Agencies**

The CTP coordinates with partners for specific training programs and through technical assistance and committee/workgroup activities. Training program partners vary but may include the FSU Coastal and Marine Laboratory, NOAA's Coastal Services Center, FWC, Florida Waterfronts Program, and regional state parks and other programs within DEP. The CTP regularly works with the Carrabelle Waterfronts Partnership, the Northwest Florida Living Shoreline Initiative, Apalachicola Riverkeeper, as a representative of ANERR on the FAMU Center for Water and Air Quality's Advisory Council.

The CTP Coordinator participates in GOMA and the GOMA Community Resilience Priority Issue Team as a representative for the State of Florida, leads the Team's communication workgroup, and coordinates GOMA related projects with CTPs from the five Gulf of Mexico NERRs.

The CTP program collaborates with the other two NERRs in Florida and the three regional coordinators on the University of Florida, Institute of Food and Agricultural Sciences Florida-Friendly Landscaping™ Program Green Industries Best Management Practices (GI-BMP) training program. This includes attending team meetings, conference calls, coordination on needs and next steps for completing the strategic plan, sharing resources and training contacts for common issues and topics and planning workshops.

Other NOAA coordination includes participating as a member of the NOAA Engagement Workgroup for Gulf Coast Education, Outreach and Extension Coordination; the NERRS Sentinel Sites Advisory Committee; the NERRS Ecosystem Restoration Workgroup and the CTP Oversight Committee as a CTP representative. The CTP Coordinator attends the annual NERRA/NERRS meeting and sector meetings when possible, depending on funding and travel approval.

## CTP Specific Goals and Objectives

The main goal of the CTP is to improve decision-making related to coastal resource management at the local and regional levels. This will be accomplished by the following ANERR specific CTP goals and objectives:

### Goals

- Provide the best available research and science-based information, tools, techniques and resources to individuals and groups responsible for making important decisions regarding resources within watersheds, estuaries and nearshore waters;
- Increase understanding of the environmental, social and economic consequences of human activities and decisions on coastal ecosystems;
- Help decision-makers implement better informed decisions that affect communities, economics, coastal resources, and natural functions and health of coastal ecosystems;
- Facilitate an understanding of a range of perspectives in order to resolve coastal conflicts and build broader constituencies for coastal stewardship; and
- Increase networking and collaboration across stakeholders and disciplines.

### Objectives

As a result of ANERR's CTP:

- Coastal decision-makers will increase their understanding of coastal hazards, community resilience, climate change, floodplain strategies, sustainable development practices, and wastewater treatment and disposal issues;
- Local decisions on actions related to the priority issues will be increasingly based on science and research;
- Decision-makers will acquire and use new tools and skills for making informed decisions about coastal hazards, floodplain management, watershed planning, sustainable development practices and wastewater treatment and disposal;

Activity	Approved	Conditional	Rejected
Protection of endangered and threatened species	•		
Ecosystem maintenance	•		
Soil and water conservation	•		
Hunting		•	
Fishing	•		
Wildlife observation	•		
Hiking	•		
Bicycling	•		
Horseback riding		•	
Timber harvest		•	
Cattle grazing			•
Camping		•	
Apiaries		•	
Linear facilities			•
Off road vehicle use		•	
Environmental education	•		
Citriculture or other agriculture			•
Preservation of archaeological and historical sites	•		
Canoe/Kayaking	•		
Boating	•		



- Decision-makers will increase their knowledge of how and where to access resources and technical assistance;
- Additional collaboration, networking and support among the Gulf of Mexico coastal communities' stakeholders and decision-makers will occur;
- A forum will be created to facilitate learning about issues, sharing ideas and networking related to fisheries;
- Coastal hazards, resilience and floodplain related programs will be offered in locations to serve the Florida Panhandle and Big Bend regions (coastal watersheds from Pensacola to Crystal River);
- Environmental professionals will continue to attend ecosystem-focused training.

The CTP will build on and complement the ongoing research, stewardship and education programs of ANERR, its partners and other training providers to support and contribute to ANERR's goals. The priorities and objectives of the CTP also address the goals and priority issues outlined in the NERRS Strategic Plan and reflect issues identified by the Florida Coastal Management Program and the Coastal Services Center. In addition, most of the CTP programs focus on issues and actions that are the same as or similar to those defined by GOMA.

### **Targeted Audiences**

The audiences to be targeted relate to identified priority issues, integrating results of the CTP Advisory Committee, formal and informal needs assessments and ongoing audience evaluations. Actual targeted audiences will be specific to each program.

- Building and development interests;
- Elected officials in Florida counties bordering the Apalachicola River;
- Emergency and floodplain managers;
- Home owner and neighborhood associations;
- Land use planners;
- Law enforcement and regulatory staff;
- Environmental consultants;
- Land and resource managers;
- Lawn maintenance and landscaping businesses;
- Public works and public lands grounds maintenance staff;
- Resource and recreation providers and tour guides (natural and cultural resources); and
- Septic tank installers.

The priority issues include:

- Wastewater treatment and disposal including current scientific research, design and maintenance; treatment and disposal alternatives; and types of systems;
- Coastal hazards, resilience, floodplain strategies (Coastal No Adverse Impact Workshops: climate adaptation, planning, mapping and decision support tools);
- Ecosystem restoration and collaboration/coordination among training providers;
- Land use planning and several very closely related issues, including sustainable practices;
- Ports, marinas, boating and fisheries issues; and
- Water quality and quantity, including floodplain and stormwater management and habitat friendly shoreline stabilization (Living Shorelines).

### **5.4 / Public Use and Access Program**

The Public Use Management Program addresses the delivery and management of public use opportunities at ANERR. The components of this program focus on providing the public recreational opportunities within the site's boundaries which are compatible with resource management objectives. The goal for public access management in CAMA managed areas is to "promote and manage public use of our preserves and reserves that supports the research, education, and stewardship mission of CAMA."

While access by the general public has always been a priority, the conservation of CAMA's sites is the primary management concern for CAMA. It is essential for staff to analyze existing public uses and define management strategies that balance these activities where compatible in a manner that protects natural, cultural and aesthetic resources. This requires gathering existing information on use, needs and opportunities, as well as a thorough consideration of the existing and potential impacts to critical upland, wetland and submerged habitats. This includes the coordination of visitor program planning with social science research. One of CAMA's critical management challenges during the next ten years is balancing anticipated increases in public use with the need to ensure preservation of site resources. This section explains the history and current status of our Public Use efforts.

#### 5.4.1 / Background of Public Use and Access at Apalachicola National Estuarine Research Reserve

The environment within the ANERR boundaries and on ANERR-managed land (Map 26) provides a wide variety of outdoor resource-based recreational opportunities. Although ANERR does not coordinate recreation, it is an important activity within ANERR. These include boat and shoreline saltwater fishing, boat and shoreline fresh water fishing, hunting, hiking, camping, nature study, birding, canoeing, kayaking, boating, shelling, beach activities, swimming, and nature photography.

Maximum non-impactive, public recreation on ANERR lands is encouraged for a variety of reasons including; instilling a sense of ownership and appreciation for the lands, contributing to individual and social well being, benefiting as an informal educational tool, promoting family values, providing economic benefit to the local economy through ecotourism and making good use of publicly owned lands.

Areas within or adjacent to the ANERR boundaries providing recreational opportunities, which are not managed by ANERR, include: St. Vincent National Wildlife Refuge, St. George Island State Park, Apalachicola National Forest, Fort Gadsden Special Feature Site, ARWEA, Tate's Hell State Forest, Box-R Wildlife Management Area and NFWFMD, Save Our Rivers lands north of ANERR. These areas offer hunting opportunities, recreational fishing, hiking, camping, boat launch facilities, nature study, swimming, historic interpretation, beach activities, shelling, boating and picnicking facilities.

Access to many points within ANERR is only by boat as approximately two thirds of the acreage is submerged bottomlands and roads do not exist in many floodplain areas. As with many other coastal and aquatic based areas, increased use leads to additional pressures on the resource, which normally leads to degradation of the resource. DEP's **Outdoor Recreation in Florida - 2008** report on the quantitative needs for resources and facilities by planning regions indicates no such need projected for facilities servicing salt water areas through the year 2000 but does indicate a projected demand for fresh water (non-boat) facilities and a small increase in bicycle trails.

#### 5.4.2 / Current Status of Public Use and Access at Apalachicola National Estuarine Research Reserve

ANERR's goal is to increase public use and access opportunities on ANERR-managed lands while minimizing adverse impacts to natural and cultural resources. Priority principles that guide the Public Use and Access Program and guide ongoing stewardship efforts include: 1) promoting activities that are compatible with the mission of ANERR and that protect resources while highlighting and enhancing our public lands; 2) ensuring the protection of key natural, cultural and historical resources while taking into consideration the changing needs of local communities; 3) utilizing public access and visitor use sites within ANERR as education and interpretation opportunities that encourage coastal stewardship through the application of "Leave No Trace" principles for visitors; 4) establishing appropriate policies for public access and visitor use as well as using existing authority provided by local, state and federal laws to ensure the protection of natural and cultural resources and; 5) monitoring visitor use and public access to assess impacts to managed lands and use adaptive management methods to eliminate, avoid, or reduce potential adverse impacts to resources.

Much of ANERR's managed uplands (GIS 6,794 acres) are accessible only by boat. The Lower River Marshes contain no facilities or structures but have historically been easily accessible for fishing and sightseeing via small boat. CAMA lands have generally and historically not been available for hunting. The Lower River Marshes have recently been included in the ARWEA for hunting access and is regulated as such by FWC. Dove hunting is allowed on Little St. George Island during established seasons. Staff perform intermittent surveys of the parcel's myriad creeks and lakes to remove trash and insure no hazards are present.

**Other available activities include:**

##### **Recreational Fishing**

Recreational fishing is enjoyed in the Apalachicola River, Apalachicola Bay, off the barrier island beaches, at the passes between the barrier islands and various other smaller water bodies within ANERR boundaries. Fresh water species taken include bass, bream and other panfish and catfish. Salt water species include flounder, redfish, trout (*Cynoscion arenarius*), pompano, tarpon and mackerel (*Scomberomorus maculatus*). Fishing methods include traditional hook and line, cast netting, gigging and spearfishing, with traditional hook and line being the most popular. Recent local trends show an increase in interest in salt water fly-fishing. Articles in national fishing publications concerning the quality of Apalachicola Bay fisheries have resulted in an increasing guide service industry. Management of recreational fishing activity is through enforcement of fresh and salt water fishing regulations by the Florida Fish and Wildlife Conservation Commission.



## **Hunting**

Hunting is a popular activity in the floodplain areas along the Apalachicola River, although there is no way to determine the extent of hunt activity or harvest. The cooperative agreement between FWC and DEP designates the lower Apalachicola area as a Type I Wildlife Management Area. FWC does not require a Management Area Permit to hunt those lands. However, other permits/stamps may be required depending on the type of hunt: quota permits for wild hog-dog season, archery permits, muzzle loading, gun permit, deer, wild turkey, migratory birds, waterfowl (state and federal) permit. Only a regular state hunting license is required. Dove hunting is allowed on Little St. George Island during specific seasons and is consistent with and managed by FWC regulations. Game hunting is allowed on the Lower River Marshes consistent with FWC regulations and seasons for the Apalachicola River Wildlife and Environmental Area. Other hunting opportunities exist in FWC-managed hunt areas, timber company lands, Tate's Hell State Forest, Apalachicola National Forest, St. Vincent NWR, NFWFMD lands and private hunt leases. Management of hunting activities is through enforcement of rules by FWC and by refuge staff on St. Vincent NWR. Hunting information publications are available through the appropriate agency offices.

## **Hiking**

Established hiking trails exist on St. George Island State Park and St. Vincent NWR, both within ANERR boundaries, and to the north, the Apalachicola National Forest. Regionally, around 555 miles of hiking trails are provided by local, state and federal governments and private landowners. Hiking opportunities exist on many ANERR-managed lands, in the form of existing roads and hunt trails. The notable exception would be the extensive marsh systems throughout ANERR. In those areas deemed fragile, prone to erosion, or otherwise unsuited to foot traffic, measures will be taken to discourage use through fencing, signage or road and trail closure. Unused roads and trails will either be allowed to revegetate naturally or will be replanted with native species. ANERR is also in the process of delineating a nature walk at the Eastpoint facility that will allow the public to learn about the habitats and species that are commonly found along the Gulf coast. Interpretative signage will be installed along the trail and a spotting scope will allow visitors to view an active bald eagle nest.

## **Camping**

Within the ANERR area, established camping facilities exist at St. George Island State Park (sixty improved sites), and three private campgrounds in Franklin County. Primitive camp facilities exist on Little St. George, St. Vincent NWR during hunting season, and the state park. In addition, improved and primitive camp facilities are available in the Apalachicola National Forest to the north.

On Little St. George, primitive camping is encouraged at sites on the east and west ends of the island. Campfires are permitted within the camp area. As no routine trash removal is performed on the island, primitive campers are encouraged to remove all items transported in and practice "no impact" camping. On ARWEA lands, primitive camping is allowed throughout, including Butcher Pen Landing.


## **Canoeing and Kayaking**

The aquatic environment of ANERR provides excellent opportunity for use of paddle craft. The use of sport kayaks by barrier island recreational users is evidenced by paddle craft rental and sea kayak trip vendors initiating new businesses in the area.

The bay environment, lower river marshes, numerous tidal creeks and freshwater streams and the Apalachicola River corridor are ideal for canoe and sea kayak use. As evidenced by DEP's Office of Greenways and Trails brochure Canoe Trails, paddle sports is a well accepted recreational user activity. In coordination with other applicable management agencies the potential for establishing overnight paddle trips, along the river corridor and originating north of or within ANERR boundaries, will be explored. If feasible, trip information guides including camping, route and safety information will be developed. Local vendor input will be solicited for partnership formation and possible benefit to the local economy. Day trip paddle opportunities exist in the form of creeks feeding the river corridors and East Bay areas. Many areas of the bay are readily accessible for trips of short duration as well. Paddle craft access information and local feature map brochures will be developed and made available. The nationally-recognized ARWEA Paddling Trail System has been established with a paddler's guide and maps for different paddling trip lengths (day or multi-day trips).

## **Other Recreational Use**

Nature study and birding, shelling, beach activities, swimming, and nature photography all occur within the ANERR boundaries and on ANERR-managed lands. On ANERR-managed lands, swimming occurs in the Gulf waters adjacent to Little St. George. The beach and waters there are infrequently monitored for hazards to swimmers and beach users. Informational brochures available for recreational users include;



bird checklist and guide, shell checklist and guide, and brochures for mammals, amphibians, and fishes. ANERR staff is generally available to recreational users regarding species identification and appropriate viewing locations.

### **Recreational Use Facility Development**

As outdoor recreation use increases in popularity on ANERR lands, the need for minimal sanitary and convenience facilities increases. DEP's Division of Recreation and Parks has developed a basic amenities package or start-up kit for DEP-managed lands. These packages were developed to provide ready amenities to properties having public access, but no facilities. The package provides for a prefabricated unisex restroom, a prefabricated weather shelter, an interpretive kiosk and stabilized parking as necessary. The use of this type package or similar application will meet the need of providing sanitary facilities on ANERR-managed lands. They are more easily built than conventionally planned facilities and are cost effective. Also, the construction techniques facilitate placement of these improvements in remote locations. An assessment will be made to determine which areas may benefit from such amenities. One area for consideration is the primitive camp location on Little St. George. Other facility development considerations include the establishment of hiking trails and freshwater fishing platforms on suitable lands under ANERR management. The basic amenities package may be used in whole or part in conjunction with other development.

Table 7 is an analysis of multiple-use potential for ANERR. Activities that are approved are allowed on all ANERR-managed lands. Those that are rejected are not allowed on ANERR lands whatsoever. Conditional activities are those which are only allowed in specific locations, at specific times or require special permitting





*Reserve staff measuring dune elevation on Little St. George Island to calculate erosion and accretion rates.*

## Chapter Six

# Issues

### 6.1 / Introduction to Issue-Based Management

The hallmark of the National Estuarine Research Reserve (NERR) System is that each site's natural resource management efforts are in direct response to, and designed for unique local and regional issues. When issues are addressed by a NERR it allows for an integrated approach by the Ecosystem Science, Resource Management, Education, Training and Outreach, and Public Use and Access programs. This complete treatment of issues provides a mechanism through which the goals, objectives and strategies associated with an issue have a greater chance of being met. For instance, a NERR may address declines in water clarity by monitoring levels of turbidity and chlorophyll (Ecosystem Science - research), planting eroded shorelines with marsh vegetation (Resource Management - habitat restoration), creating a display or program on preventing water quality degradation (Education and Outreach), and offering training to municipal officials on retrofitting stormwater facilities to increase levels of treatment (Education, Training and Outreach).

Not only does issue-based management create a unified direction for the Apalachicola National Estuarine Research Reserve (ANERR) programs, but it allows any number of partners to become involved in addressing an issue. Partnering is invaluable to ANERR, and by bringing issues into a broad public consciousness partners who wish to be involved are able to do so. Involving partners in issue-based management ensures that a particular issue receives attention from perspectives that ANERR may not be equipped to address.

This section is based on the issues that impact the management of ANERR directly, or are of significant local or regional importance that ANERR's participation in them may prove beneficial. The issues were initially identified through a process that began with a staff retreat. The issues that were suggested were discussed and fine tuned by staff. The draft list was presented at a public scoping meeting. Based on feedback from the meeting, the issues were revised and then goals, objectives and strategies were drafted. These were presented at the public meetings and to the advisory committee. The results of the input were used to revise the issues and associated goals, objectives and strategies.

## Introduction to Issue-Based Adaptive Management

Natural resource management efforts are in direct response to, and designed for, unique local and regional issues.

Challenges of an identified issue are met by integrating research, education and stewardship strategies.

Objectives are measurable.

Continued monitoring allows the reserve to evaluate progress and, if needed, adaptively adjust strategies to achieve the desired objective.



Figure 3 | Introduction to Issue-Based Adaptive Management

While an issue may be the same from NERR to NERR, the goals, objectives and strategies employed to address the issue will likely vary depending on the ecological and socioeconomic conditions present within and around a particular NERR's boundary. In this management plan, ANERR characterizes each of its issues and delineates the unique goals, objectives and strategies that will set the framework for meeting the challenges presented by the issues.

Each issue has goals, objectives and strategies associated with it. Goals are broad statements of what the organization plans to do and/or enable in the future. They should address identified needs and advance the mission of the organization. Objectives are a specific statement of expected results that contribute to the associated goal and strategies are the general means by which the associated objectives will be met. Unless otherwise specified, the time frame to accomplish the objectives is the period addressed by this management plan, 2013-2018. The benchmarks for assessing progress will be based on ANERR's most current and historic data and knowledge. The goals, objectives and strategies are integrated across sectors. The lead sector(s) are indicated in parentheses following each strategy (RC=Research, SC=Stewardship, EC=Education, CTP=Coastal Training, MG = manager, ADM = administration). **Appendix D** contains a summary table of all the goals, objectives and strategies associated with each issue and the lead sector(s) for each strategy.

### 6.2 / Public Use

#### Issue One: Public use and access to ANERR-managed lands

ANERR is comprised of sensitive upland, wetland and aquatic habitats. Increasing public access and use can have adverse impacts on some sensitive areas and species. For example, excessive or unmanaged uses can cause impacts to resources; litter can create unattractive or unsafe conditions and can harm wildlife, or nesting shorebirds and sea turtles can be disturbed by beachgoers. The balancing of increased access for the public and protection of the resources is a challenge for ANERR. Public use opportunities can be increased and impacts minimized through appropriate management of public access and use areas, where possible, and through education and training efforts.





*Apalachicola Bay is a favored recreational boating location with numerous commercial marinas throughout the Reserve area.*

**Goal 1.1: An informed public that is aware of environmental issues and has a sense of stewardship for resources within ANERR.**

**Objective 1.1.1:** Increase public awareness of opportunities to access and enjoy ANERR-managed lands and waters.

**Integrated Strategies:**

1. Ensure that operations at the ANERR Visitor Center address public demand during seasonal population fluctuations. (EC)
2. Publicize resource-related recreational opportunities on ANERR-managed resources (land and waters), at the ANERR Visitor Center, in ANERR newsletter and on ANERR websites.(EC, SC)
3. Install and maintain signage within areas that present opportunities for instruction and education about the resources and objectives of ANERR. (EC, SC)
4. Train staff and volunteers regarding recreational opportunities on ANERR lands and waters. (EC, SC)
5. Identify ANERR on all interpretive and regulatory signage. (EC, SC)
6. Offer Coastal Training Program classes, including Master Naturalist Courses and Panhandle Habitat Series, that highlight ANERR habitats and their management. (CTP)
7. Offer programs that encourage/highlight Leave No Trace™ principles. (CTP)
8. Maintain existing websites for the National Oceanic and Atmospheric Administration (NOAA) and the Florida Department of Environmental Protection (DEP), describing ecological, cultural and historical resources within ANERR. (All)
9. Host seminars at ANERR Visitor Center showcasing the resources of ANERR as well as describing research and monitoring efforts to manage these resources. (All)

**Goal 1.2: Increase public access to ANERR-managed areas while minimizing impacts to natural and cultural resources and allowing for multiple uses.**

**Objective 1.2.1:** Create and maintain sustainable recreational opportunities for the public on ANERR lands and waters.



**Integrated Strategies:**

1. Designate areas for, and types of, public use that are compatible with the resource management goals of ANERR. (SC)
2. Develop and maintain parking areas, trailheads and trails. (EC, SC)
3. Complete Little St. George Island Government Dock. (MG)
4. Design and construct a new trail at ANERR Visitor Center. (SC, EC)
5. Maintain primitive camping sites. (SC)
6. Utilize Master Naturalist course student projects that support sustainable recreational opportunities. (CTP)
7. Increase guided and self-guided field trips as well as other educational opportunities for the public at ANERR Visitor Center. (EC)

**Objective 1.2.2:** Minimize impacts of public use on ANERR-managed lands.

**Integrated Strategies:**

1. Install and maintain signage in high use areas that serves to minimize impacts to the resource. (SC)
2. Maintain effective relations with local and Florida Fish and Wildlife Conservation Commission (FWC) law enforcement personnel. (SC, MG)
3. Maintain gates and fences where access is not desired. (SC)
4. Promote Best Management Practices (BMPs) that minimize impacts through the Coastal Training Program. (CTP)

**Objective 1.2.3:** Allow sustainable hunting practices on designated ANERR-managed lands.

**Integrated Strategies:**

1. Allow dove hunting on Little St. George Island consistent with and managed by FWC regulations and seasons. (SC)
2. Allow game hunting on the Lower River Marshes consistent with FWC regulations and seasons for the Apalachicola River Wildlife and Environmental Area (ARWEA). (SC)
3. Notify the public of hunting regulations on ANERR lands through appropriate signage. (SC)



*A Leatherback crawl on St. George Island.*

**6.3 / Habitat and Species Management**

**Issue Two: Habitat change and the resultant impacts to species within ANERR**

Habitats can change as a result of altered hydrology, adjacent land use and development practices, climate change, fire exclusion, invasive species and natural disasters. Monitoring data can be used to inform resource managers, decision-makers, local residents and visitors about appropriate strategies to protect and manage habitats.

**Goal 2.1: Maintain biodiversity, abundance and productivity within ANERR.**

**Objective 2.1.1:** Use monitoring data and peer-reviewed literature to support science-based decision-making and promote BMPs within communities in the region.

**Integrated Strategies:**

1. Maintain an easily accessible library of scientific materials relevant to the Apalachicola system as well as natural resource management issues. (RC)
2. Maintain a computerized database of pertinent information collected within and adjacent to ANERR for use in long-term interdisciplinary research and monitoring efforts. (RC)
3. Maintain field and laboratory facilities that provide a basic level of scientific and sampling equipment necessary to attract and support research and monitoring studies. (RC)



4. Provide scientific information necessary for sound natural resource management to federal, state, and local decision-makers that enables them to make informed decisions. (RC, CTP)
5. Offer BMP training programs and technical assistance based on monitoring data and peer-reviewed literature. (CTP)
6. Maintain a Geographic Information System (GIS) and provide GIS-based products in support of decision-making. (SC, RC)

**Objective 2.1.2:** Identify, monitor and manage upland natural communities within ANERR.

**Integrated Strategies:**

1. Promote research and monitoring efforts within ANERR through the development of agreements with other entities within DEP, other research organizations and universities, and other state and federal agencies. (RC)
2. Maintain a comprehensive monitoring program that enables ANERR to establish conditions and determine changes in the health and status of the lower Apalachicola River and Bay system. (RC)
3. Complete Phase III of the System-Wide Monitoring Program (SWMP) – habitat mapping using GIS and complete land use change analysis at regular intervals. (SC, RC)
4. Identify, monitor and reduce the distribution and abundance of invasive/exotic species. (SC)
5. Identify and resolve Urban/Conservation Lands Interface conflicts. (SC)
6. Continue to offer training programs, such as Florida Master Naturalist Program, Panhandle Habitat Series and Ecological Restoration classes that highlight the importance of conservation and management of upland habitats. (CTP)
7. Provide information/public education on the importance of upland management practices within ANERR. (SC)

**Objective 2.1.3:** Identify, monitor and manage important submergent and emergent habitats within ANERR including oyster reefs, submerged aquatic vegetation, salt marsh, brackish marsh and freshwater marsh.

**Integrated Strategies:**

1. Identify important submerged and emergent habitats within ANERR through remote sensing and physical groundtruthing. (RC, SC)
2. Construct and maintain habitat datalayers within the ANERR GIS using the Florida Natural Areas Inventory (FNAI) and NERR classification systems. (SC, RC)
3. Characterize change over time in these areas through GIS change analysis. (SC, RC)
4. Identify the potential implications of sea level rise on these habitats through modeling, directed research and monitoring. (SC, RC)
5. Provide opportunities to share scientific data and tools with decision-makers. (CTP)
6. Continue to offer training programs, such as Florida Master Naturalist Program and Panhandle Habitat Series classes, that include the importance of conservation of submerged and emergent habitats. (CTP)
7. Provide training and technical assistance on techniques, funding sources and benefits of restoration of marsh and submerged vegetation through the Living Shorelines Initiative. (CTP)
8. Explore opportunities to engage local schools in restoration projects. (EC)

**Objective 2.1.4:** Maintain and restore native habitat on lands managed by ANERR.

**Integrated Strategies:**

1. Allow/facilitate the natural fire regime on ANERR-managed properties and facilitate prescribed burning where appropriate. (SC)
2. Identify and remove invasive/exotic species from ANERR-managed uplands. (SC)
3. Acquire alternative funding for restoration projects, especially those that deal with high priority management issues that are of critical interest to ANERR. (SC, CTP)
4. Work with stakeholders to identify, promote and support restoration efforts for aquatic and upland habitats. (SC, CTP)
5. Provide training and technical assistance on techniques, funding sources and benefits of environmentally sensitive shoreline stabilization through the Living Shorelines Initiative. (CTP)
6. Explore opportunities to engage local schools in habitat restoration projects. (EC)

**Objective 2.1.5:** Conserve and manage listed species through focused habitat management, education and training.

**Integrated Strategies:**

1. Protect important habitats for listed species by posting clear signage and limiting access during nesting activities. (RC)

2. Limit predation of listed species on ANERR lands through nuisance species removal. (RC)
3. Provide scientific information and recommendations on methods to reduce or eliminate threats to listed species. (RC)
4. Provide information and training on alternatives for local governments and developers to minimize impacts to habitats of listed species. (CTP)
5. Incorporate education themes into existing K-12 program venues that address conservation of listed species. (EC)
6. Continue to offer training programs, such as Florida Master Naturalist Program and Panhandle Habitat Series classes, that include the importance of conservation of listed species. (CTP)

#### 6.4 / **Watershed Land Use**

### **Issue Three: Changing land use patterns within the Apalachicola-Chattahoochee-Flint watershed and the potential hydrologic changes within the system.**

One of the most pressing issues for ANERR has been and continues to be water quantity. Since the majority of the watershed that contributes to riverflow is outside of Florida, the state does not have direct control of freshwater flow into the system. This issue is being addressed largely through scientific, legal and political processes. Monitoring, partnerships and training can address how land use and altered hydrology impact water quantity. The quantity and seasonality of river flow impacts the habitats and species along the river and aquatic resources within the bay. Most existing and new development along ANERR's boundaries is concentrated along the bay shore and barrier islands. Potential impacts include declining water quality due to wastewater discharges, stormwater runoff and increased sediment. Water quality is affected by land use patterns, development and stormwater management practices on land adjacent to ANERR. River flow can also affect water quality.

#### **Goal 3.1: Quantify short-duration and long-term changes in water and sediment quality within the NERR and adjacent waters.**

**Objective 3.1.1:** Monitor change by identifying the physical, chemical and biological characteristics of Apalachicola Bay through regular sampling.

##### **Integrated Strategies:**

1. Continue long-term monitoring programs within and adjacent to the NERR to determine the current status of water quality parameters, potential threats to water quality, and impacts of water quality changes on resources. (RC)
2. Monitor water parameters through use of YSI 6600 dataloggers; measuring temperature, salinity, dissolved oxygen, turbidity and depth at four locations every 15 minutes. (RC)
3. Monitor nutrient availability in Apalachicola Bay by the collection of monthly discrete water samples identifying concentrations of total nitrogen, nitrate, nitrite, orthophosphate and chlorophyll a. (RC)
4. Facilitate research within ANERR that addresses water and sediment quality changes and the resultant effects on the biota of the estuary. (RC)
5. Provide additional information to the public, managers, and decision-makers, especially local governments, about the importance of maintaining water quality, the detrimental effects of reduced water quality, and methods that can be used to minimize impacts to water quality. (CTP)
6. Expand and improve the SWMP and its usefulness to resource managers. (RC, SC)
7. Develop outreach and educational programs for teachers to help educate students (the next generation) about the importance of maintaining water quality and the detrimental effects of reduced water quality. (EC)
8. Work with federal and state regulators on Total Maximum Daily Load determinations and Impaired Waters status. (MG, RC)

**Objective 3.1.2:** Identify and monitor potential point and nonpoint sources of surface water contaminants.

##### **Integrated Strategies**

1. Use monitoring to determine primary pollution sources and concentrations within ANERR. (RC)
2. Facilitate research within ANERR that addresses water quality changes due to surface water contamination and the resultant effects on the biota of the estuary. (RC)
3. Use monitoring and scientific research results to inform decision-makers of point and nonpoint source impacts within the watershed. (CTP)





*Salt marshes are vital natural communities within estuaries, providing important habitat for several species, nutrient filtration and shoreline protection.*

**Goal 3.2: Reduce impacts of modified hydrology in the Apalachicola-Chattahoochee-Flint watershed on the Apalachicola River and bay system.**

**Objective 3.2.1:** Characterize and monitor the physical, chemical and biological characteristics of waters within the bay water as it relates to the flow regime of the Apalachicola River.

**Integrated Strategies:**

1. Monitor water parameters through use of YSI 6600 dataloggers; measuring temperature, salinity, dissolved oxygen, turbidity and depth at four locations every 15 minutes. (RC)
2. Monitor nutrient availability in Apalachicola Bay by the collection of monthly discrete water samples identifying concentrations of total nitrogen, nitrate, nitrite, orthophosphate and chlorophyll a. (RC)
3. Facilitate research within ANERR that addresses water quantity changes and the resultant effects on the biota of the estuary. (RC)
4. Provide scientific information and recommendations to decision-makers on methods to lessen or eliminate threats associated with reduced water availability.(RC, CTP)
5. Develop partnerships with state and federal agencies, especially the Northwest Florida Water Management District and the U.S. Army Corps of Engineers, to help determine fresh water needs of habitats and species within the NERR. (MG, RC)
6. Facilitate research and monitoring programs that help identify natural variability (highs and lows) in flows and levels necessary to protect the natural resources of ANERR. (MG, RC)
7. Provide scientific information from research and monitoring programs to local, regional and state decision-makers that will assist in effective water management at all levels of water use, including private users. (CTP, MG, RC)
8. Develop outreach and educational programs for teachers to help educate students (the next generation) about the importance of maintaining water quantity and the detrimental effects of reduced water flows on the resources. (EC)

**Goal 3.3: Facilitate the use of sustainable land use planning strategies and Best Management Practices for areas adjacent to ANERR.**

**Objective 3.3.1:** Provide information on BMPs to direct residential and commercial development projects in the watershed (increased density, development related to working waterfront – ports, marinas, boating, and fisheries).



**Integrated Strategies:**

1. Work with local, regional, state, and national organizations on rules, statutes and laws. (MG)
2. Assist local governments with appropriate input on comprehensive plan development, point and non-point source controls, setbacks, development issues, etc. (CTP)
3. Provide reasonable alternatives to local governments and developers that help to minimize impacts from habitat and land use changes. (CTP)
4. Promote science-based strategies through training programs, technical assistance, demonstration sites and public outreach, including the Green Industries BMP Training Program. (CTP)
5. Promote and support research of innovative, environmentally-sensitive development and land use practices through the CTP. (CTP)
6. Incorporate education themes into K-12 program venues that address use of BMPs at home and school where teachers and students can be involved in protecting water quality. Use tools such as Enviroscape to demonstrate. (EC)
7. Provide education materials for the public at the Visitor Center related to BMPs for homeowners to protect water quality. (EC, CTP)

**Objective 3.3.2:** Work with partners to reduce loss and fragmentation of habitats within ANERR.

**Integrated Strategies:**

1. Identify property within and adjacent to ANERR sustaining high quality, undisturbed habitats. Look into protecting acreage through conservation easements. (SC)
2. Identify property that may have a direct impact on ANERR lands or that allows for better connectivity of important habitats within or adjacent to ANERR. (SC)
3. Seek alternative funding to acquire priority land parcels. (SC)
4. Promote science-based strategies, including conservation subdivision planning and land owner incentives, through training programs, technical assistance, demonstration sites and public outreach. (CTP)
5. Ensure public input into potential boundary expansion and acquisition of priority land parcels. (MG, SC)

**Objective 3.3.3:** Provide decision-makers with strategies to minimize impacts on ANERR resources related to increasing infrastructure demands such as road construction, power line installation, wastewater treatment and increased impervious surfaces.

**Integrated Strategies:**

1. Utilize ANERR's GIS database to identify habitats susceptible to infrastructure demands. (RC, SC)
2. Educate local and state entities on BMPs to reduce the effects of infrastructure changes and expansion. (CTP)
3. Work with local and state entities to consider infrastructure impacts on ANERR ecosystems. (MG, SC, RC)
4. Provide training and technical assistance relating to wastewater treatment including current scientific research, design and maintenance, treatment and disposal alternatives, and types of systems. (CTP)



*Cape St. George Lighthouse in 1950. Photo: Florida State Museum.*



## 6.5 / Cultural Resources

### Issue Four: Loss of cultural resources within ANERR boundary

Cultural resources within ANERR boundaries have been identified. These resources are susceptible to loss due to natural processes such as erosion and storm events, as well as human disturbance. ANERR will collaborate with appropriate partners to educate the public and manage these resources.

#### Goal 4.1: Protect cultural resource sites within ANERR.

**Objective 4.1.1:** Increase awareness of the importance of archaeological sites and their legal protections.

##### Integrated Strategies:

1. Provide educational information at public access points describing historical resources and their protections. (SC)
2. Maintain working relationship with law enforcement entities regarding protection of sites. (SC, MG)
3. Host periodic Archaeology Day events at the ANERR Visitor Center. (EC)
4. Continue to offer training programs, such as Florida Master Naturalist Program and Panhandle Habitat Series classes, that include information on and the importance of conservation and protection of cultural resources. (CTP)
5. Work with partners to develop outreach to local community members about the importance of conserving and protecting cultural resources. (EC)
6. Develop additional interpretation of cultural resources in the Visitor Center. (EC)

**Objective 4.1.2:** Protect historical structures and sites such as the St. George Island lighthouse and Marshall House.

##### Integrated Strategies:

1. Maintain appropriate buffer around Marshall House to discourage fires. (SC, EC)
2. Maintain pump and water systems near Marshall House to facilitate fire suppression. (SC, EC)
3. Provide continued training for staff related to managing wildland fires. (SC)
4. Interpret history of these sites in exhibits at the ANERR Visitor Center and on location. (EC)

**Objective 4.1.3:** Monitor and maintain cultural resources on ANERR-managed lands.

##### Integrated Strategies:

1. Maintain a secure datalayer of archaeological sites within ANERR's GIS. (SC)
2. Monitor status of archaeological sites on ANERR-managed lands. (SC)
3. Implement appropriate management actions based on monitoring. (SC)
4. Maintain historical knowledge of staff and provide regular training on monitoring and managing cultural resources (Historical and Archaeological Resource Training). (All)

#### Goal 4.2: Promote local cultural identity through programs, exhibits and partnerships.

**Objective 4.2.1:** Interpret traditional uses of Apalachicola Bay and surroundings.

##### Integrated Strategies:

1. Feature local human connections to the natural environment in Visitor Center exhibits. (EC)
2. Interpret traditional sustainable uses of natural resources in Visitor Center exhibits. (EC)
3. Feature human connections to the natural environment during special events at Visitor Center. (EC)
4. Continue to offer training programs, such as Florida Master Naturalist Program and Panhandle Habitat Series classes that include information on, and the importance of, local history and cultural practices. (CTP)
5. Promote sustainable activities. (CTP)

## 6.6 / Global Processes

### Issue Five: Impacts of global and regional processes on ecosystems and communities within ANERR

ANERR and the surrounding region are frequently impacted by natural processes such as drought, floods, hurricanes, harmful algal blooms and others. The impact of climate change on natural resources and local communities is also an issue of increasing importance. The greatest climate change impact to ANERR will likely be sea level rise. Due to the low topography of the area, sea level rise impacts such as saltwater intrusion and changes to inundation patterns may change the composition of coastal vegetation communities or result in loss of certain natural communities. As tidal boundaries move

upstream, faunal or trophic changes may occur. Water level and temperature increases may allow the invasion of non-native species, which may be able to out-compete native species. Sea level increases will also increase storm surge impacts. ANERR's ability to monitor and characterize these process and changes is important to understanding, planning for and adapting to potential changes.

**Goal 5.1: Identify potential effects of climate change (increased temperature, sea level rise, ocean acidification) on the resources of ANERR.**

**Objective 5.1.1:** Identify changes in water quality/quantity related to climate change effects through monitoring and research.

**Integrated Strategies:**

1. Continue long-term monitoring programs within and adjacent to ANERR to determine the current status of water quality parameters, potential threats to water quality, and impacts of water quality changes on resources. (RC)
2. Develop new research programs and partnerships to address estuarine water quality issues associated with potential climate impacts. (RC)
3. Monitor water parameters through use of YSI 6600 dataloggers, measuring temperature, salinity, dissolved oxygen, turbidity and depth at four locations every 15 minutes. (RC)
4. Monitor nutrient availability in Apalachicola Bay by the collection of monthly discrete water samples identifying concentrations of total nitrogen, nitrate, nitrite, orthophosphate and chlorophyll a. (RC)
5. Maintain weather station as a reference site. (RC)
6. Facilitate coordination, communication and training programs relating to research and partnerships that address estuarine water quality issues associated with climate change impacts. (CTP)

**Objective 5.1.2:** Identify the potential impacts of climate change on natural resources within ANERR through monitoring and research.

**Integrated Strategies:**

1. Utilize vulnerability assessments to guide management actions for ANERR. (All)
2. Establish benchmarks within ANERR to serve as reference points for measuring the effects of sea level rise. (SC,RC)
3. Establish long term monitoring of morphometric changes (Surface Elevation Tables) and measure biological feedbacks (such as vegetation response) within important habitats of ANERR. (SC,RC)
4. Establish a vertical control network of all long-term monitoring sites within ANERR. (SC,RC)
5. Identify changes in species composition of habitats – migration, expansion and reduction. (SC,RC)

**Objective 5.1.3:** Improve understanding of impacts on ANERR resources related to coastal hazards.

**Integrated Strategies:**

1. Facilitate coordination, communication and training programs relating to research addressing the impacts of coastal hazards and climate change on resources within ANERR. (CTP)

**Goal 5.2: Improve species/habitat resilience to storm events (wind damage, flooding and storm surge) and sea level rise.**

**Objective 5.2.1:** Assist landowners and land managers with planning and implementing adaptive measures.

**Integrated Strategies:**

1. Provide training programs and technical assistance relating to coastal hazards, resilience, floodplain strategies and climate change; including planning, mapping and decision support tools. (CTP)

**Objective 5.2.2:** Use and promote appropriate measures to reduce shoreline erosion.

**Integrated Strategies:**

1. Provide training and technical assistance on techniques, funding sources and benefits of habitat-friendly shoreline stabilization through the Living Shorelines Initiative. (CTP)
2. Explore opportunities to engage local schools in habitat restoration projects, such as the Grasses in Classes program. (EC)
3. Provide assistance for monitoring of shoreline stabilization projects. (RC, SC)

**Objective 5.2.3:** Acquire land to mitigate for storm damage and impacts of sea level rise.

**Integrated Strategies:**

1. Utilize the Florida Forever program and alternative land acquisition funding sources to purchase lands which would allow for the migration of important estuarine habitats. (MG, SC)



**Goal 5.3: Increase awareness and participation in research relating to Harmful Algal Blooms (HABs).**

**Objective 5.3.1:** Support monitoring of conditions and warning systems for HABs.

**Integrated Strategies:**

1. Continue the SWMP particularly the description of water quality and nutrient parameters that may facilitate HAB formation. (RC)
2. Attract and support researchers addressing early detection of harmful algal blooms in Apalachicola Bay. (RC)

**Goal 5.4: Promote strategies for improving community resilience (physical and socio-economic processes) while maintaining environmental sensitivity.**

**Objective 5.4.1:** Improve awareness and implementation of community resilience practices through training programs, technical assistance and sharing resources.

**Integrated Strategies:**

1. Attract and support scientists conducting community resilience research in the Apalachicola-Chattahoochee-Flint Watershed. Encourage researchers to put emphasis on the science to management aspect of their work. (MG, RC)
2. Utilize community resilience research and Gulf of Mexico Alliance products including the Coastal Community Resilience Index, and planning, mapping and decision support tools; in training programs, technical assistance and public outreach relating to coastal hazards, resilience, floodplain strategies and climate change impacts. (CTP)
3. Assist communities with developing sea level rise adaptation plans. (CTP)

**Issue 6: Community involvement, engagement and support**

The support and involvement of community members and officials is critical to ANERR. Increasing awareness of the region's resources, and issues impacting them, can foster good stewardship and support within the local communities. With increasing visitor numbers and demand for programs it is also important to build opportunities for interns, students and volunteers.

**Goal 6.1: Increase capacity and support for ANERR through opportunities that engage community members and students directly in ANERR activities.**

**Objective 6.1.1:** Increase opportunities for students and volunteers to assist with monitoring, restoration, invasive species removal, native plantings, education and other programs.

**Integrated Strategies:**

1. Develop a process for using interns and volunteers to assist with projects and management activities. (All)
2. Identify and offer specific activities and opportunities for interns, spring break volunteers, students and community members. (All)
3. Provide field experiences (summer or volunteer projects) for high school and college students. (RC, EC)

**Objective 6.1.2:** Build partnerships with volunteer organizations, researchers, stakeholders and others that ensure community involvement in accomplishing ANERR activities.

**Integrated Strategies:**

1. Provide information on research, restoration and other project needs related to the issues and strategies in this plan. (RC, SC)
2. Encourage prospective researchers and other project leads to communicate with ANERR programs when developing proposals. (MG, RC)
3. Work with programs that encourage or support volunteers or interns (such as AmeriCorps, Bright Futures Scholarships, etc.) (MG,EC)
4. Share new information about funding sources and project needs with volunteer organizations, researchers and others. (EC, CTP)

**Goal 6.2: Increase awareness of the Apalachicola River and Bay system and priority issues among local volunteers, college students and community members.**

**Objective 6.2.1:** Increase public awareness of ANERR's natural and cultural resources.

**Integrated Strategies:**

1. Use social science techniques to identify community needs and strategies to engage non-traditional community members and develop appropriate targeted programs or activities. (EC, CTP)

2. Use a variety of media to provide accurate and current technical information about the importance of the Apalachicola River and Bay system and the threats that it faces. (EC, CTP)

**Objective 6.2.2:** Increase residents, stakeholders, and decision-makers involvement in the support and conservation of the Apalachicola River and Bay system's resources.

**Integrated Strategies:**

1. Highlight positive stewardship actions by local community members. (SC, CTP)
2. Promote ANERR programs to build public support and stewardship. (MG)
3. Promote more community involvement in ANERR programs and facilities by specifically targeting community organizations. (MG)





*A local beekeeper collects tupelo honey from hives on a bee dock on the Apalachicola River.*

Part Three

## Additional Plans

Chapter Seven

### Administrative Plan

#### Background

Administration of a National Estuarine Research Reserve (NERR) is accomplished through federal, state and local partnerships. At the national level, the National Oceanic and Atmospheric Administration (NOAA) is responsible for the administration of the NERR System. NOAA's Estuarine Reserves Division works with state agencies in developing a national network of estuarine research reserves. NOAA provides, through both competitive and non-competitive grants, funding to eligible state agencies for the establishment and continued operation of NERRs, as well as funding for construction and land acquisition activities; provides program guidance and oversight including review and approval of management plans; and conducts periodic evaluations to validate that operations are consistent with NERR goals and objectives.

The Department of Environmental Protection (DEP) is responsible for local administration and management of Florida's NERRs. Coastal and Aquatic Managed Areas (CAMA), under DEP's Deputy Secretary for Water Policy and Ecosystem Restoration, administers on-site operations, hires Apalachicola NERR staff and reviews program content for each NERR in the state. CAMA also manages the state's 41 aquatic preserves and partners with NOAA in the management of the Florida Keys National Marine Sanctuary and the Coral Reef Conservation Program. It uses information developed within the NERR program to improve management in its other marine and estuarine program areas of responsibility.

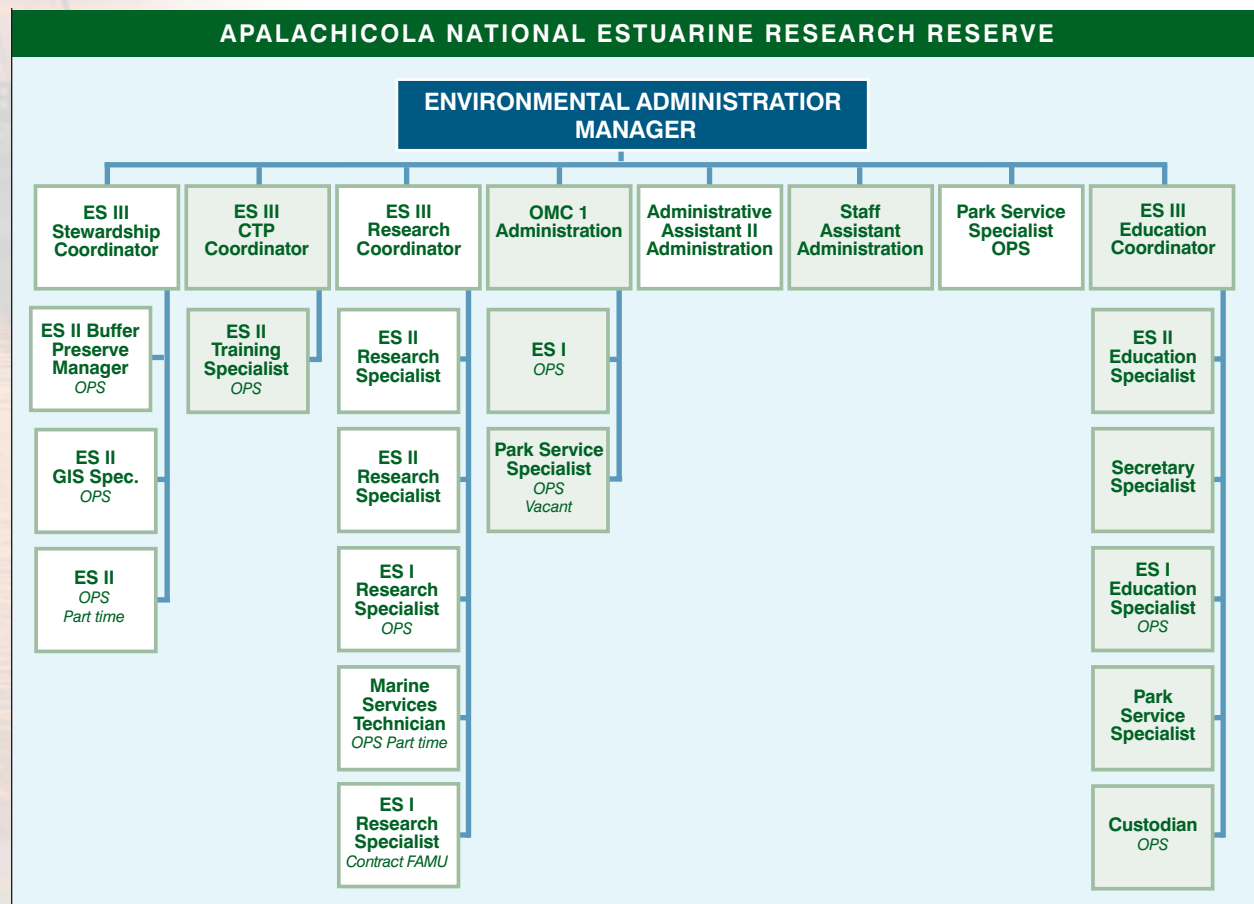
## Current Staff

As with most NERRs in the system, the Apalachicola National Estuarine Research Reserve (ANERR) has four constituent programs: research and monitoring (ecosystem science), education, coastal training, and stewardship. While the employees that form teams within each of these program areas have certain responsibilities to their program, there is a good degree of integration among programs. This is essential in supporting the tenets of resource management and protection set forth by both NOAA and DEP. In addition, there is an administration team that supports the efforts of all program areas. DEP will continue to pursue state, federal, and other funding for staff support as needed to fulfill the goals, objectives, and strategies of this management plan. See Figure 4 for the staff organization chart for ANERR.

As of January 1, 2012 ANERR had thirteen State of Florida Career Service positions (12 state funded and one federally funded), and eight Other Personal Services (OPS, non-Career Service) positions, for a total of twenty-one staff at ANERR. The following details the organization and responsibilities of each of the teams at ANERR:

### Reserve Manager (Environmental Administrator)/Northwest Florida Regional Administrator for Aquatic and Buffer Preserves

**Primary Responsibilities:** Provides oversight and guidance to each of ANERR's program areas so that the entire reserve operates in an organized, integrated and meaningful manner; often serves as the face of ANERR at local, regional and national public meetings and workshops; serves as the liaison between state and federal partners; is active in the Apalachicola/Franklin County community to communicate the direction and purpose of ANERR. The manager works as the lead partner with state and federal agencies as well as public and private entities; supervises all program leads and additional administrative staff; and ensures that operational, resource management, and conservation goals of NOAA and DEP are met. As the northwest regional administrator, this position is responsible for the supervision of eleven aquatic preserves, one buffer preserve, and the managers associated with them. These preserves encompass more than 1.2 million acres of coastal and freshwater resources between Pensacola and Ocala. In this capacity the position must ensure that the management of the preserves is consistent with Florida statutes and rules and effective communications are maintained between the preserves and all





stakeholders. The manager must also oversee and guide resource management and administrative activities; and directly engage with agency, public, and private interests in the aquatic and buffer preserve program.

**Research and Monitoring (Ecosystem Science) Program Team** – One coordinator (Environmental Specialist (ES) III), four support staff

**Primary Responsibilities:** This team is responsible for executing and directing ANERR's research and monitoring efforts. This includes maintaining databases; facilitating the work of visiting researchers; carrying out the System-Wide Monitoring Program, making sure all protocols are followed and data is submitted on time; attending to monthly, seasonal and annual monitoring and research programs; making data available to other DEP and ANERR programs; providing technical support to the Franklin County community and regional aquatic preserves; and participating in local and regional outreach.

**Education and Outreach Team** – One coordinator (ES III), five support staff

**Primary Responsibilities:** This team develops and executes all K – 12 education programs. This includes both programs that have school groups come to the visitor center and those that are done at multiple locations in the field. Every year, the education team reaches every seventh-grader in Franklin County through the Learning In Florida's Environment (LIFE) program. The education team also conducts numerous public outreach activities during the year and hosts a number of non-formal educational group programs. The lead role in the preparation, printing and distribution of ANERR's newsletter, monthly report, brochure, and other outreach documents is performed by this team. This team is also responsible for all the operations, upkeep and enhancements to the Visitor Center, including maintaining a number of aquaria and specimens. The education coordinator also acts as the assistant manager, fulfilling duties related to this position as required.

**Coastal Training Program Team** – One coordinator (ES III), one support staff

**Primary Responsibilities:** The Coastal Training Program (CTP) provides professional training opportunities to coastal decision-makers, state and federal agency personnel, city and county officials, elected representatives, stakeholders and citizens. A typical CTP event includes subject matter experts, classroom lecture and discussion, and in the field training. Workshops cover a variety of topics that include best management practices for storm water management and watershed planning, Florida Master Naturalist courses, a panhandle habitat series, leave-no-trace outdoor recreation, ecosystem restoration, coastal hazards and sustainable practices. The CTP team works with communities in the panhandle and Big Bend to help them with their low-impact coastal planning efforts, and also is an active participant in the Gulf of Mexico Alliance's Coastal Resilience priority issue team. The CTP Coordinator also supervises a full-time Green Industries Best Management Practices regional coordinator, although this person is not funded by ANERR.

**Stewardship (Resource Management) Team** – One coordinator, one support staff

**Primary Responsibilities:** This team is primarily responsible for the uplands resource management planning and activities for ANERR. This includes applying prescribed fire where appropriate, removal of exotic plants and animals, hydrologic restoration projects and maintaining and designing public access opportunities for the public, such as trails, kiosks, etc. It should be noted that the Stewardship



*Research staff collecting samples with trawl net.*



Coordinator also serves as the supervisor for the manager of the St. Joseph Bay State Buffer Preserve. This team also serves as the host program for ANERR's Geographic Information System (GIS) program and coordinates closely with the research coordinator on GIS products.

#### **Administrative/Operations Team – Six support staff**

**Primary Responsibilities:** This team operates under the manager and includes two staff that have administrative duties, two staff that have building maintenance duties, and two staff that support the needs of the other programs in the form of repair and maintenance of equipment and in-house construction projects. The administrative staff work largely with budget, purchasing, grant tracking and reporting, timesheets, vehicle logs, and personnel paperwork. The building maintenance staff are almost completely dedicated to the upkeep and enhancement of the new facility.



*Stewardship staff managing a controlled burn.*

#### **Anticipated Staffing Needs**

What follows is a list of positions that are integral to the successful operation of the ANERR, and which ANERR feels need to be converted from OPS to Career Service to minimize turnover, and offer health care and retirement benefits to those who have dedicated themselves to the program for years. The list does not cover all the OPS positions, but is a realistic accounting of positions whose conversion would benefit the public service and operational capacity of ANERR. This also includes new positions ANERR believes it needs to meet anticipated increases in public use and resource management issues.

#### **Position Conversions (Other Personal Services to Career Service)**

**GIS Specialist (Environmental Specialist II):** This position offers valuable support to ANERR by being able to provide a suite of remote sensing/GIS data to the stewardship and research section and other ANERR programs. ANERR relies on GIS information in making resource management decisions, and it is a tool that can provide an enormous amount of information which is highly complementary to data collected in the field. This position is instrumental in providing partners with boundary maps and spatial representation of data. Conversion of this position would lend needed stability and support to all ANERR programs, and improve ANERR's ability to work with local, regional and national partners.

#### **Environmental Specialist I to Facilities**

**Management Consultant:** The new facility demands an enormous amount of attention and is much more technically challenging to operate. The OPS ES I position tasked with building services was on site when the building was built, and is aware of the operational and maintenance

needs of the systems. Conversion of this position to Career Service would afford ANERR stability in this essential position. The building systems are complex and hiring, training, and keeping competent personnel is critical to the level of public service ANERR endeavors to offer.

**Park Services Specialist to Park Services Specialist:** This position is one that has been of great value to ANERR for many years. Because the position is not tied to a particular program the incumbent has been able to easily offer a wealth of assistance to all programs. The skill set in the position has allowed for ANERR to build two docks with in-house labor, and that has been a huge cost savings to ANERR,



and its state and federal partners. Conversion of the position will provide ANERR with dedicated in-house construction and repair personnel that can save on both time and funds.

### **New Positions Needed**

**Assistant Manager:** Currently the ANERR manager also serves as the Northwest Regional Administrator for Florida's aquatic preserve program, which stretches from Pensacola to Ocala. Oversight and attention to staff needs is a challenge. An assistant manager would be able to bear a fair portion of the manager's administrative load, and serve in a supervisory capacity as well. This would allow the manager to strengthen ties with ANERR partners and stakeholders, be a more thoughtful liaison between DEP and NOAA, and ultimately benefit both the daily operations and long-term planning of the program.

**Environmental Specialist I:** Over the past seven years the Education and Outreach Program has lost two career service positions. What has not changed is the demand for education programs by school groups, seasonal and walk-in visitors, and other organizations. Currently the education team cannot accommodate all requests for programs. Visitor service needs are increasing. In order to continue to provide high quality environmental education products to those local, regional, and out-of-state groups that ANERR currently reaches, and to meet increased public demand for both on-site and off-site programs, it is essential to bolster the education staff with this position. The position would be responsible for scheduling education and outreach events, preparing materials, and directly engaging with walk-in visitors and organized groups.







*Aboard the Reserve vessel Tideline, education section staff embark on boat tour with a group of students.*

## Chapter Eight

# Facilities Plan

The Apalachicola National Estuarine Research Reserve (ANERR) staff has moved into the new facility in Eastpoint. Most staff from the two offices are now consolidated into one, and the functions of existing facilities have changed somewhat. Therefore this section describes facilities and their uses as they currently exist, but will anticipate use of the new facility and changes in the use of existing facilities. One of the practices employed at each of our facilities is the reduction of waste, and efficiency in energy usage. All existing facilities provide for the recycling of paper, aluminum, glass, and plastic. The Marshall House runs on solar power and the new facility is on course to be LEED (Leadership in Energy and Environmental Design) certified at the silver level. The chapter will also identify future facility needs.

### Emergency Action Plan

A hurricane plan is in place and updated annually for ANERR. This plan accounts for how all facilities, equipment and data sources are to be protected in the event of a storm, and provides for the relocation of vehicles, vessels and sensitive equipment. ANERR is also working with the other four Gulf of Mexico NERRs to develop a specific disaster response plan to be used in future incidents related to oil or hazardous waste spills as well as natural disasters.

### Existing Facilities

#### Apalachicola Facilities:

There are two facilities in Apalachicola. Both are situated in the city limits at the northern end of 7<sup>th</sup> Street. The first is ANERR's former visitor center, and located across the street from it is a portable office building. The property that the buildings sit on was conditionally given to the State of Florida by the City of Apalachicola so that ANERR would have an area to build its first facility. The visitor center is approximately 3,500 square feet, and has been expanded twice since it was built in 1984. It has multiple exhibit spaces and an auditorium that can accommodate 40 people. Staff is currently working with the City of Apalachicola, Department of Environmental Protection (DEP), and the National Oceanic and Atmospheric Administration (NOAA) to surplus the building and have it revert back to the City. ANERR is

currently paying electric, water and sewer charges on this vacant building. The portable office building has been converted into dormitory space for visiting researchers. This facility and the land surrounding it will be kept and maintained by ANERR for continuing use as a dorm and staging area for research trips, since ANERR boats are docked at the adjacent city marina.

#### **Old Eastpoint Facility:**

The two older facilities in Eastpoint, the former research/shop building and the visiting scientist dormitory, are located at the northern end of Carroll Street on a tract known as Magnolia Bluff. The old Eastpoint facilities are on state-owned lands leased to the Florida Fish and Wildlife Conservation Commission (FWC), and subleased to DEP's Office of Coastal and Aquatic Managed Areas (CAMA) under Sublease Agreement 3584-01, executed January 2001 (Appendix A.6). The purpose of the sublease is "only for the establishment and operation of administrative office, land base and maintenance shop, along with other related uses necessary for the accomplishment of this purpose." Although the area used to meet the purpose of the sublease is approximately four acres, the acreage total of the sublease is 203.6 acres. The sublease states that a management plan for the area is required. To meet the requirement of the sublease, an abbreviated management plan for the ANERR use site is included in this document (Appendix E.9).

The former research building, built in 1997, is 8,000 square feet, and provides office and laboratory space to the FWC Fisheries Independent Monitoring group. The laboratory is outfitted with a hood, and is used to calibrate field equipment, species identification work, sample and gear storage, and is also utilized by FWC. The shop area makes up 3,000 square feet of the building space. Many of ANERR's tools are stored here, and it is a space where the maintenance staff can do repairs to vehicles, vessels, and other equipment. The grounds around this building are mostly pine flatwoods that are surrounded by salt marsh along the northeastern shore of the bay. Behind the building is a dock that runs into the bay and possesses two lifts that hold ANERR boats for roughly three quarters of the year. The dock is wide enough to accommodate an All Terrain Vehicle (ATV) which the research team uses to haul equipment between the boats and the laboratory.

The visiting scientist dormitory is a portable building across the parking area from the research building. It has three bedrooms, two bathrooms, a kitchen, and a common space. A number of researchers and interns use this building each year. However, over the past five years structural issues have developed. The floor in the bathrooms and some of the common area has begun to deteriorate and the roof has leaked. Repairs are made to keep the building safe and comfortable for those who use it, but it is anticipated that the rate at which it requires repair will increase. An evaluation of the overall condition of the dormitory with a cost benefit analysis will be made to determine its future use.

#### **New Eastpoint Facility:**

The new ANERR facility is sited on 26 acres along the shore of Apalachicola Bay near the northern terminus of the St. George Island Bridge. The new ANERR Visitor Center opened to the public in February 2011. It is an extremely ecologically-friendly building and the site on which it was constructed is minimally disturbed. The facility is approximately 18,000 square feet and was funded by both NOAA acquisition and construction grant funds and money appropriated by the Florida Legislature. The site where the new facility is located was purchased by the State of Florida and assigned by the Board of Trustees of the Internal Improvement Trust Fund to CAMA to manage as part of ANERR. The site has a mix of pines and oaks with a nearby salt marsh.

The new facility was designed for multiple public and staff uses so that scripted programs and planned visits could happen simultaneously with normal walk-in visitation, and while both may happen in nearly the same space, neither would impinge on the other. For example the Visitor Center has a room within a room. This space is called the Bay Discovery room, which houses many hands-on exhibits. It has platform seating for roughly twenty-five. If a planned tour is watching a video or getting a presentation, the Bay Discovery room doors may be closed so the larger part of the Visitor Center remains available for casual visitors. In the same vein, the multipurpose room can comfortably seat one hundred and is equipped to show video, but the larger room is, by sliding partitions, divisible in two. When divided, the smaller portion will seat thirty and the larger room is available as meeting space. The arrival deck is connected to an amphitheater that lends itself to outdoor presentations, and doubles as a space where visitors may sit and relax. Since the building is on pilings there is space below, and plans are to use some of this space as a covered area for outdoor programs.

The exhibits in, and design of the new facility are meant to give visitors an orientation as to where they are in Florida and within the Apalachicola-Chattahoochee-Flint watershed. Much of the interpretation demonstrates the connectivity among habitats (river, bay and gulf), to teach a continuum of habitat





*Apalachola National Estuarine Research Reserve facilities in Eastpoint, Florida.*

versus discrete, separate systems. Also, many of the LEED design features of the building are interpreted through signage both in the building and on the grounds.

The new facility has an open area in the research and stewardship wing that houses the library, GIS area, and map room, along with a dive locker and shower area. There are two labs - a dry lab and a wet lab. A small kitchen was also included for use by staff and the CTP program to provide refreshments for their programs. Staff are currently designing signage to better enumerate planned trails and to enhance additional education components of the facility. Staff are also anticipating adding a screened-in education area under the building to accommodate field classes and school groups, bug-free.

**LEED Attributes:** The building was built to be LEED certified at the silver level, but is still awaiting certification. As such, new disturbance to the site was minimal. The building itself was planned to be constructed in an area previously disturbed therefore only a dozen or so small trees had to be removed. The building was built around larger trees. There is very little space between the forested habitat on site and the facility so it appears to be a natural component of the site. Because most disturbances were concentrated within the footprint of the building and the parking areas, the remaining vegetation on site is native, and the small amount of landscaping needed was done with native plants that are found on the parcel.

Other LEED attributes include the use of pervious materials for all parking spaces with the exception of three handicap parking spaces. Additionally, the roof of the facility drains into cisterns that have 40,000 liters of water storage capacity located underneath the facility. Together, these two features make a very significant reduction in storm water run-off from the site so that no retention ponds were required to be constructed, which further reduced impacts to the site. This was the aim of ANERR since the important Cat Point oyster reef stretches south from the new facility site. Also, the cisterns serve to provide water to flush the toilets in the facility and are available to irrigate landscaping. Many of the light sources used are compact fluorescent bulbs and most are on motion sensors so are only on when a room is occupied. Also, there are many generously apportioned windows that allow for ample natural light inside the facility. All carpet in the building is made from recycled materials, and put down in squares so that any damage to the carpet will only require the replacement of a square or two. The air handling system, and a heating, ventilating, and air conditioning (HVAC) unit, is programmed to respond to the heating or cooling needs of individual spaces or sections so that vacant areas are not over heated or over cooled. This system is also designed to moderate humidity levels so that conditioned air is not being overly absorbed by moist air in the building. Additionally, the HVAC system draws fresh air into the building which prevents stale air from continuing to be recycled.

#### **Little St. George Island Facilities:**

When Little St. George Island was purchased by the state, there existed a primitive house (Marshall House), a derelict barn, and the Cape St. George lighthouse. The education, research, and stewardship programs occasionally use the Marshall House when they have overnight programs on the island, and



it is used by staff to get out of inclement weather when they are working on the island. The derelict barn is not used, but a shed was built many years back and serves to store ATVs and other equipment that is used on the island. There are also two docks on Little St. George Island, a staff dock and a public access dock, currently being repaired by ANERR staff due to damage from hurricane Dennis in 2007. Finally, the lighthouse succumbed to coastal erosion and fell into the Gulf in October of 2005. Many of the bricks were recovered and used to rebuild the structure at a new location on St. George Island. The lighthouse belongs to ANERR (the state), but is managed by the St. George Lighthouse Association, a not-for-profit organization, under a lease agreement.

### Identified Future Facility Needs

**Trail/Boardwalk at New Facility (Estimated Cost: \$70,000):** The new ANERR facility was built with the residence time of visitors in mind. The building itself has a number of features that should keep visitors on site for a while, but having a trail around the grounds would increase the time of stay and help visitors make the connection between interpretive displays and actual ecosystems. The trail is visualized as extending from the base of the amphitheater to the shoreline of the bay, and then looping around the parking lot and building, around a freshwater marsh, oak hammock and pine flatwoods communities (see Map 27). Plus, it will pass by some pavilions with picnic tables that are next to the new facility. The freshwater wetlands would necessitate the need for boardwalk materials, and there are plans for interpretive signage with areas to sit for wildlife viewing. In addition there is an active eagle nest on-site and a viewing area with telescope is also planned as part of the trail system.

**Outdoor Education Lab (Estimated Cost: \$800,000):** While the new facility provides space beneath it for “wet lab” type activities it is open space with a loose dirt substrate. ANERR envisions an outdoor laboratory where students can examine samples taken from the nearby bay and wash equipment (and themselves), without bringing muddy shoes or samples into the building. To accomplish this, a slab will be poured, screen wall erected, sinks, cabinets, lights and overhead fans installed, and work tables and benches mounted. All manner of hands-on science could take place in this space and everything could be easily cleaned.

**Public Pier at New Facility (Estimated Cost: \$100,000):** ANERR currently has one living shoreline at the new site, is building an additional one to minimize erosion as a mitigation project, and is planning a third living shoreline. A public viewing pier is planned, with signage explaining and detailing the benefits





of living shorelines. The pier would extend from the shoreline, through the planted marsh, and over shallow oyster bars adjacent to the facility. The benefits to the public and the education and research programs would be extraordinary. Due to the shallowness of the water and the importance of the oyster bars, it will not be accessible to boats, but would function as a living classroom to all.

**Primitive Camping Area on Little St. George Island (Estimated Cost: \$15,000):** Parts of the Florida Circumnavigational Saltwater Paddling Trail, a 1,515-mile sea kayaking trail around the entire state, passes through ANERR, specifically Little St. George Island. ANERR is in the planning stages for a primitive camping area to be established on the island as part of the trail and for use by the public interested in a true primitive outdoor experience. The primitive camping area would have an on-site sewage system that needs no water or electricity, a gazebo/covered deck and firepit to control campfires. The area would be on the bayside of the island or easily accessible from the beach side. Appropriate signage would be provided, but the facility would be primitive in nature without electricity or running water.

#### **Trail Parking and Access Area at Nick's Hole**

The state-owned lands of Nick's Hole are located within the St. George Island Plantation, a private gated community on the west end of St. George Island. ANERR has been working in collaboration with the St. George Plantation Home Owner's Association as well as the Boy Scouts of America, to improve access at the Nick's Hole site for visitors and residents. Together, these groups have developed five pedestrian hiking trails throughout the site. Continued maintenance and trail improvements are recommended to improve access and to potentially provide for other future improvements such as bench seating, picnic areas, primitive campsites, and interpretive kiosks. The development of a designated parking area will serve visitors to ANERR's hiking trails and users of the St. George Island Plantation airport. The proposed parking area will accommodate approximately 16 parking spaces. The parking area will be designed to work around existing trees and significant foliage and will be composed of porous paving to provide the least amount of impacts as possible. The approximate total area is less than one acre.







*The Reserve contains a variety of habitats within its 234,715 acres.*

## Chapter Nine

# Land Acquisition Plan

### Scope and Purpose

#### **“Core” and “Buffer” Areas: National Estuarine Research Reserve System Regulations**

National Estuarine Research Reserve (NERR) regulations, 15 Code of Federal Regulations (C.F.R.), Section 921.13, outlines requirements for the selection and ranking of “ecologically key land and water areas of the Reserve.” These areas are to be prioritized based on their relative importance, including “a strategy for establishing long-term state control over those areas sufficient to provide protection for Reserve resources to ensure a stable research environment ...”

The ecological characteristics of a NERR, including its “biological productivity, diversity of flora and fauna, and capacity to attract a broad range of research and educational interests,” must necessarily be defined to establish requirements for managing in the most effective way possible the entire NERR, but particularly its most sensitive, or “core” areas. Assurance that the boundaries of Apalachicola NERR (ANERR) “encompass an adequate portion of the key land and water areas of the natural system [is defined] to approximate an ecological unit and to ensure effective conservation...Reserve boundaries must encompass the area within which adequate control has or will be established by the managing entity over human activities occurring within the Reserve ...Key land and water areas and a buffer zone will likely require significantly different levels of control”(15 C.F.R. 921.11). Key land and water areas are identified as “that core area within the Reserve that is so vital to the functioning of the estuarine ecosystem that it must be under a level of control sufficient to ensure the long-term viability of the Reserve for research on natural processes” (15 C.F.R. 921.11). Key land and water areas are those ecological units that “preserve, for research purposes, a full range of significant physical, chemical and biological factors contributing to the diversity of fauna, flora and natural processes occurring within the estuary” (15 C.F.R. 921.11). The establishment of which specific areas are to be identified as “core” within a NERR is determined by scientific knowledge of that area and the degree of scientific research occurring within that area.



Buffer areas of a NERR are identified as those areas that are “adjacent to or surrounding key land and water areas and are essential to maintaining their integrity. Buffer zones protect the core area and provide additional protection for estuarine-dependent species...” (15 C.F.R. 921.11).

NERR regulations also require that a NERR define the biological and ecological characteristics of land and water areas within the NERR, including requirements for “managing in the most effective way possible the entire NERR...” These land and water areas are thus designated as “core” areas, vital to the proper functioning of the entire system; and buffer areas, adjacent to, surrounding, or otherwise essential to the viability of core areas.

### **Apalachicola National Estuarine Research Reserve Core and Buffer Areas: Designation and Rationale**

#### **Core Area of the Apalachicola National Estuarine Research Reserve**

The core areas of ANERR are the estuarine waters and associated marshes, and uplands within the designated boundary of ANERR associated with the barrier islands, estuaries and rivers, as well as, their associated tributaries (Map 1). These core components ensure adequate, and direct, applications of state and federal control and management, providing sufficient protection to ensure the integrity of a stable platform for the continuation of ongoing scientific investigation.

#### **Buffer Area of the Apalachicola National Estuarine Research Reserve**

Buffer zones protect the core area and provide additional protection for estuarine-dependent species, including those that are rare or endangered. When determined appropriate by the state and approved by the National Oceanic and Atmospheric Administration (NOAA), buffer zones may also include areas necessary for facilities required for research and interpretation. Additionally, buffer zones are established sufficient to accommodate for a reasonably expected occurring shift of the core area resulting from biological, ecological or geomorphological change (i.e. climate change and related sea-level rise).

The historic natural watershed that serves as ANERR’s buffer area and supports ANERR’s core area is defined by both biotic and abiotic aspects including dynamics of natural areas, as well as, areas altered by human urbanization activities such as housing developments, roadways, canals, weirs, dikes and





dams. Multiple basins that comprise the areas providing water crucial to ANERR are located within ANERR's watershed. These basins include Carrabelle River, Apalachicola River, Brothers River, Chipola River, Chattahoochee River and Flint River. All the previously mentioned basins feed into the Apalachicola Bay basin which covers the entire ANERR (Map 8).

**Acquisition Plan Leads:**

Lee Edmiston, Environmental Administrator, ANERR.

Kim Miller-Wren, Stewardship Coordinator, ANERR.

José Canedo, GIS Specialist, ANERR.

**Role of the Apalachicola National Estuarine Research Reserve:** Stewardship, education, and research involving coastal ecosystems.

**Geographic Scope:** The ANERR boundary currently encompasses 234,715 acres of submerged lands and leased uplands in Franklin, Liberty and Gulf counties, Florida (Map 1). Inclusion of the potential acquisitions listed below would increase the size of ANERR by 50,122 acres, to 284,837 acres.

**Purpose:** Land consolidation and acquisition activities within ANERR include acquisition goals focused on assuring for the establishment of adequate long-term state control over areas sufficient to provide protection for ANERR resources and acquiring current in-holdings within the boundary. This protection in turn will ensure a stable environment for research activities within ANERR.

Of the total 234,715 acres within the ANERR boundary, 6,794 state-owned upland acres are managed by the Office of Coastal and Aquatic Managed Areas (CAMA) under lease from the Board of Trustees of the Internal Improvement Trust Fund. Many of the parcels are fragmented and disjunct but serve their acquisition purpose well by protecting the watershed from runoff-producing activities and providing public access. Other state and federally-owned parcels within ANERR's boundary include areas managed by Florida Fish and Wildlife Conservation Commission, Florida Park Service, U.S. Fish and Wildlife Service and North Florida Water Management District. ANERR management staff enjoy advantages and face challenges not typical of the NERR System, due to ANERR's large boundary, physical location and array of managing entities (see Chapter 5).

**Key Plan Elements: Prospective Land Acquisitions**

Historically, Florida's conservation land acquisition programs (Preservation 2000 (1990 – 1999); and Florida Forever (1999 – present)) have included in their annual allocations a relatively small acquisition fund for use by public land managers. These funds are utilized to acquire lands within or adjacent to existing managed areas. Referred to as Additions and Inholdings (A&I) acquisitions, these lands are identified by each agency in its respective Unit Management Plan as having intrinsic natural or cultural values, or for the extent to which the acquisition may enhance site management.

Historically, CAMA has not received separate A&I funding for acquisitions within, or adjacent to, existing managed area boundaries. The Florida Department of Environmental Protection's Division of State Lands has typically utilized funds from the broader statewide allocations to assist CAMA in developing optimum boundaries or other A&I objectives through small acquisitions. In addition to the Division of State Lands, another alternative utilized by CAMA to acquire A&I assistance is through review of proposed Unit Management Plans developed by public land managers within ANERR boundaries. In some cases, A&I proposals that serve the needs of publicly-managed sites will also serve the objectives of CAMA or ANERR. It is also both effective and of potentially greater impact when CAMA identifies and sponsors, either alone or jointly, proposed stand-alone Florida Forever projects. In the case of ANERR, its size and the number of public lands within its boundary tend to focus acquisition efforts on enhancement of existing areas within the boundary, rather than expanding the boundary itself. Therefore, this plan does not contemplate lands to be acquired for boundary expansion.

There are two existing Florida Forever projects that are considered priorities by ANERR:

First, the St. Joe Timberland project, which includes, among others, the St. Vincent Sound-to-Lake Wimico Ecosystem project. If acquired, this project would connect St. Joseph Bay State Buffer Preserve, the Box-R Wildlife Management Area and ANERR. It includes a large portion of the Depot Creek drainage, and a large portion of the southern parcel flows directly into St. Vincent Sound, part of Apalachicola Bay.

Second, the Pierce Mound Complex Florida Forever project would place in public ownership one of the state's important archaeological sites and would also add a mosaic of upland natural communities.

Recommended acquisition priorities for Apalachicola National Estuarine Research Reserve (in order of priority)			
Parcel / Florida Forever Project	Acres	Property Description	Acquisition Reason
<b>St. Vincent Sound -to-Lake Wimico Ecosystem</b> (St. Joe Timberland Project)	49,565	This particular site contains approximately 12 miles of bayshore, pine uplands, wet prairies, cypress swamps, salt flats, and creek and river swamps that flank portions of three blackwater rivers and coastal bluffs.	Water quality protection, wildlife habitat and travel corridors and rare species protection.
<b>Pierce Mound Complex</b> (Pierce Mound Complex Project)	557	This project includes one of the most important archaeological sites in Florida. The former Indian mounds and village sites on this property served as both secular and ritual centers during centuries of use. Natural communities include estuarine tidal marsh, mesic flatwoods, hydric hammock, scrub, maritime hammock, and scrubby flatwoods.	Protection of prehistoric cultural artifacts, provide for public access and education and protect aquatic resources.

*Table 8 / Recommended acquisition priorities for Apalachicola National Estuarine Research Reserve.*

### **Potential Funding Sources and Other Conservation and Acquisition Efforts**

ANERR will continue to pursue all possible county, state and federal fee-simple land acquisition programs for funding. ANERR has developed a strong partnership with Franklin County, The Nature Conservancy and Northwest Florida Water Management District. ANERR will also work with other major landowners to explore less-than-fee options for strategic conservation.



# Lists of Appendices

Appendix A / <b>Legal Documents</b> .....	118
A.1 / Code of Federal Regulations .....	118
A.2 / Conceptual State Lands Management Plan .....	143
A.3 / Aquatic Preserve Resolution .....	179
A.4 / Florida Statutes .....	180
A.5 / Florida Administrative Code .....	180
A.6 / Management Agreements and Related Documents .....	181
Memorandums of Understanding and Memorandums of Agreement.....	181
Apalachicola Regional Stewardship Alliance Memorandum of Understanding.....	181
Florida Division of Forestry Memorandum of Agreement.....	210
Other Agreements.....	216
Magnolia Bluff Sublease.....	216
Citizen Support Organization Agreement.....	246
Administration Agreement for the Apalachicola National Estuarine Research Reserve .....	250
First Baptist Church of St. George Island Special Use Permit .....	276
Appendix B / <b>Resource Data</b> .....	284
B.1 / Acronym List.....	284
B.2 / Glossary of Terms .....	285
B.3 / References.....	286
B.4 / Species Lists .....	304
Species of the Apalachicola River and Bay Basin.....	304
Listed Species .....	354
Non-native Species.....	358
B.5 / Monitoring Data.....	359
B.6 / Summary of Florida Natural Areas Inventory Descriptions .....	361
B.7 / Summary of Apalachicola National Estuarine Research Reserve Policies .....	364
Appendix C / <b>Public Involvement</b> .....	365
C.1 / Advisory Committee .....	365
List of Members and their Affiliations.....	365
Florida Administrative Weekly Postings .....	366
Meeting Summaries.....	368
C.2 / Public Scoping Meeting(s).....	370
Florida Administrative Weekly Posting(s).....	370
Advertisement Flyers .....	371
Summary of the Public Scoping Meeting(s).....	372
C.3 / Formal Public Meeting(s) .....	375
Florida Administrative Weekly Posting(s).....	375
Advertisement Flyers .....	376
Summary of the Formal Public Meeting(s) .....	377
C.4 / Acquisition and Restoration Approval Letter .....	382
C.5 / Federal Review.....	383
Federal Review and Public Commenting.....	383
Federal Register Notices .....	384
Appendix D / <b>Goals, Objectives and Strategies Tables</b> .....	386
D.1 / Current Goals, Objectives and Strategies Table.....	386
D.2 / Budget Summary Table.....	397
D.3 / Major Accomplishments since the Approval of the Previous Plan .....	398
D.4 / Eliminated Goals, Objectives and Strategies from Previous Plan .....	399
Appendix E / <b>Division of State Lands/Acquisition and Restoration Council Requirements</b> .....	401
E.1 / Acquisition and Restoration Council Management Plan Compliance Checklist.....	401
E.2 / Trustees Lease Agreement and Related Documents .....	404
E.3 / Letter of Compliance of the Management Plan with the Local Government Comprehensive Plan.....	405
E.4 / Management Prospectus.....	406
E.5 / Fire Management Plan .....	406
E.6 / Management Procedures for Archaeological and Historical Sites and Properties on State-Owned or Controlled Lands.....	417
E.7 / Analysis of Contracting Potential .....	418
E.8 / Land Management Review Team Recommendations.....	419
E.9 / Magnolia Bluff Management Plan .....	426
E.10 / Arthropod Control Letter .....	436

**National Estuarine Research Reserve Legal Requirements**  
15 Code of Federal Regulations Part 921

**SUBCHAPTER B—OCEAN AND COASTAL RESOURCE  
MANAGEMENT**

**PART 921—NATIONAL ESTUARINE  
RESEARCH RESERVE SYSTEM REG-  
ULATIONS**

**Subpart A—General**

Sec.

- 921.1 Mission, goals and general provisions.  
921.2 Definitions.  
921.3 National Estuarine Research Reserve System biogeographic classification scheme and estuarine typologies.  
921.4 Relationship to other provisions of the Coastal Zone Management Act and the Marine Protection, Research and Sanctuaries Act.

**Subpart B—Site Selection, Post Site Selection and Management Plan Development**

- 921.10 General.  
921.11 Site selection and feasibility.  
921.12 Post site selection.  
921.13 Management plan and environmental impact statement development.

**Subpart C—Acquisition, Development and Preparation of the Final Management Plan**

- 921.20 General.  
921.21 Initial acquisition and development awards.

**Subpart D—Reserve Designation and Subsequent Operation**

- 921.30 Designation of National Estuarine Research Reserves.  
921.31 Supplemental acquisition and development awards.  
921.32 Operation and management: Implementation of the management plan.  
921.33 Boundary changes, amendments to the management plan, and addition of multiple-site components.

**Subpart E—Ongoing Oversight, Performance Evaluation and Withdrawal of Designation**

- 921.40 Ongoing oversight and evaluations of designated National Estuarine Research Reserves.  
921.41 Withdrawal of designation.

**Subpart F—Special Research Projects**

- 921.50 General.  
921.51 Estuarine research guidelines.

- 921.52 Promotion and coordination of estuarine research.

**Subpart G—Special Monitoring Projects**

- 921.60 General.

**Subpart H—Special Interpretation and Education Projects**

- 921.70 General.

**Subpart I—General Financial Assistance Provisions**

- 921.80 Application information.  
921.81 Allowable costs.  
921.82 Amendments to financial assistance awards.

APPENDIX I TO PART 921—BIOGEOGRAPHIC CLASSIFICATION SCHEME

APPENDIX II TO PART 921—TYPOLOGY OF NATIONAL ESTUARINE RESEARCH RESERVES

AUTHORITY: Section 315 of the Coastal Zone Management Act, as amended (16 U.S.C. 1461).

SOURCE: 58 FR 38215, July 15, 1993, unless otherwise noted.

**Subpart A—General**

**§921.1 Mission, goals and general provisions.**

(a) The mission of the National Estuarine Research Reserve Program is the establishment and management, through Federal-state cooperation, of a national system (National Estuarine Research Reserve System or System) of estuarine research reserves (National Estuarine Research Reserves or Reserves) representative of the various regions and estuarine types in the United States. National Estuarine Research Reserves are established to provide opportunities for long-term research, education, and interpretation.

(b) The goals of the Program are to:

- (1) Ensure a stable environment for research through long-term protection of National Estuarine Research Reserve resources;

- (2) Address coastal management issues identified as significant through coordinated estuarine research within the System;



(3) Enhance public awareness and understanding of estuarine areas and provide suitable opportunities for public education and interpretation;

(4) Promote Federal, state, public and private use of one or more Reserves within the System when such entities conduct estuarine research; and

(5) Conduct and coordinate estuarine research within the System, gathering and making available information necessary for improved understanding and management of estuarine areas.

(c) National Estuarine Research Reserves shall be open to the public to the extent permitted under state and Federal law. Multiple uses are allowed to the degree compatible with each Reserve's overall purpose as provided in the management plan (see §921.13) and consistent with paragraphs (a) and (b) of this section. Use levels are set by the state where the Reserve is located and analyzed in the management plan. The Reserve management plan shall describe the uses and establish priorities among these uses. The plan shall identify uses requiring a state permit, as well as areas where uses are encouraged or prohibited. Consistent with resource protection and research objectives, public access and use may be restricted to certain areas or components within a Reserve.

(d) Habitat manipulation for research purposes is allowed consistent with the following limitations. Manipulative research activities must be specified in the management plan, be consistent with the mission and goals of the program (see paragraphs (a) and (b) of this section) and the goals and objectives set forth in the Reserve's management plan, and be limited in nature and extent to the minimum manipulative activity necessary to accomplish the stated research objective. Manipulative research activities with a significant or long-term impact on Reserve resources require the prior approval of the state and the National Oceanic and Atmospheric Administration (NOAA). Manipulative research activities which can reasonably be expected to have a significant adverse impact on the estuarine resources and habitat of a Reserve, such that the activities themselves or their resulting short- and

long-term consequences compromise the representative character and integrity of a Reserve, are prohibited. Habitat manipulation for resource management purposes is prohibited except as specifically approved by NOAA as: (1) A restoration activity consistent with paragraph (e) of this section; or (2) an activity necessary for the protection of public health or the preservation of other sensitive resources which have been listed or are eligible for protection under relevant Federal or state authority (e.g., threatened/endangered species or significant historical or cultural resources) or if the manipulative activity is a long-term pre-existing use (*i.e.*, has occurred prior to designation) occurring in a buffer area. If habitat manipulation is determined to be necessary for the protection of public health, the preservation of sensitive resources, or if the manipulation is a long-term pre-existing use in a buffer area, then these activities shall be specified in the Reserve management plan in accordance with §921.13(a)(10) and shall be limited to the reasonable alternative which has the least adverse and shortest term impact on the representative and ecological integrity of the Reserve.

(e) Under the Act an area may be designated as an estuarine Reserve only if the area is a representative estuarine ecosystem that is suitable for long-term research. Many estuarine areas have undergone some ecological change as a result of human activities (e.g., hydrological changes, intentional/unintentional species composition changes—introduced and exotic species). In those areas proposed or designated as National Estuarine Research Reserves, such changes may have diminished the representative character and integrity of the site. Although restoration of degraded areas is not a primary purpose of the System, such activities may be permitted to improve the representative character and integrity of a Reserve. Restoration activities must be carefully planned and approved by NOAA through the Reserve management plan. Historical research may be necessary to determine the "natural" representative state of an estuarine area (*i.e.*, an estuarine ecosystem minimally affected by



human activity or influence). Frequently, restoration of a degraded estuarine area will provide an excellent opportunity for management oriented research.

(f) NOAA may provide financial assistance to coastal states, not to exceed, per Reserve, 50 percent of all actual costs or \$5 million whichever amount is less, to assist in the acquisition of land and waters, or interests therein. NOAA may provide financial assistance to coastal states not to exceed 70 percent of all actual costs for the management and operation of, the development and construction of facilities, and the conduct of educational or interpretive activities concerning Reserves (see subpart I). NOAA may provide financial assistance to any coastal state or public or private person, not to exceed 70 percent of all actual costs, to support research and monitoring within a Reserve. Notwithstanding any financial assistance limits established by this Part, when financial assistance is provided from amounts recovered as a result of damage to natural resources located in the coastal zone, such assistance may be used to pay 100 percent of all actual costs of activities carried out with this assistance, as long as such funds are available. Predesignation, acquisition and development, operation and management, special research and monitoring, and special education and interpretation awards are available under the National Estuarine Reserve Program. Predesignation awards are for site selection/feasibility, draft management plan preparation and conduct of basic characterization studies. Acquisition and development awards are intended primarily for acquisition of interests in land, facility construction and to develop and/or upgrade research, monitoring and education programs. Operation and management awards provide funds to assist in implementing, operating and managing the administrative, and basic research, monitoring and education programs, outlined in the Reserve management plan. Special research and monitoring awards provide funds to conduct estuarine research and monitoring projects with the System. Special educational and interpretive awards provide funds to conduct estuarine educational and

interpretive projects within the System.

(g) Lands already in protected status managed by other Federal agencies, state or local governments, or private organizations may be included within National Estuarine Research Reserves only if the managing entity commits to long term management consistent with paragraphs (d) and (e) of this section in the Reserve management plan. Federal lands already in protected status may not comprise a majority of the key land and water areas of a Reserve (see §921.11(c)(3)).

(h) To assist the states in carrying out the Program's goals in an effective manner, NOAA will coordinate a research and education information exchange throughout the National Estuarine Research Reserve System. As part of this role, NOAA will ensure that information and ideas from one Reserve are made available to others in the System. The network will enable Reserves to exchange information and research data with each other, with universities engaged in estuarine research, and with Federal, state, and local agencies. NOAA's objective is a system-wide program of research and monitoring capable of addressing the management issues that affect long-term productivity of our Nation's estuaries.

[58 FR 38215, July 15, 1993, as amended at 62 FR 12540, Mar. 17, 1997; 63 FR 26717, May 14, 1998]

#### §921.2 Definitions.

(a) *Act* means the Coastal Zone Management Act of 1972, as amended, 16 U.S.C. 1451 *et seq.*

(b) *Assistant Administrator* means the Assistant Administrator for Ocean Services and Coastal Zone Management or delegee.

(c) *Coastal state* means a state of the United States, in or bordering on, the Atlantic, Pacific, or Arctic Ocean, the Gulf of Mexico, Long Island Sound, or one or more of the Great Lakes. For the purposes of these regulations the term also includes Puerto Rico, the Virgin Islands, Guam, the Commonwealth of the Northern Marianas Islands, the Trust Territories of the Pacific Islands, and American Samoa (see 16 U.S.C. 1453(4)).



(d) *State agency* means an instrumentality of a coastal state to whom the coastal state has delegated the authority and responsibility for the creation and/or management/operation of a National Estuarine Research Reserve. Factors indicative of this authority may include the power to receive and expend funds on behalf of the Reserve, acquire and sell or convey real and personal property interests, adopt rules for the protection of the Reserve, enforce rules applicable to the Reserve, or develop and implement research and education programs for the reserve. For the purposes of these regulations, the terms "coastal state" and "State agency" shall be synonymous.

(e) *Estuary* means that part of a river or stream or other body of water having unimpaired connection with the open sea, where the sea water is measurably diluted with fresh water derived from land drainage. The term also includes estuary-type areas with measurable freshwater influence and having unimpaired connections with the open sea, and estuary-type areas of the Great Lakes and their connecting waters (see 16 U.S.C. 1453(7)).

(f) *National Estuarine Research Reserve* means an area that is a representative estuarine ecosystem suitable for long-term research, which may include all of the key land and water portion of an estuary, and adjacent transitional areas and uplands constituting to the extent feasible a natural unit, and which is set aside as a natural field laboratory to provide long-term opportunities for research, education, and interpretation on the ecological relationships within the area (see 16 U.S.C. 1453(8)) and meets the requirements of 16 U.S.C. 1461(b). This includes those areas designated as National Estuarine Sanctuaries or Reserves under section 315 of the Act prior to enactment of the Coastal Zone Act Reauthorization Amendments of 1990 and each area subsequently designated as a National Estuarine Research Reserve.

**§921.3 National Estuarine Research Reserve System biogeographic classification scheme and estuarine typologies.**

(a) National Estuarine Research Reserves are chosen to reflect regional

differences and to include a variety of ecosystem types. A biogeographic classification scheme based on regional variations in the nation's coastal zone has been developed. The biogeographic classification scheme is used to ensure that the National Estuarine Research Reserve System includes at least one site from each region. The estuarine typology system is utilized to ensure that sites in the System reflect the wide range of estuarine types within the United States.

(b) The biogeographic classification scheme, presented in appendix I, contains 29 regions. Figure 1 graphically depicts the biogeographic regions of the United States.

(c) The typology system is presented in appendix II.

**§921.4 Relationship to other provisions of the Coastal Zone Management Act, and to the Marine Protection, Research and Sanctuaries Act.**

(a) The National Estuarine Research Reserve System is intended to provide information to state agencies and other entities involved in addressing coastal management issues. Any coastal state, including those that do not have approved coastal management programs under section 306 of the Act, is eligible for an award under the National Estuarine Research Reserve Program (see §921.2(c)).

(b) For purposes of consistency review by states with a federally approved coastal management program, the designation of a National Estuarine Research Reserve is deemed to be a Federal activity, which, if directly affecting the state's coastal zone, must be undertaken in a manner consistent to the maximum extent practicable with the approved state coastal management program as provided by section 1456(c)(1) of the Act, and implementing regulations at 15 CFR part 930, subpart C. In accordance with section 1456(c)(1) of the Act and the applicable regulations NOAA will be responsible for certifying that designation of the Reserve is consistent with the state's approved coastal management program. The state must concur with or object to the certification. It is recommended that the lead state agency for Reserve designation consult, at the



earliest practicable time, with the appropriate state officials concerning the consistency of a proposed National Estuarine Research Reserve.

(c) The National Estuarine Research Reserve Program will be administered in close coordination with the National Marine Sanctuary Program (Title III of the Marine Protection, Research and Sanctuaries Act, as amended, 16 U.S.C. 1431-1445), also administered by NOAA. Title III authorizes the Secretary of Commerce to designate discrete areas of the marine environment as National Marine Sanctuaries to protect or restore such areas for their conservation, recreational, ecological, historical, research, educational or esthetic values. National Marine Sanctuaries and Estuarine Research Reserves may not overlap, but may be adjacent.

### **Subpart B—Site Selection, Post Site Selection and Management Plan Development**

#### **§ 921.10 General.**

(a) A coastal state may apply for Federal financial assistance for the purpose of site selection, preparation of documents specified in § 921.13 (draft management plan (DMP) and environmental impact statement (EIS)), and the conduct of limited basic characterization studies. The total Federal share of this assistance may not exceed \$100,000. Federal financial assistance for preacquisition activities under § 921.11 and § 921.12 is subject to the total \$5 million for which each Reserve is eligible for land acquisition. Notwithstanding the above, when financial assistance is provided from amounts recovered as a result of damage to natural resources located in the coastal zone, such assistance may be used to pay 100 percent of all actual costs of activities carried out with this assistance, as long as such funds are available. In the case of a biogeographic region (see appendix I) shared by two or more coastal states, each state is eligible for Federal financial assistance to establish a separate National Estuarine Research Reserve within their respective portion of the shared biogeographic region. Each separate National Estuarine Research Reserve is eligible for the full complement of

funding. Financial assistance application procedures are specified in subpart I.

(b) In developing a Reserve program, a state may choose to develop a multiple-site Reserve reflecting a diversity of habitats in a single biogeographic region. A multiple-site Reserve allows the state to develop complementary research and educational programs within the individual components of its multi-site Reserve. Multiple-site Reserves are treated as one Reserve in terms of financial assistance and development of an overall management framework and plan. Each individual site of a proposed multiple-site Reserve shall be evaluated both separately under § 921.11(c) and collectively as part of the site selection process. A coastal state may propose to establish a multiple-site Reserve at the time of the initial site selection, or at any point in the development or operation of the Reserve. If the state decides to develop a multiple-site National Estuarine Research Reserve after the initial acquisition and development award is made for a single site, the proposal is subject to the requirements set forth in § 921.33(b). However, a state may not propose to add one or more sites to an already designated Reserve if the operation and management of such Reserve has been found deficient and uncorrected or the research conducted is not consistent with the Estuarine Research Guidelines referenced in § 921.51. In addition, Federal funds for the acquisition of a multiple-site Reserve remain limited to \$5,000,000 (see § 921.20). The funding for operation of a multiple-site Reserve is limited to the maximum allowed for any one Reserve per year (see § 921.32(c)) and preacquisition funds are limited to \$100,000 per Reserve. Notwithstanding the above, when financial assistance is provided from amounts recovered as a result of damage to natural resources located in the coastal zone, such assistance may be used to pay 100 percent of all actual costs of activities carried out with this assistance, as long as such funds are available.

[58 FR 38215, July 15, 1993, as amended at 63 FR 26717, May 14, 1998]



**§921.11 Site selection and feasibility.**

(a) A coastal state may use Federal funds to establish and implement a site selection process which is approved by NOAA.

(b) In addition to the requirements set forth in subpart 1, a request for Federal funds for site selection must contain the following programmatic information:

(1) A description of the proposed site selection process and how it will be implemented in conformance with the biogeographic classification scheme and typology (§921.3);

(2) An identification of the site selection agency and the potential management agency; and

(3) A description of how public participation will be incorporated into the process (see §921.11(d)).

(c) As part of the site selection process, the state and NOAA shall evaluate and select the final site(s). NOAA has final authority in approving such sites. Site selection shall be guided by the following principles:

(1) The site's contribution to the biogeographical and typological balance of the National Estuarine Research Reserve System. NOAA will give priority consideration to proposals to establish Reserves in biogeographic regions or subregions or incorporating types that are not represented in the system. (see the biogeographic classification scheme and typology set forth in §921.3 and appendices I and II);

(2) The site's ecological characteristics, including its biological productivity, diversity of flora and fauna, and capacity to attract a broad range of research and educational interests. The proposed site must be a representative estuarine ecosystem and should, to the maximum extent possible, be an estuarine ecosystem minimally affected by human activity or influence (see §921.1(e)).

(3) Assurance that the site's boundaries encompass an adequate portion of the key land and water areas of the natural system to approximate an ecological unit and to ensure effective conservation. Boundary size will vary greatly depending on the nature of the ecosystem. Reserve boundaries must encompass the area within which adequate control has or will be established

by the managing entity over human activities occurring within the Reserve. Generally, Reserve boundaries will encompass two areas: Key land and water areas (or "core area") and a buffer zone. Key land and water areas and a buffer zone will likely require significantly different levels of control (see §921.13(a)(7)). The term "key land and water areas" refers to that core area within the Reserve that is so vital to the functioning of the estuarine ecosystem that it must be under a level of control sufficient to ensure the long-term viability of the Reserve for research on natural processes. Key land and water areas, which comprise the core area, are those ecological units of a natural estuarine system which preserve, for research purposes, a full range of significant physical, chemical and biological factors contributing to the diversity of fauna, flora and natural processes occurring within the estuary. The determination of which land and water areas are "key" to a particular Reserve must be based on specific scientific knowledge of the area. A basic principle to follow when deciding upon key land and water areas is that they should encompass resources representative of the total ecosystem, and which if compromised could endanger the research objectives of the Reserve. The term *buffer zone* refers to an area adjacent to or surrounding key land and water areas and essential to their integrity. Buffer zones protect the core area and provide additional protection for estuarine-dependent species, including those that are rare or endangered. When determined appropriate by the state and approved by NOAA, the buffer zone may also include an area necessary for facilities required for research and interpretation. Additionally, buffer zones should be established sufficient to accommodate a shift of the core area as a result of biological, ecological or geomorphological change which reasonably could be expected to occur. National Estuarine Research Reserves may include existing Federal or state lands already in a protected status where mutual benefit can be enhanced. However, NOAA will not approve a site



for potential National Estuarine Research Reserve status that is dependent primarily upon the inclusion of currently protected Federal lands in order to meet the requirements for Reserve status (such as key land and water areas). Such lands generally will be included within a Reserve to serve as a buffer or for other ancillary purposes; and may be included, subject to NOAA approval, as a limited portion of the core area;

(4) The site's suitability for long-term estuarine research, including ecological factors and proximity to existing research facilities and educational institutions;

(5) The site's compatibility with existing and potential land and water uses in contiguous areas as well as approved coastal and estuarine management plans; and

(6) The site's importance to education and interpretive efforts, consistent with the need for continued protection of the natural system.

(d) Early in the site selection process the state must seek the views of affected landowners, local governments, other state and Federal agencies and other parties who are interested in the area(s) being considered for selection as a potential National Estuarine Research Reserve. After the local government(s) and affected landowner(s) have been contacted, at least one public meeting shall be held in the vicinity of the proposed site. Notice of such a meeting, including the time, place, and relevant subject matter, shall be announced by the state through the area's principal newspaper at least 15 days prior to the date of the meeting and by NOAA in the FEDERAL REGISTER.

(e) A state request for NOAA approval of a proposed site (or sites in the case of a multi-site Reserve) must contain a description of the proposed site(s) in relationship to each of the site selection principals (§921.11(c)) and the following information:

(1) An analysis of the proposed site(s) based on the biogeographical scheme/typology discussed in §921.3 and set forth in appendices I and II;

(2) A description of the proposed site(s) and its (their) major resources, including location, proposed bound-

aries, and adjacent land uses. Maps are required;

(3) A description of the public participation process used by the state to solicit the views of interested parties, a summary of comments, and, if interstate issues are involved, documentation that the Governor(s) of the other affected state(s) has been contacted. Copies of all correspondence, including contact letters to all affected landowners must be appended;

(4) A list of all sites considered and a brief statement of the reasons why a site was not preferred; and

(5) A nomination of the proposed site(s) for designation as a National Estuarine Research Reserve by the Governor of the coastal state in which the state is located,

(f) A state proposing to reactivate an inactive site, previously approved by NOAA for development as an Estuarine Sanctuary or Reserve, may apply for those funds remaining, if any, provided for site selection and feasibility (§921.11a)) to determine the feasibility of reactivation. This feasibility study must comply with the requirements set forth in §921.11 (c) through (e).

#### §921.12 Post site selection.

(a) At the time of the coastal state's request for NOAA approval of a proposed site, the state may submit a request for funds to develop the draft management plan and for preparation of the EIS. At this time, the state may also submit a request for the remainder of the predesignation funds to perform a limited basic characterization of the physical, chemical and biological characteristics of the site approved by NOAA necessary for providing EIS information to NOAA. The state's request for these post site selection funds must be accompanied by the information specified in subpart I and, for draft management plan development and EIS information collection, the following programmatic information:

(1) A draft management plan outline (see §921.13(a) below); and

(2) An outline of a draft memorandum of understanding (MOU) between the state and NOAA detailing the Federal-state role in Reserve management during the initial period of Federal funding and expressing the



state's long-term commitment to operate and manage the Reserve.

(b) The state is eligible to use the funds referenced in §921.12(a) after the proposed site is approved by NOAA under the terms of §921.11.

**§921.13 Management plan and environmental impact statement development.**

(a) After NOAA approves the state's proposed site and application for funds submitted pursuant to §921.12, the state may begin draft management plan development and the collection of information necessary for the preparation by NOAA of an EIS. The state shall develop a draft management plan, including an MOU. The plan shall set out in detail:

(1) Reserve goals and objectives, management issues, and strategies or actions for meeting the goals and objectives;

(2) An administrative plan including staff roles in administration, research, education/interpretation, and surveillance and enforcement;

(3) A research plan, including a monitoring design;

(4) An education/interpretive plan;

(5) A plan for public access to the Reserve;

(6) A construction plan, including a proposed construction schedule, general descriptions of proposed developments and general cost estimates. Information should be provided for proposed minor construction projects in sufficient detail to allow these projects to begin in the initial phase of acquisition and development. A categorical exclusion, environmental assessment, or EIS may be required prior to construction;

(7)(i) An acquisition plan identifying the ecologically key land and water areas of the Reserve, ranking these areas according to their relative importance, and including a strategy for establishing adequate long-term state control over these areas sufficient to provide protection for Reserve resources to ensure a stable environment for research. This plan must include an identification of ownership within the proposed Reserve boundaries, including land already in the public domain; the method(s) of acquisition which the

state proposes to use—acquisition (including less-than-fee simple options) to establish adequate long-term state control; an estimate of the fair market value of any property interest—which is proposed for acquisition; a schedule estimating the time required to complete the process of establishing adequate state control of the proposed research reserve; and a discussion of any anticipated problems. In selecting a preferred method(s) for establishing adequate state control over areas within the proposed boundaries of the Reserve, the state shall perform the following steps for each parcel determined to be part of the key land and water areas (control over which is necessary to protect the integrity of the Reserve for research purposes), and for those parcels required for research and interpretive support facilities or buffer purposes:

(A) Determine, with appropriate justification, the minimum level of control(s) required [e.g., management agreement, regulation, less-than-fee simple property interest (e.g., conservation easement), fee simple property acquisition, or a combination of these approaches]. This does not preclude the future necessity of increasing the level of state control;

(B) Identify the level of existing state control(s);

(C) Identify the level of additional state control(s), if any, necessary to meet the minimum requirements identified in paragraph (a)(7)(i)(A) of this section;

(D) Examine all reasonable alternatives for attaining the level of control identified in paragraph (a)(7)(i)(C) of this section, and perform a cost analysis of each; and

(E) Rank, in order of cost, the methods (including acquisition) identified in paragraph (a)(7)(i)(D) of this section.

(ii) An assessment of the relative cost-effectiveness of control alternatives shall include a reasonable estimate of both short-term costs (e.g., acquisition of property interests, regulatory program development including associated enforcement costs, negotiation, adjudication, etc.) and long-term costs (e.g., monitoring, enforcement,



adjudication, management and coordination). In selecting a preferred method(s) for establishing adequate state control over each parcel examined under the process described above, the state shall give priority consideration to the least costly method(s) of attaining the minimum level of long-term control required. Generally, with the possible exception of buffer areas required for support facilities, the level of control(s) required for buffer areas will be considerably less than that required for key land and water areas. This acquisition plan, after receiving the approval of NOAA, shall serve as a guide for negotiations with landowners. A final boundary for the reserve shall be delineated as a part of the final management plan;

(8) A resource protection plan detailing applicable authorities, including allowable uses, uses requiring a permit and permit requirements, any restrictions on use of the research reserve, and a strategy for research reserve surveillance and enforcement of such use restrictions, including appropriate government enforcement agencies;

(9) If applicable, a restoration plan describing those portions of the site that may require habitat modification to restore natural conditions;

(10) If applicable, a resource manipulation plan, describing those portions of the Reserve buffer in which long-term pre-existing (prior to designation) manipulation for reasons not related to research or restoration is occurring. The plan shall explain in detail the nature of such activities, shall justify why such manipulation should be permitted to continue within the reserve buffer; and shall describe possible effects of this manipulation on key land and water areas and their resources;

(11) A proposed memorandum of understanding (MOU) between the state and NOAA regarding the Federal-state relationship during the establishment and development of the National Estuarine Research Reserve, and expressing a long-term commitment by the state to maintain and manage the Reserve in accordance with section 315 of the Act, 16 U.S.C. 1461, and applicable regulations. In conjunction with the MOU, and where possible under state law, the state will consider taking appropriate

administrative or legislative action to ensure the long-term protection and operation of the National Estuarine Research Reserve. If other MOUs are necessary (such as with a Federal agency, another state agency or private organization), drafts of such MOUs must be included in the plan. All necessary MOU's shall be signed prior to Reserve designation; and

(12) If the state has a federally approved coastal management program, a certification that the National Estuarine Research Reserve is consistent to the maximum extent practicable with that program. See §§921.4(b) and 921.30(b).

(b) Regarding the preparation of an EIS under the National Environmental Policy Act on a National Estuarine Research Reserve proposal, the state and NOAA shall collect all necessary information concerning the socioeconomic and environmental impacts associated with implementing the draft management plan and feasible alternatives to the plan. Based on this information, the state will draft and provide NOAA with a preliminary EIS.

(c) Early in the development of the draft management plan and the draft EIS, the state and NOAA shall hold a scoping meeting (pursuant to NEPA) in the area or areas most affected to solicit public and government comments on the significant issues related to the proposed action. NOAA will publish a notice of the meeting in the FEDERAL REGISTER at least 15 days prior to the meeting. The state shall be responsible for publishing a similar notice in the local media.

(d) NOAA will publish a FEDERAL REGISTER notice of intent to prepare a draft EIS. After the draft EIS is prepared and filed with the Environmental Protection Agency (EPA), a Notice of Availability of the draft EIS will appear in the FEDERAL REGISTER. Not less than 30 days after publication of the notice, NOAA will hold at least one public hearing in the area or areas most affected by the proposed national estuarine research reserve. The hearing will be held no sooner than 15 days after appropriate notice of the meeting has been given in the principal news media by the state and in the FEDERAL REGISTER by NOAA. After a 45-day



comment period, a final EIS will be prepared by the state and NOAA.

### Subpart C—Acquisition, Development and Preparation of the Final Management Plan

#### § 921.20 General.

The acquisition and development period is separated into two major phases. After NOAA approval of the site, draft management plan and draft MOU, and completion of the final EIS, a coastal state is eligible for an initial acquisition and development award(s). In this initial phase, the state should work to meet the criteria required for formal research reserve designation; e.g., establishing adequate state control over the key land and water areas as specified in the draft management plan and preparing the final management plan. These requirements are specified in § 921.30. Minor construction in accordance with the draft management plan may also be conducted during this initial phase. The initial acquisition and development phase is expected to last no longer than three years. If necessary, a longer time period may be negotiated between the state and NOAA. After Reserve designation, a state is eligible for a supplemental acquisition and development award(s) in accordance with § 921.31. In this post-designation acquisition and development phase, funds may be used in accordance with the final management plan to construct research and educational facilities, complete any remaining land acquisition, for program development, and for restorative activities identified in the final management plan. In any case, the amount of Federal financial assistance provided to a coastal state with respect to the acquisition of lands and waters, or interests therein, for any one National Estuarine Research Reserve may not exceed an amount equal to 50 percent of the costs of the lands, waters, and interests therein or \$5,000,000, whichever amount is less, except when the financial assistance is provided from amounts recovered as a result of damage to natural resources located in the coastal zone, in which case the assistance may be used to pay 100 percent of all actual costs of activities carried out

with this assistance, as long as such funds are available.

[58 FR 38215, July 15, 1993, as amended at 62 FR 12540, Mar. 17, 1997; 63 FR 26717, May 14, 1998]

#### § 921.21 Initial acquisition and development awards.

(a) Assistance is provided to aid the recipient prior to designation in:

(1) Acquiring a fee simple or less-than-fee simple real property interest in land and water areas to be included in the Reserve boundaries (see § 921.13(a)(7); § 921.30(d));

(2) Minor construction, as provided in paragraphs (b) and (c) of this section;

(3) Preparing the final management plan; and

(4) Initial management costs, e.g., for implementing the NOAA approved draft management plan, hiring a Reserve manager and other staff as necessary and for other management-related activities. Application procedures are specified in subpart I.

(b) The expenditure of Federal and state funds on major construction activities is not allowed during the initial acquisition and development phase. The preparation of architectural and engineering plans, including specifications, for any proposed construction, or for proposed restorative activities, is permitted. In addition, minor construction activities, consistent with paragraph (c) of this section also are allowed. The NOAA approved draft management plan must, however, include a construction plan and a public access plan before any award funds can be spent on construction activities.

(c) Only minor construction activities that aid in implementing portions of the management plan (such as boat ramps and nature trails) are permitted during the initial acquisition and development phase. No more than five (5) percent of the initial acquisition and development award may be expended on such activities. NOAA must make a specific determination, based on the final EIS, that the construction activity will not be detrimental to the environment.



(d) Except as specifically provided in paragraphs (a) through (c) of this section, construction projects, to be funded in whole or in part under an acquisition and development award(s), may not be initiated until the Reserve receives formal designation (see §921.30). This requirement has been adopted to ensure that substantial progress in establishing adequate state control over key land and water areas has been made and that a final management plan is completed before major sums are spent on construction. Once substantial progress in establishing adequate state control/acquisition has been made, as defined by the state in the management plan, other activities guided by the final management plan may begin with NOAA's approval.

(e) For any real property acquired in whole or part with Federal funds for the Reserve, the state shall execute suitable title documents to include substantially the following provisions, or otherwise append the following provisions in a manner acceptable under applicable state law to the official land record(s):

(1) Title to the property conveyed by this deed shall vest in the [recipient of the award granted pursuant to section 315 of the Act, 16 U.S.C. 1461 or other NOAA approved state agency] subject to the condition that the designation of the [name of National Estuarine Reserve] is not withdrawn and the property remains part of the federally designated [name of National Estuarine Research Reserve]; and

(2) In the event that the property is no longer included as part of the Reserve, or if the designation of the Reserve of which it is part is withdrawn, then NOAA or its successor agency, after full and reasonable consultation with the State, may exercise the following rights regarding the disposition of the property:

(i) The recipient may retain title after paying the Federal Government an amount computed by applying the Federal percentage of participation in the cost of the original project to the current fair market value of the property;

(ii) If the recipient does not elect to retain title, the Federal Government may either direct the recipient to sell

the property and pay the Federal Government an amount computed by applying the Federal percentage of participation in the cost of the original project to the proceeds from the sale (after deducting actual and reasonable selling and repair or renovation expenses, if any, from the sale proceeds), or direct the recipient to transfer title to the Federal Government. If directed to transfer title to the Federal Government, the recipient shall be entitled to compensation computed by applying the recipient's percentage of participation in the cost of the original project to the current fair market value of the property; and

(iii) Fair market value of the property must be determined by an independent appraiser and certified by a responsible official of the state, as provided by Department of Commerce regulations at 15 CFR part 24, and Uniform Relocation Assistance and Real Property Acquisition for Federal and Federally assisted programs at 15 CFR part 11.

(f) Upon instruction by NOAA, provisions analogous to those of §921.21(e) shall be included in the documentation underlying less-than-fee-simple interests acquired in whole or part with Federal funds.

(g) Federal funds or non-Federal matching share funds shall not be spent to acquire a real property interest in which the state will own the land concurrently with another entity unless the property interest has been identified as a part of an acquisition strategy pursuant to §921.13(7) which has been approved by NOAA prior to the effective date of these regulations.

(h) Prior to submitting the final management plan to NOAA for review and approval, the state shall hold a public meeting to receive comment on the plan in the area affected by the estuarine research reserve. NOAA will publish a notice of the meeting in the FEDERAL REGISTER at least 15 days prior to the public meeting. The state shall be responsible for having a similar notice published in the local newspaper(s).



### Subpart D—Reserve Designation and Subsequent Operation

#### §921.30 Designation of National Estuarine Research Reserves.

(a) The Under Secretary may designate an area proposed for designation by the Governor of the state in which it is located, as a National Estuarine Research Reserve if the Under Secretary finds:

(1) The area is a representative estuarine ecosystem that is suitable for long-term research and contributes to the biogeographical and typological balance of the System;

(2) Key land and water areas of the proposed Reserve, as identified in the management plan, are under adequate state control sufficient to provide long-term protection for reserve resources to ensure a stable environment for research;

(3) Designation of the area as a Reserve will serve to enhance public awareness and understanding of estuarine areas, and provide suitable opportunities for public education and interpretation;

(4) A final management plan has been approved by NOAA;

(5) An MOU has been signed between the state and NOAA ensuring a long-term commitment by the state to the effective operation and implementation of the area as a National Estuarine Research Reserve;

(6) All MOU's necessary for reserve management (*i.e.*, with relevant Federal, state, and local agencies and/or private organizations) have been signed; and

(7) The coastal state in which the area is located has complied with the requirements of subpart B.

(b) NOAA will determine whether the designation of a National Estuarine Research Reserve in a state with a federally approved coastal zone management program directly affects the coastal zone. If the designation is found to directly affect the coastal zone, NOAA will make a consistency determination pursuant to §307(c)(1) of the Act, 16 U.S.C. 1456, and 15 CFR part 930, subpart C. See §921.4(b). The results of this consistency determination will be published in the FEDERAL REG-

ISTER when the notice of designation is published. See §921.30(c).

(c) NOAA will publish the notice of designation of a National Estuarine Research Reserve in the FEDERAL REGISTER. The state shall be responsible for having a similar notice published in the local media.

(d) The term *state control* in §921.30(a)(3) does not necessarily require that key land and water areas be owned by the state in fee simple. Acquisition of less-than-fee simple interests *e.g.*, conservation easements) and utilization of existing state regulatory measures are encouraged where the state can demonstrate that these interests and measures assure adequate long-term state control consistent with the purposes of the research reserve (see also §§921.13(a)(7); 921.21(g)). Should the state later elect to purchase an interest in such lands using NOAA funds, adequate justification as to the need for such acquisition must be provided to NOAA.

#### §921.31 Supplemental acquisition and development awards.

After National Estuarine Research Reserve designation, and as specified in the approved management plan, a coastal state may request a supplemental acquisition and/or development award(s) for acquiring additional property interests identified in the management plan as necessary to strengthen protection of key land and water areas and to enhance long-term protection of the area for research and education, for facility and exhibit construction, for restorative activities identified in the approved management plan, for administrative purposes related to acquisition and/or facility construction and to develop and/or upgrade research, monitoring and education/interpretive programs. Federal financial assistance provided to a National Estuarine Research Reserve for supplemental development costs directly associated with facility construction (*i.e.*, major construction activities) may not exceed 70 percent of the total project cost, except when the financial assistance is provided from amounts recovered as a result of damage to natural resources located in the coastal zone, in which case the assistance may be used to pay 100



percent of the costs. NOAA must make a specific determination that the construction activity will not be detrimental to the environment. Acquisition awards for the acquisition of lands or waters, or interests therein, for any one reserve may not exceed an amount equal to 50 percent of the costs of the lands, waters, and interests therein of \$5,000,000, whichever amount is less, except when the financial assistance is provided from amounts recovered as result of damage to natural resources located in the coastal zone, in which case the assistance may be used to pay 100 percent of all actual costs of activities carried out with this assistance, as long as such funds are available. In the case of a biogeographic region (see appendix I) shared by two or more states, each state is eligible independently for Federal financial assistance to establish a separate National Estuarine Research Reserve within their respective portion of the shared biogeographic region. Application procedures are specified in subpart I. Land acquisition must follow the procedures specified in §§ 921.13(a)(7), 921.21(e) and (f) and 921.81.

[58 FR 38215, July 15, 1993, as amended at 62 FR 12540, Mar. 17, 1997; 63 FR 26717, May 14, 1998]

**§ 921.32 Operation and management: Implementation of the management plan.**

(a) After the Reserve is formally designated, a coastal state is eligible to receive Federal funds to assist the state in the operation and management of the Reserve including the management of research, monitoring, education, and interpretive programs. The purpose of this Federally funded operation and management phase is to implement the approved final management plan and to take the necessary steps to ensure the continued effective operation of the Reserve.

(b) State operation and management of the Reserves shall be consistent with the mission, and shall further the goals of the National Estuarine Research Reserve program (see § 921.1).

(c) Federal funds are available for the operation and management of the Reserve. Federal funds provided pursuant to this section may not exceed 70 percent of the total cost of operating and

managing the Reserve for any one year, except when the financial assistance is provided from amounts recovered as a result of damage to natural resources located in the coastal zone, in which case the assistance may be used to pay 100 percent of the costs. In the case of a biogeographic region (see Appendix I) shared by two or more states, each state is eligible for Federal financial assistance to establish a separate Reserve within their respective portion of the shared biogeographic region (see § 921.10).

(d) Operation and management funds are subject to the following limitations:

(1) Eligible coastal state agencies may apply for up to the maximum share available per Reserve for that fiscal year. Share amounts will be announced annually by letter from the Sanctuary and Reserves Division to all participating states. This letter will be provided as soon as practicable following approval of the Federal budget for that fiscal year.

(2) No more than ten percent of the total amount (state and Federal shares) of each operation and management award may be used for construction-type activities.

[58 FR 38215, July 15, 1993, as amended at 62 FR 12541, Mar. 17, 1997]

**§ 921.33 Boundary changes, amendments to the management plan, and addition of multiple-site components.**

(a) Changes in the boundary of a Reserve and major changes to the final management plan, including state laws or regulations promulgated specifically for the Reserve, may be made only after written approval by NOAA. NOAA may require public notice, including notice in the FEDERAL REGISTER and an opportunity for public comment before approving a boundary or management plan change. Changes in the boundary of a Reserve involving the acquisition of properties not listed in the management plan or final EIS require public notice and the opportunity for comment; in certain cases, a categorical exclusion, an environmental assessment and possibly an environmental impact statement may be required.



NOAA will place a notice in the FEDERAL REGISTER of any proposed changes in Reserve boundaries or proposed major changes to the final management plan. The state shall be responsible for publishing an equivalent notice in the local media. See also requirements of §§921.4(b) and 921.13(a)(11).

(b) As discussed in §921.10(b), a state may choose to develop a multiple-site National Estuarine Research Reserve after the initial acquisition and development award for a single site has been made. NOAA will publish notice of the proposed new site including an invitation for comments from the public in the FEDERAL REGISTER. The state shall be responsible for publishing an equivalent notice in the local newspaper(s). An EIS, if required, shall be prepared in accordance with section §921.13 and shall include an administrative framework for the multiple-site Reserve and a description of the complementary research and educational programs within the Reserve. If NOAA determines, based on the scope of the project and the issues associated with the additional site(s), that an environmental assessment is sufficient to establish a multiple-site Reserve, then the state shall develop a revised management plan which, concerning the additional component, incorporates each of the elements described in §921.13(a). The revised management plan shall address goals and objectives for all components of the multi-site Reserve and the additional component's relationship to the original site(s).

(c) The state shall revise the management plan for a Reserve at least every five years, or more often if necessary. Management plan revisions are subject to (a) above.

(d) NOAA will approve boundary changes, amendments to management plans, or the addition of multiple-site components, by notice in the FEDERAL REGISTER. If necessary NOAA will revise the designation document (findings) for the site.

### Subpart E—Ongoing Oversight, Performance Evaluation and Withdrawal of Designation

#### §921.40 Ongoing oversight and evaluations of designated National Estuarine Research Reserves.

(a) The Sanctuaries and Reserve Division shall conduct, in accordance with section 312 of the Act and procedures set forth in 15 CFR part 928, ongoing oversight and evaluations of Reserves. Interim sanctions may be imposed in accordance with regulations promulgated under 15 CFR part 928.

(b) The Assistant Administrator may consider the following indicators of non-adherence in determining whether to invoke interim sanctions:

(1) Inadequate implementation of required staff roles in administration, research, education/interpretation, and surveillance and enforcement. Indicators of inadequate implementation could include: No Reserve Manager, or no staff or insufficient staff to carry out the required functions.

(2) Inadequate implementation of the required research plan, including the monitoring design. Indicators of inadequate implementation could include: Not carrying out research or monitoring that is required by the plan, or carrying out research or monitoring that is inconsistent with the plan.

(3) Inadequate implementation of the required education/interpretation plan. Indicators of inadequate implementation could include: Not carrying out education or interpretation that is required by the plan, or carrying out education/interpretation that is inconsistent with the plan.

(4) Inadequate implementation of public access to the Reserve. Indicators of inadequate implementation of public access could include: Not providing necessary access, giving full consideration to the need to keep some areas off limits to the public in order to protect fragile resources.

(5) Inadequate implementation of facility development plan. Indicators of inadequate implementation could include: Not taking action to propose and budget for necessary facilities, or not undertaking necessary construction in a timely manner when funds are available.



(6) Inadequate implementation of acquisition plan. Indicators of inadequate implementation could include: Not pursuing an aggressive acquisition program with all available funds for that purpose, not requesting promptly additional funds when necessary, and evidence that adequate long-term state control has not been established over some core or buffer areas, thus jeopardizing the ability to protect the Reserve site and resources from offsite impacts.

(7) Inadequate implementation of Reserve protection plan. Indicators of inadequate implementation could include: Evidence of non-compliance with Reserve restrictions, insufficient surveillance and enforcement to assure that restrictions on use of the Reserve are adhered to, or evidence that Reserve resources are being damaged or destroyed as a result of the above.

(8) Failure to carry out the terms of the signed Memorandum of Understanding (MOU) between the state and NOAA, which establishes a long-term state commitment to maintain and manage the Reserve in accordance with section 315 of the Act. Indicators of failure could include: State action to allow incompatible uses of state-controlled lands or waters in the Reserve, failure of the state to bear its fair share of costs associated with long-term operation and management of the Reserve, or failure to initiate timely updates of the MOU when necessary.

**§ 921.41 Withdrawal of designation.**

The Assistant Administrator may withdraw designation of an estuarine area as a National Estuarine Research Reserve pursuant to and in accordance with the procedures of section 312 and 315 of the Act and regulations promulgated thereunder.

**Subpart F—Special Research Projects**

**§ 921.50 General.**

(a) To stimulate high quality research within designated National Estuarine Research Reserves, NOAA may provide financial support for research projects which are consistent with the Estuarine Research Guidelines referenced in § 921.51. Research awards may be awarded under this subpart to

only those designated Reserves with approved final management plans. Although research may be conducted within the immediate watershed of the Reserve, the majority of research activities of any single research project funded under this subpart may be conducted within Reserve boundaries. Funds provided under this subpart are primarily used to support management-related research projects that will enhance scientific understanding of the Reserve ecosystem, provide information needed by Reserve management and coastal management decision-makers, and improve public awareness and understanding of estuarine ecosystems and estuarine management issues. Special research projects may be oriented to specific Reserves; however, research projects that would benefit more than one Reserve in the National Estuarine Reserve Research System are encouraged.

(b) Funds provided under this subpart are available on a competitive basis to any coastal state or qualified public or private person. A notice of available funds will be published in the FEDERAL REGISTER. Special research project funds are provided in addition to any other funds available to a coastal state under the Act. Federal funds provided under this subpart may not exceed 70 percent of the total cost of the project, consistent with § 921.81(e)(4) (“allowable costs”), except when the financial assistance is provided from amounts recovered as a result of damage to natural resources located in the coastal zone, in which case the assistance may be used to pay 100 percent of the costs.

[58 FR 38215, July 15, 1993, as amended at 62 FR 12541, Mar. 17, 1997]

**§ 921.51 Estuarine research guidelines.**

(a) Research within the National Estuarine Research Reserve System shall be conducted in a manner consistent with Estuarine Research Guidelines developed by NOAA.

(b) A summary of the Estuarine Research Guidelines is published in the FEDERAL REGISTER as a part of the notice of available funds discussed in § 921.50(c).

(c) The Estuarine Research Guidelines are reviewed annually by NOAA. This review will include an opportunity



for comment by the estuarine research community.

**§ 921.52 Promotion and coordination of estuarine research.**

(a) NOAA will promote and coordinate the use of the National Estuarine Research Reserve System for research purposes.

(b) NOAA will, in conducting or supporting estuarine research other than that authorized under section 315 of the Act, give priority consideration to research that make use of the National Estuarine Research Reserve System.

(c) NOAA will consult with other Federal and state agencies to promote use of one or more research reserves within the National Estuarine Research Reserve System when such agencies conduct estuarine research.

**Subpart G—Special Monitoring Projects**

**§ 921.60 General.**

(a) To provide a systematic basis for developing a high quality estuarine resource and ecosystem information base for National Estuarine Research Reserves and, as a result, for the System, NOAA may provide financial support for basic monitoring programs as part of operations and management under § 921.32. Monitoring funds are used to support three major phases of a monitoring program:

- (1) Studies necessary to collect data for a comprehensive site description/characterization;
- (2) Development of a site profile; and
- (3) Formulation and implementation of a monitoring program.

(b) Additional monitoring funds may be available on a competitive basis to the state agency responsible for Reserve management or a qualified public or private person or entity. However, if the applicant is other than the managing entity of a Reserve that applicant must submit as a part of the application a letter from the Reserve manager indicating formal support of the application by the managing entity of the Reserve. Funds provided under this subpart for special monitoring projects are provided in addition to any other funds available to a coastal state under the Act. Federal funds provided

under this subpart may not exceed 70 percent of the total cost of the project, consistent with § 921.81(e)(4) ("allowable costs"), except when the financial assistance is provided from amounts recovered as a result of damage to natural resources located in the coastal zone, in which case the assistance may be used to pay 100 percent of the costs.

(c) Monitoring projects funded under this subpart must focus on the resources within the boundaries of the Reserve and must be consistent with the applicable sections of the Estuarine Research Guidelines referenced in § 921.51. Portions of the project may occur within the immediate watershed of the Reserve beyond the site boundaries. However, the monitoring proposal must demonstrate why this is necessary for the success of the project.

[58 FR 38215, July 15, 1993, as amended at 62 FR 12541, Mar. 17, 1997]

**Subpart H—Special Interpretation and Education Projects**

**§ 921.70 General.**

(a) To stimulate the development of innovative or creative interpretive and educational projects and materials to enhance public awareness and understanding of estuarine areas, NOAA may fund special interpretive and educational projects in addition to those activities provided for in operations and management under § 921.32. Special interpretive and educational awards may be awarded under this subpart to only those designated Reserves with approved final management plans.

(b) Funds provided under this subpart may be available on a competitive basis to any state agency. However, if the applicant is other than the managing entity of a Reserve, that applicant must submit as a part of the application a letter from the Reserve manager indicating formal support of the application by the managing entity of the Reserve. These funds are provided in addition to any other funds available to a coastal state under the Act. Federal funds provided under this subpart may not exceed 70 percent of the total cost of the project, consistent with § 921.81(e)(4) ("allowable costs"),



except when the financial assistance is provided from amounts recovered as a result of damage to natural resources located in the coastal zone, in which case the assistance may be used to pay 100 percent of the costs.

(c) Applicants for education/interpretive projects that NOAA determines benefit the entire National Estuarine Research Reserve System may receive Federal assistance of up to 100% of project costs.

[58 FR 38215, July 15, 1993, as amended at 62 FR 12541, Mar. 17, 1997]

### Subpart I—General Financial Assistance Provisions

#### §921.80 Application information.

(a) Only a coastal state may apply for Federal financial assistance awards for preacquisition, acquisition and development, operation and management, and special education and interpretation projects under subpart H. Any coastal state or public or private person may apply for Federal financial assistance awards for special estuarine research or monitoring projects under subpart G. The announcement of opportunities to conduct research in the System appears on an annual basis in the FEDERAL REGISTER. If a state is participating in the national Coastal Zone Management Program, the applicant for an award under section 315 of the Act shall notify the state coastal management agency regarding the application.

(b) An original and two copies of the formal application must be submitted at least 120 working days prior to the proposed beginning of the project to the following address: Sanctuaries and Reserves Division Ocean and Coastal Resource Management, National Oceanic and Atmospheric Administration, 1825 Connecticut Avenue, NW., suite 714, Washington, DC 20235. Application for Federal Assistance Standard Form 424 (Non-construction Program) constitutes the formal application for site selection, post-site selection, operation and management, research, and education and interpretive awards. The Application for Federal Financial Assistance Standard Form 424 (Construction Program) constitutes the formal

application for land acquisition and development awards. The application must be accompanied by the information required in subpart B (predesignation), subpart C and §921.31 (acquisition and development), and §921.32 (operation and management) as applicable. Applications for development awards for construction projects, or restorative activities involving construction, must include a preliminary engineering report, a detailed construction plan, a site plan, a budget and categorical exclusion check list or environmental assessment. All applications must contain back up data for budget estimates (Federal and non-Federal shares), and evidence that the application complies with the Executive Order 12372, "Intergovernmental Review of Federal Programs." In addition, applications for acquisition and development awards must contain:

- (1) State Historic Preservation Office comments;
- (2) Written approval from NOAA of the draft management plan for initial acquisition and development award(s); and
- (3) A preliminary engineering report for construction activities.

#### §921.81 Allowable costs.

(a) Allowable costs will be determined in accordance with applicable OMB Circulars and guidance for Federal financial assistance, the financial assistant agreement, these regulations, and other Department of Commerce and NOAA directives. The term "costs" applies to both the Federal and non-Federal shares.

(b) Costs claimed as charges to the award must be reasonable, beneficial and necessary for the proper and efficient administration of the financial assistance award and must be incurred during the award period.

(c) Costs must not be allocable to or included as a cost of any other Federally-financed program in either the current or a prior award period.

(d) General guidelines for the non-Federal share are contained in Department of Commerce Regulations at 15 CFR part 24 and OMB Circular A-110.



Copies of Circular A-110 can be obtained from the Sanctuaries and Reserves Division; 1825 Connecticut Avenue, NW., suite 714; Washington, DC 20235. The following may be used in satisfying the matching requirement:

(1) *Site selection and post site selection awards.* Cash and in-kind contributions (value of goods and services directly benefiting and specifically identifiable to this part of the project) are allowable. Land may not be used as match.

(2) *Acquisition and development awards.* Cash and in-kind contributions are allowable. In general, the fair market value of lands to be included within the Reserve boundaries and acquired pursuant to the Act, with other than Federal funds, may be used as match. However, the fair market value of real property allowable as match is limited to the fair market value of a real property interest equivalent to, or required to attain, the level of control over such land(s) identified by the state and approved by the Federal Government as that necessary for the protection and management of the National Estuarine Research Reserve. Appraisals must be performed according to Federal appraisal standards as detailed in Department of Commerce regulations at 15 CFR part 24 and the Uniform Relocation Assistance and Real Property Acquisition for Federal land Federally assisted programs in 15 CFR part 11. The fair market value of privately donated land, at the time of donation, as established by an independent appraiser and certified by a responsible official of the state, pursuant to 15 CFR part 11, may also be used as match. Land, including submerged lands already in the state's possession, may be used as match to establish a National Estuarine Research Reserve. The value of match for these state lands will be calculated by determining the value of the benefits foregone by the state, in the use of the land, as a result of new restrictions that may be imposed by Reserve designation. The appraisal of the benefits foregone must be made by an independent appraiser in accordance with Federal appraisal standards pursuant to 15 CFR part 24 and 15 CFR part 11. A state may initially use as match land valued at greater than the Federal share of the acquisition and develop-

ment award. The value in excess of the amount required as match for the initial award may be used to match subsequent supplemental acquisition and development awards for the National Estuarine Research Reserve (see also §921.20). Costs related to land acquisition, such as appraisals, legal fees and surveys, may also be used as match.

(3) *Operation and management awards.* Generally, cash and in-kind contributions (directly benefiting and specifically identifiable to operations and management), except land, are allowable.

(4) *Research, monitoring, education and interpretive awards.* Cash and in-kind contributions (directly benefiting and specifically identifiable to the scope of work), except land, are allowable.

#### **§921.82 Amendments to financial assistance awards.**

Actions requiring an amendment to the financial assistance award, such as a request for additional Federal funds, revisions of the approved project budget or original scope of work, or extension of the performance period must be submitted to NOAA on Standard Form 424 and approved in writing.

#### APPENDIX I TO PART 921— BIOGEOGRAPHIC CLASSIFICATION SCHEME

##### *Acadian*

1. Northern of Maine (Eastport to the Sheepscot River.)
2. Southern Gulf of Maine (Sheepscot River to Cape Cod.)

##### *Virginian*

3. Southern New England (Cape Cod to Sandy Hook.)
4. Middle Atlantic (Sandy Hook to Cape Hatteras.)
5. Chesapeake Bay.

##### *Carolinian*

6. North Carolinas (Cape Hatteras to Santee River.)
7. South Atlantic (Santee River to St. John's River.)
8. East Florida (St. John's River to Cape Canaveral.)

##### *West Indian*

9. Caribbean (Cape Canaveral to Ft. Jefferson and south.)
10. West Florida (Ft. Jefferson to Cedar Key.)

**Pt. 921, App. I**

*Louisianian*

- 11. Panhandle Coast (Cedar Key to Mobile Bay.)
- 12. Mississippi Delta (Mobile Bay to Galveston.)
- 13. Western Gulf (Galveston to Mexican border.)

*Californian*

- 14. Southern California (Mexican border to Point Conception.)
- 15. Central California (Point Conception to Cape Mendocino.)
- 16. San Francisco Bay.

*Columbian*

- 17. Middle Pacific (Cape Mendocino to the Columbia River.)
- 18. Washington Coast (Columbia River to Vancouver Island.)
- 19. Puget Sound.

*Great Lakes*

- 20. Lake Superior (including St. Mary's River.)

**15 CFR Ch. IX (1-1-06 Edition)**

- 21. Lakes Michigan and Huron (including Straits of Mackinac, St. Clair River, and Lake St. Clair.)

- 22. Lake Erie (including Detroit River and Niagara Falls.)

- 23. Lake Ontario (including St. Lawrence River.)

*Fjord*

- 24. Southern Alaska (Prince of Wales Island to Cook Inlet.)

- 25. Aleutian Island (Cook Inlet Bristol Bay.)

*Sub-Arctic*

- 26. Northern Alaska (Bristol Bay to Damarcation Point.)

*Insular*

- 27. Hawaiian Islands.

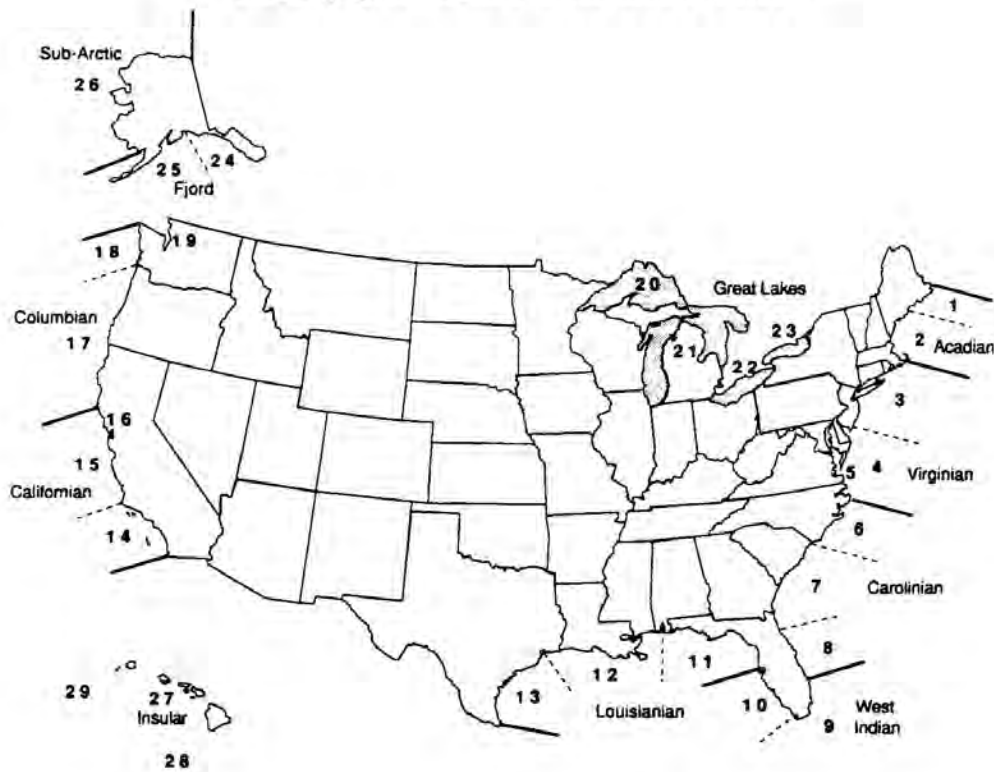
- 28. Western Pacific Island.

- 29. Eastern Pacific Island.



FIGURE 1

**National Estuarine Research Reserve System  
Biogeographic Regions of the United States**



APPENDIX II TO PART 921—TYPOLOGY OF NATIONAL ESTUARINE RESEARCH RESERVES

This typology system reflects significant differences in estuarine characteristics that are not necessarily related to regional location. The purpose of this type of classification is to maximize ecosystem variety in the selection of national estuarine reserves. Priority will be given to important ecosystem types as yet unrepresented in the reserve system. It should be noted that any one site may represent several ecosystem types or physical characteristics.

*Class I—Ecosystem Types*

*Group I—Shorelands*

*A. Maritime Forest-Woodland.* That have developed under the influence of salt spray. It can be found on coastal uplands or recent features such as barrier islands and beaches,

and may be divided into the following biomes:

1. Northern coniferous forest biome: This is an area of predominantly evergreens such as the sitka spruce (*Picea*), grand fir (*Abies*), and white cedar (*Thuja*), with poor development of the shrub and herb layer, but high annual productivity and pronounced seasonal periodicity.

2. Moist temperate (Mesothermal) coniferous forest biome: Found along the west coast of North America from California to Alaska, this area is dominated by conifers, has relatively small seasonal range, high humidity with rainfall ranging from 30 to 150 inches, and a well-developed understory of vegetation with an abundance of mosses and other moisture-tolerant plants.

3. Temperate deciduous forest biome: This biome is characterized by abundant, evenly distributed rainfall, moderate temperatures which exhibit a distinct seasonal pattern,

well-developed soil biota and herb and shrub layers, and numerous plants which produce pulpy fruits and nuts. A distinct subdivision of this biome is the pine edible forest of the southeastern coastal plain, in which only a small portion of the area is occupied by climax vegetation, although it has large areas covered by edaphic climax pines.

4. Broad-leaved evergreen subtropical forest biome: The main characteristic of this biome is high moisture with less pronounced differences between winter and summer. Examples are the hammocks of Florida and the live oak forests of the Gulf and South Atlantic coasts. Floral dominants include pines, magnolias, bays, hollies, wild tamarine, strangler fig, gumbo limbo, and palms.

*B. Coast shrublands.* This is a transitional area between the coastal grasslands and woodlands and is characterized by woody species with multiple stems and a few centimeters to several meters above the ground developing under the influence of salt spray and occasional sand burial. This includes thickets, scrub, scrub savanna, heathlands, and coastal chaparral. There is a great variety of shrubland vegetation exhibiting regional specificity:

1. Northern areas: Characterized by *Hudsonia*, various erinaceous species, and thickets of *Myrica*, *prunus*, and *Rosa*.

2. Southeast areas: Floral dominants include *Myrica*, *Baccharis*, and *Ilex*.

3. Western areas: *Adenostoma*, *arcotyphlos*, and *eucalyptus* are the dominant floral species.

*C. Coastal grasslands.* This area, which possesses sand dunes and coastal flats, has low rainfall (10 to 30 inches per year) and large amounts of humus in the soil. Ecological succession is slow, resulting in the presence of a number of seral stages of community development. Dominant vegetation includes mid-grasses (5 to 8 feet tall), such as *Spartina*, and trees such as willow (*Salix* sp.), cherry (*Prunus* sp.), and cottonwood (*Populus deltoides*.) This area is divided into four regions with the following typical strand vegetation:

1. Arctic/Boreal: *Elymus*;

2. Northeast/West: *Ammophla*;

3. Southeast Gulf: *Uniola*; and

4. Mid-Atlantic/Gulf: *Spartina patens*.

*D. Coastal tundra.* This ecosystem, which is found along the Arctic and Boreal coasts of North America, is characterized by low temperatures, a short growing season, and some permafrost, producing a low, treeless mat community made up of mosses, lichens, heath, shrubs, grasses, sedges, rushes, and herbaceous and dwarf woody plants. Common species include arctic/alpine plants such as *Empetrum nigrum* and *Betula nana*, the lichens *Cetraria* and *Cladonia*, and herbaceous plants such as *Potentilla tridentata* and *Rubus chamaemorus*. Common species

on the coastal beach ridges of the high arctic desert include *Bryas intergrifolia* and *Saxifrage oppositifolia*. This area can be divided into two main subdivisions:

1. Low tundra: Characterized by a thick, spongy mat of living and undecayed vegetation, often with water and dotted with ponds when not frozen; and

2. High Tundra: A bare area except for a scanty growth of lichens and grasses, with underlying ice wedges forming raised polygonal areas.

*E. Coastal cliffs.* This ecosystem is an important nesting site for many sea and shore birds. It consists of communities of herbaceous, graminoid, or low woody plants (shrubs, heath, etc.) on the top or along rocky faces exposed to salt spray. There is a diversity of plant species including mosses, lichens, liverworts, and "higher" plant representatives.

#### GROUP II—TRANSITION AREAS

*A. Coastal marshes.* These are wetland areas dominated by grasses (*Poacea*), sedges (*Cyperaceae*), rushes (*Juncaceae*), cattails (*Typhaceae*), and other graminoid species and is subject to periodic flooding by either salt or freshwater. This ecosystem may be subdivided into: (a) Tidal, which is periodically flooded by either salt or brackish water; (b) nontidal (freshwater); or (c) tidal freshwater. These are essential habitats for many important estuarine species of fish and invertebrates as well as shorebirds and waterfowl and serve important roles in shore stabilization, flood control, water purification, and nutrient transport and storage.

*B. Coastal swamps.* These are wet lowland areas that support mosses and shrubs together with large trees such as cypress or gum.

*C. Coastal mangroves.* This ecosystem experiences regular flooding on either a daily, monthly, or seasonal basis, has low wave action, and is dominated by a variety of salt-tolerant trees, such as the red mangrove (*Rhizophora mangle*), black mangrove (*Avicennia Nitida*), and the white mangrove (*Laguncularia racemosa*.) It is also an important habitat for large populations of fish, invertebrates, and birds. This type of ecosystem can be found from central Florida to extreme south Texas to the islands of the Western Pacific.

*D. Intertidal beaches.* This ecosystem has a distinct biota of microscopic animals, bacteria, and unicellular algae along with macroscopic crustaceans, mollusks, and worms with a detritus-based nutrient cycle. This area also includes the driftline communities found at high tide levels on the beach. The dominant organisms in this ecosystem include crustaceans such as the mole crab (*Emerita*), amphipods (*Gammaridae*), ghost crabs (*Ocypode*), and bivalve mollusks such



as the coquina (*Donax*) and surf clams (*Spisula* and *Mactra*.)

*E. Intertidal mud and sand flats.* These areas are composed of unconsolidated, high organic content sediments that function as a short-term storage area for nutrients and organic carbons. Macrophytes are nearly absent in this ecosystem, although it may be heavily colonized by benthic diatoms, dinoflagellates, filamentous blue-green and green algae, and chaemosynthetic purple sulfur bacteria. This system may support a considerable population of gastropods, bivalves, and polychaetes, and may serve as a feeding area for a variety of fish and wading birds. In sand, the dominant fauna include the wedge shell *Donax*, the scallop *Pecten*, tellin shells *Tellina*, the heart urchin *Echinocardium*, the lug worm *Arenicola*, sand dollar *Dendraster*, and the sea pansy *Renilla*. In mud, faunal dominants adapted to low oxygen levels include the terebellid *Amphitrite*, the boring clam *Playdon*, the deep sea scallop *Placopecten*, the Quahog *Mercenaria*, the echiurid worm *Urechis*, the mud snail *Nassarius*, and the sea cucumber *Thyone*.

*F. Intertidal algal beds.* These are hard substrates along the marine edge that are dominated by macroscopic algae, usually thalloid, but also filamentous or unicellular in growth form. This also includes the rocky coast tidepools that fall within the intertidal zone. Dominant fauna of these areas are barnacles, mussels, periwinkles, anemones, and chitons. Three regions are apparent:

1. Northern latitude rocky shores: It is in this region that the community structure is best developed. The dominant algal species include *Chondrus* at the low tide level, *Fucus* and *Ascophyllum* at the mid-tidal level, and *Laminaria* and other kelp-like algae just beyond the intertidal, although they can be exposed at extremely low tides or found in very deep tidepools.

2. Southern latitudes: The communities in this region are reduced in comparison to those of the northern latitudes and possess algae consisting mostly of single-celled or filamentous green, blue-green, and red algae, and small thalloid brown algae.

3. Tropical and subtropical latitudes: The intertidal in this region is very reduced and contains numerous calcareous algae such as *Porolithon* and *Lithothamnion*, as well as green algae with calcareous particles such as *Halimeda*, and numerous other green, red, and brown algae.

#### GROUP III—SUBMERGED BOTTOMS

*A. Subtidal hardbottoms.* This system is characterized by a consolidated layer of solid rock or large pieces of rock (neither of biotic origin) and is found in association with geomorphological features such as submarine canyons and fjords and is usually covered with assemblages of sponges, sea fans, bivalves, hard corals, tunicates, and

other attached organisms. A significant feature of estuaries in many parts of the world is the oyster reef, a type of subtidal hardbottom. Composed of assemblages of organisms (usually bivalves), it is usually found near an estuary's mouth in a zone of moderate wave action, salt content, and turbidity. If light levels are sufficient, a covering of microscopic and attached macroscopic algae, such as kelp, may also be found.

*B. Subtidal softbottoms.* Major characteristics of this ecosystem are an unconsolidated layer of fine particles of silt, sand, clay, and gravel, high hydrogen sulfide levels, and anaerobic conditions often existing below the surface. Macrophytes are either sparse or absent, although a layer of benthic microalgae may be present if light levels are sufficient. The faunal community is dominated by a diverse population of deposit feeders including polychaetes, bivalves, and burrowing crustaceans.

*C. Subtidal plants.* This system is found in relatively shallow water (less than 8 to 10 meters) below mean low tide. It is an area of extremely high primary production that provides food and refuge for a diversity of faunal groups, especially juvenile and adult fish, and in some regions, manatees and sea turtles. Along the North Atlantic and Pacific coasts, the seagrass *Zostera marina* predominates. In the South Atlantic and Gulf coast areas, *Thalassia* and *Diplanthera* predominate. The grasses in both areas support a number of epiphytic organisms.

#### Class II—Physical Characteristics

##### GROUP I—GEOLOGIC

*A. Basin type.* Coastal water basins occur in a variety of shapes, sizes, depths, and appearances. The eight basic types discussed below will cover most of the cases:

1. Exposed coast: Solid rock formations or heavy sand deposits characterize exposed ocean shore fronts, which are subject to the full force of ocean storms. The sand beaches are very resilient, although the dunes lying just behind the beaches are fragile and easily damaged. The dunes serve as a sand storage area making them chief stabilizers of the ocean shorefront.

2. Sheltered coast: Sand or coral barriers, built up by natural forces, provide sheltered areas inside a bar or reef where the ecosystem takes on many characteristics of confined waters—abundant marine grasses, shellfish, and juvenile fish. Water movement is reduced, with the consequent effects pollution being more severe in this area than in exposed coastal areas.

3. Bay: Bays are larger confined bodies of water that are open to the sea and receive strong tidal flow. When stratification is pronounced the flushing action is augmented by



river discharge. Bays vary in size and in type of shorefront.

4. **Embayment:** A confined coastal water body with narrow, restricted inlets and with a significant freshwater inflow can be classified as an embayment. These areas have more restricted inlets than bays, are usually smaller and shallower, have low tidal action, and are subject to sedimentation.

5. **Tidal river:** The lower reach of a coastal river is referred to as a tidal river. The coastal water segment extends from the sea or estuary into which the river discharges to a point as far upstream as there is significant salt content in the water, forming a salt front. A combination of tidal action and freshwater outflow makes tidal rivers well-flushed. The tidal river basin may be a simple channel or a complex of tributaries, small associated embayments, marshfronts, tidal flats, and a variety of others.

6. **Lagoon:** Lagoons are confined coastal bodies of water with restricted inlets to the sea and without significant freshwater inflow. Water circulation is limited, resulting in a poorly flushed, relatively stagnant body of water. Sedimentation is rapid with a great potential for basin shoaling. Shores are often gently sloping and marshy.

7. **Perched coastal wetlands:** Unique to Pacific islands, this wetland type found above sea level in volcanic crater remnants forms as a result of poor drainage characteristics of the crater rather than from sedimentation. Floral assemblages exhibit distinct zonation while the faunal constituents may include freshwater, brackish, and/or marine species. **EXAMPLE:** Aunu's Island, American Samoa.

8. **Anchialine systems:** These small coastal exposures of brackish water form in lava depressions or elevated fossil reefs have only a subsurface connection in the ocean, but show tidal fluctuations. Differing from true estuaries in having no surface continuity with streams or ocean, this system is characterized by a distinct biotic community dominated by benthic algae such as *Rhizoclonium*, the mineral encrusting *Schizothrix*, and the vascular plant *Ruppia maritima*. Characteristic fauna which exhibit a high degree of endemism, include the mollusks *Theosoxus neglectus* and *Tcariosus*. Although found throughout the world, the high islands of the Pacific are the only areas within the U.S. where this system can be found.

**B. Basin structure.** Estuary basins may result from the drowning of a river valley (coastal plains estuary), the drowning of a glacial valley (fjord), the occurrence of an offshore barrier (bar-bounded estuary), some tectonic process (tectonic estuary), or volcanic activity (volcanic estuary).

1. **Coastal plains estuary:** Where a drowned valley consists mainly of a single channel, the form of the basin is fairly regular form-

ing a simple coastal plains estuary. When a channel is flooded with numerous tributaries an irregular estuary results. Many estuaries of the eastern United States are of this type.

2. **Fjord:** Estuaries that form in elongated steep headlands that alternate with deep U-shaped valleys resulting from glacial scouring are called fjords. They generally possess rocky floors or very thin veneers of sediment, with deposition generally being restricted to the head where the main river enters. Compared to total fjord volume river discharge is small. But many fjords have restricted tidal ranges at their mouths due to sills, or upreaching sections of the bottom which limit free movement of water, often making river flow large with respect to the tidal prism. The deepest portions are in the upstream reaches, where maximum depths can range from 800m to 1200m while sill depths usually range from 40m to 150m.

3. **Bar-bounded estuary:** These result from the development of an offshore barrier such as a beach strand, a line of barrier islands, reef formations a line of moraine debris, or the subsiding remnants of a deltaic lobe. The basin is often partially exposed at low tide and is enclosed by a chain of offshore bars of barrier islands broken at intervals by inlets. These bars may be either deposited offshore or may be coastal dunes that have become isolated by recent sea level rises.

4. **Tectonic estuary:** These are coastal indentures that have formed through tectonic processes such as slippage along a fault line (San Francisco Bay), folding or movement of the earth's bedrock often with a large inflow of freshwater.

5. **Volcanic estuary:** These coastal bodies of open water, a result of volcanic processes are depressions or craters that have direct and/or subsurface connections with the ocean and may or may not have surface continuity with streams. These formations are unique to island areas of volcanic origin.

**C. Inlet type.** Inlets in various forms are an integral part of the estuarine environment as they regulate to a certain extent, the velocity and magnitude of tidal exchange, the degree of mixing, and volume of discharge to the sea.

1. **Unrestricted:** An estuary with a wide unrestricted inlet typically has slow currents, no significant turbulence, and receives the full effect of ocean waves and local disturbances which serve to modify the shoreline. These estuaries are partially mixed, as the open mouth permits the incursion of marine waters to considerable distances upstream, depending on the tidal amplitude and stream gradient.

2. **Restricted:** Restrictions of estuaries can exist in many forms: Bars, barrier islands, spits, sills, and more. Restricted inlets result in decreased circulation, more pronounced longitudinal and vertical salinity gradients, and more rapid sedimentation. However, if



the estuary mouth is restricted by depositional features or land closures, the incoming tide may be held back until it suddenly breaks forth into the basin as a tidal wave, or bore. Such currents exert profound effects on the nature of the substrate, turbidity, and biota of the estuary.

3. Permanent: Permanent inlets are usually opposite the mouths of major rivers and permit river water to flow into the sea.

4. Temporary (Intermittent): Temporary inlets are formed by storms and frequently shift position, depending on tidal flow, the depth of the sea, and sound waters, the frequency of storms, and the amount of littoral transport.

*D. Bottom composition.* The bottom composition of estuaries attests to the vigorous, rapid, and complex sedimentation processes characteristic of most coastal regions with low relief. Sediments are derived through the hydrologic processes of erosion, transport, and deposition carried on by the sea and the stream.

1. Sand: Near estuary mouths, where the predominating forces of the sea build spits or other depositional features, the shore and substrates of the estuary are sandy. The bottom sediments in this area are usually coarse, with a graduation toward finer particles in the head region and other zones of reduced flow, fine silty sands are deposited. Sand deposition occurs only in wider or deeper regions where velocity is reduced.

2. Mud: At the base level of a stream near its mouth, the bottom is typically composed of loose muds, silts, and organic detritus as a result of erosion and transport from the upper stream reaches and organic decomposition. Just inside the estuary entrance, the bottom contains considerable quantities of sand and mud, which support a rich fauna. Mud flats, commonly built up in estuarine basins, are composed of loose, coarse, and fine mud and sand, often dividing the original channel.

3. Rock: Rocks usually occur in areas where the stream runs rapidly over a steep gradient with its coarse materials being derived from the higher elevations where the stream slope is greater. The larger fragments are usually found in shallow areas near the stream mouth.

4. Oyster shell: Throughout a major portion of the world, the oyster reef is one of the most significant features of estuaries, usually being found near the mouth of the estuary in a zone of moderate wave action, salt content, and turbidity. It is often a major factor in modifying estuarine current systems and sedimentation, and may occur as an elongated island or peninsula oriented across the main current, or may develop parallel to the direction of the current.

#### GROUP II—HYDROGRAPHIC

*A. Circulation.* Circulation patterns are the result of combined influences of freshwater inflow, tidal action, wind and oceanic forces, and serve many functions: Nutrient transport, plankton dispersal, ecosystem flushing, salinity control, water mixing, and more.

1. Stratified: This is typical of estuaries with a strong freshwater influx and is commonly found in bays formed from "drowned" river valleys, fjords, and other deep basins. There is a net movement of freshwater outward at the top layer and saltwater at the bottom layer, resulting in a net outward transport of surface organisms and net inward transport of bottom organisms.

2. Non-stratified: Estuaries of this type are found where water movement is sluggish and flushing rate is low, although there may be sufficient circulation to provide the basis for a high carrying capacity. This is common to shallow embayments and bays lacking a good supply of freshwater from land drainage.

3. Lagoonal: An estuary of this type is characterized by low rates of water movement resulting from a lack of significant freshwater influx and a lack of strong tidal exchange because of the typically narrow inlet connecting the lagoon to the sea. Circulation whose major driving force is wind, is the major limiting factor in biological productivity within lagoons.

*B. Tides.* This is the most important ecological factor in an estuary as it affects water exchange and its vertical range determines the extent of tidal flats which may be exposed and submerged with each tidal cycle. Tidal action against the volume of river water discharged into an estuary results in a complex system whose properties vary according to estuary structure as well as the magnitude of river flow and tidal range. Tides are usually described in terms of the cycle and their relative heights. In the United States, tide height is reckoned on the basis of average low tide, which is referred to as datum. The tides, although complex, fall into three main categories:

1. Diurnal: This refers to a daily change in water level that can be observed along the shoreline. There is one high tide and one low tide per day.

2. Semidiurnal: This refers to a twice daily rise and fall in water that can be observed along the shoreline.

3. Wind/Storm tides: This refers to fluctuations in water elevation to wind and storm events, where influence of lunar tides is less.

*C. Freshwater.* According to nearly all the definitions advanced, it is inherent that all estuaries need freshwater, which is drained from the land and measurably dilutes seawater to create a brackish condition. Freshwater enters an estuary as runoff from the



land either from a surface and/or subsurface source.

1. Surface water: This is water flowing over the ground in the form of streams. Local variation in runoff is dependent upon the nature of the soil (porosity and solubility), degree of surface slope, vegetational type and development, local climatic conditions, and volume and intensity of precipitation.

2. Subsurface water: This refers to the precipitation that has been absorbed by the soil and stored below the surface. The distribution of subsurface water depends on local climate, topography, and the porosity and permeability of the underlying soils and rocks. There are two main subtypes of surface water:

a. Vadose water: This is water in the soil above the water table. Its volume with respect to the soil is subject to considerable fluctuation.

b. Groundwater: This is water contained in the rocks below the water table, is usually of more uniform volume than vadose water, and generally follows the topographic relief of the land being high hills and sloping into valleys.

#### GROUP III—CHEMICAL

A. *Salinity*. This reflects a complex mixture of salts, the most abundant being sodium chloride, and is a very critical factor in the distribution and maintenance of many estuarine organisms. Based on salinity, there are two basic estuarine types and eight different salinity zones (expressed in parts per thousand-ppt.)

1. Positive estuary: This is an estuary in which the freshwater influx is sufficient to maintain mixing, resulting in a pattern of increasing salinity toward the estuary mouth. It is characterized by low oxygen concentration in the deeper waters and considerable organic content in bottom sediments.

2. Negative estuary: This is found in particularly arid regions, where estuary evaporation may exceed freshwater inflow, resulting in increased salinity in the upper part of the basin, especially if the estuary mouth is restricted so that tidal flow is inhibited. These are typically very salty (hyperhaline), moderately oxygenated at depth, and possess bottom sediments that are poor in organic content.

3. Salinity zones (expressed in ppt):

- a. Hyperhaline—greater than 40 ppt.
- b. Euhaline—40 ppt to 30 ppt.
- c. Mixhaline—30 ppt to 0.5 ppt.
  - (1) Mixoeuhaline—greater than 30 ppt but less than the adjacent euhaline sea.
  - (2) Polyhaline—30 ppt to 18 ppt.
  - (3) Mesohaline—18 ppt to 5 ppt.
  - (4) Oligohaline—5 ppt to 0.5 ppt.
- d. Limnetic: Less than 0.5 ppt.

B. *pH Regime*: This is indicative of the mineral richness of estuarine waters and falls into three main categories:

1. Acid: Waters with a pH of less than 5.5.
2. Circumneutral: A condition where the pH ranges from 5.5 to 7.4.
3. Alkaline: Waters with a pH greater than 7.4.

## PART 922—NATIONAL MARINE SANCTUARY PROGRAM REGULATIONS

### Subpart A—General

Sec.

- 922.1 Applicability of regulations.
- 922.2 Mission, goals, and special policies.
- 922.3 Definitions.
- 922.4 Effect of National Marine Sanctuary designation.

### Subpart B—Site Evaluation List (SEL)

- 922.10 General.

### Subpart C—Designation of National Marine Sanctuaries

- 922.20 Standards and procedures for designation.
- 922.21 Selection of active candidates.
- 922.22 Development of designation materials.
- 922.23 Coordination with States and other Federal agencies.
- 922.24 Congressional documents.
- 922.25 Designation determination and findings.

### Subpart D—Management Plan Development and Implementation

- 922.30 General.
- 922.31 Promotion and coordination of Sanctuary use.

### Subpart E—Regulations of General Applicability

- 922.40 Purpose.
- 922.41 Boundaries.
- 922.42 Allowed activities.
- 922.43 Prohibited or otherwise regulated activities.
- 922.44 Emergency regulations.
- 922.45 Penalties.
- 922.46 Response costs and damages.
- 922.47 Pre-existing authorizations or rights and certifications of pre-existing authorizations or rights.
- 922.48 National Marine Sanctuary permits—application procedures and issuance criteria.



## CONCEPTUAL STATE LANDS MANAGEMENT PLAN

Adopted

March 17, 1981

7/07/1981 and 3/15/1983 Revisions Incorporated

By the Board of Trustees of the Internal  
Improvement Trust Fund

Governor Bob Graham  
Secretary of State George Firestone  
Attorney General Jim Smith  
Comptroller Gerald A. Lewis  
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**TABLE OF CONTENTS**

PREFACE: A Legal Perspective .....3  
 I. INTRODUCTION: The Management Concept And Evaluation Process .....4  
 II. GOALS .....5  
 III. OBJECTIVES.....6  
 IV. RESOURCE AND PROGRAM ELEMENTS .....8  
 V. RESOURCE ELEMENT POLICIES .....8  
     A. Upland Vegetation .....8  
     B. Soils .....9  
     C. Archeological and Historical Resources .....10  
     D. Water Resources (Quality and Quantity).....10  
     E. Fish and Wildlife Resources .....11  
     F. Endangered Species .....11  
     G. Beaches and Dunes .....12  
     H. Natural Hazard Areas.....12  
     I. Submerged Grass Beds .....13  
     J. Swamps, Marshes, and Other Wetlands .....14  
     K. Mineral Resources .....14  
     L. Unique Natural Features .....15  
     M. Ecological Reserves.....15  
 VI. PROGRAM ELEMENT POLICIES.....16  
     A. State Land Acquisition.....16  
     B. Dispositions .....17  
     C. Sale or Release of Reserved Title Interest .....18  
     D. Murphy Act Lands.....18  
     E. Management Agreements and Leases.....19  
     F. Submerged Land Leases .....20  
     G. Marinas .....22  
     H. Spoil Islands .....23  
     I. Leasing of the State's Mineral Interest.....24  
     J. Leases for Sanitary Landfills .....25  
     K. Easements .....25  
     L. Artificial Reefs.....26  
     M. Aquatic Preserves .....27  
     N. Erosion Control Lines and Beach Restoration.....28  
     O. Conservation and Recreation-Environmentally, Endangered Lands .....28  
     P. Compensation for the Use of state-owned lands.....29  
     Q. Surplus Lands .....30  
 VII. Appendix .....32  
     A. Management Evaluation Criteria .....32  
     B. Walk-Through Example #1: Specific Purpose Acquisition .....33  
     C. Glossary .....34  
     D. CHAPTER 79-255 .....35  
     E. CHAPTER 80-280 .....35  
     F. Section 197.387 from 1980 Supplement To Florida Statutes 1979 .....35  
     G. State Lands Management Plan Interagency Advisory Committee.....36



## **PREFACE: A Legal Perspective**

Prior to discussing the activities affecting the utilization of lands vested in the Board of Trustees of the Internal Improvement Trust Fund, it is essential to examine the legal concepts surrounding such trust arrangements.

Important concepts warranting definition and discussion include: (1) trust, (2) trustees, (3) cestui que trust, and (4) fiduciary. For the purposes of discussion, Blacks' Law Dictionary has been used for all definitions.

(1) Trust - "A right of property, real or personal, held by one party for the benefit of another." It is also defined as "a fiduciary relation with respect to property subjecting person by whom the property is held to equitable duties to deal with the property for the benefit of another person which arises as the result of a manifestation of an intention to create it."

(2) Trustee - "The person appointed, or required by law, to execute a trust; one in whom an estate, interest, or power is vested, under an express or implied agreement to administer or exercise it for the benefit or the use of another called the cestui que trust."

(3) Cestui que trust - "The person for whose benefit a trust is created or who is to enjoy the income or the avails of it."

(4) Fiduciary - "A person holding the character of a trustee, or a character analogous to that of a trustee, in respect to the trust and confidence involved in it and the scrupulous good faith and candor which it requires. "The "trust", per se, is established pursuant to Chapter 253, Florida Statutes, and generally consists of those state-owned lands in which title is vested in the Board of Trustees of the Internal Improvement Trust Fund. The trust also includes those "fruits" of the trust that have been generated and returned to the trust for administration by the Board. The beneficiary or "cestui que trust" of the trust is the state, which, by extension, is the general citizenry of Florida. "State" has been defined as "a people permanently occupying a fixed territory bound together by common-law habits and custom into one body politic exercising, through the medium of an organized government, independent sovereignty and control over all persons and things within its boundaries... (Emphasis added). Therefore, management of state-owned lands is for the benefit of all the citizens of Florida; and to this end, a fiduciary relationship exists with this general public. The Florida Constitution (Article II, Section 7 and Article IX, Section 11), Chapter 253, Florida Statutes, and certain other statutes provide specific guidance in relation to the trust and fiduciary obligations. Statutory direction such as "The Board of Trustees of the Internal Improvement Trust Fund is hereby authorized and directed to administer all state-owned lands and shall be responsible for the creation of an overall and comprehensive plan of development concerning the acquisition, management and disposition of state-owned lands, so as to insure maximum benefit and use" (Section 253.03(7), Florida Statutes) must, therefore, be executed within the confines of this fiduciary relationship.

In addition to the more commonly recognized obligations imposed upon the Board by its fiduciary relationship with the citizens of Florida, it is also bound by factors delineated by court decisions: To wit: "The relations and duties involved (in a fiduciary relationship) need not be legal, but may be moral, social, domestic, or merely personal" (Trustees of Jesse Parker William Hospital v. Nisbet, 191 Ga. 821, 14 S.E. 2nd 64, 76). The Board of Trustees of the Internal Improvement Trust Fund must necessarily, by virtue of its fiduciary responsibilities, consider a broad array of public interest factors before authorizing activities affecting the trust.

The following narratives, goals, objectives, and policies were drafted with these responsibilities in mind. Professional planning and resource management recommendations have been melded with both the expressed and implied obligations inherent in the management of an active public trust.

## **I. INTRODUCTION: The Management Concept And Evaluation Process**

The Conceptual State Lands Management Plan represents completion of the first phase of the planning effort mandated by Section 253.03(7), Florida Statutes. This conceptual plan is intended as a management overview or outline whereby the Board of Trustees of the Internal Improvement Trust Fund establishes, for the first time, a comprehensive set of policies governing the real properties under its ownership and control.

Acceptance of this document by the Board will set the stage for more specific planning and management, such as the development of administrative rules and parcel-specific management evaluations and recommendations. This multi-faceted planning and management process will provide philosophical direction for the Board's staff, while remaining flexible enough to accommodate future legislative, judicial, or Board directives. The total of the Conceptual State Lands Management Plan, administrative rules, supplemental legislation, and parcel specific management procedures, evaluations, data and recommendations will constitute the overall state lands management program.

The management evaluation process is a staff effort whereby the Board is provided a synopsis of projected effects (both positive and negative) that are anticipated to occur should the Board authorize certain activities involving real property under its ownership and control. It is through this process that the philosophical directions embodied in the Conceptual State Lands Management Plan (hereafter referred to as the Plan) and the resultant procedures established as administrative rules are brought together to develop parcel-specific management evaluations and recommendations pursuant to Section 253.034, Florida Statutes.

The Plan provides basic policy guidance for the formulation of management evaluations and recommendations, but the information in the Plan is far from exhaustive. In fact, most management evaluations involve the use of a series of data collection and assessment steps. These evaluation steps generally fall into the following categories: legal, physical, environmental, recreational, socio-cultural, aesthetic, and economic. Most of the assessment data routinely come from existing sources.

A typical management evaluation would begin with an examination of the degree of title interest held by the Board. This title examination would determine the existence of any restrictive covenants, outstanding title reservations or other encumbrances that may affect the management of a given parcel.

Next, staff would consider any constraints that may have been placed on the property by legislative direction, statutory prohibitions, or executive instructions at acquisition. In addition to revealing the more obvious results of these limitations, such analysis would indicate the possibility of multiple use management of the parcel being evaluated, consistent with Section 253.034, Florida Statutes.

The next step would involve the delineation of the physical, environmental, and cultural features characterizing the property. This information is obtained from a number of available sources such as topographic maps, aerial photographs, soil maps, field inspection reports, and similar aids. In cases where an agency has or will have management responsibility, this information may be provided as part of the management plan.

One of the most significant and readily available sources of parcel-specific physical and cultural data is the Department's computer system. This data system (SLAMIS) must be continually updated to reflect current management conditions of Board-owned and controlled real property.

Once the legal, physical, environmental, and cultural profile of the property is established, staff will consult the policies in the Plan and potential managing agencies and prepare a recommendation encompassing both opportunities and constraints to management. This recommendation will frequently contain references to other federal, state, and local plans and programs potentially affecting anticipated management activities. The final staff recommendation will list those general management actions that



can be accommodated without inordinately detracting from the basic public values of that land and identify whether any of a certain parcel may be surplus to public needs. Any specific intended use for the subject property will be compared with the list of preferred management activities, and rated accordingly.

The Plan, like the ongoing management program, must remain flexible enough to accommodate necessary changes. A static plan would soon become an anachronism as new legislative and administrative directions are implemented. To avoid this problem, provisions must be made to establish an orderly process for continuous updating of the adopted Plan.

The preferred update process would involve placing additions, deletions, or modifications on the normal Board Agenda for policy-level direction and guidance. This would provide the most timely Plan modification system, while maximizing public notice and input. Such modifications could be proposed by either the public, departmental staff, or directly by the Board. Affirmative Board action on such Agenda items would effectively accomplish the required modification.

## **II. GOALS**

### **A. Achieve full proprietary responsibility for the management of those state-owned lands vested in the Board of Trustees of the Internal Improvement Trust Fund.**

Chapter 253.03, Florida Statutes, establishes the legal basis for the Board of Trustees to assume an active role in the administration of those state-owned lands vested in the Board of Trustees. Section 253.03(7), Florida Statutes, directs the Board of Trustees "...to administer to all state-owned lands...so as to insure maximum benefit and use." In a legal context the word "Administer" means "to superintend the execution, use, or conduct of; to manage affairs; to take charge of business.

The Board of Trustees, in meeting its obligations as both title holder and administrator of certain state-owned lands, must assert a proprietary role in the acquisition, management, and disposition of those lands. State-owned lands should be managed with recognition that land is a resource and not a commodity. Consistent with this concept, state-owned lands should be treated with equal or greater proprietary respect than that usually afforded privately owned lands.

### **B. Achieve internal program consistency in the management of state-owned lands.**

One of the essential ingredients of a successful land management program is a high degree of internal consistency between the various management functions. This is especially true when the management evaluations and proposed management activities are predicated upon a resource-based methodology.

The present management authorities of the Board of Trustees do not necessarily ensue from the same statutory directives. As a result, leases of submerged lands, for example, were not evaluated and processed in the same manner as the leases of upland property. This situation resulted from a traditional management bias that attached greater importance to upland property than to submerged land. Consequently, implementing consistent management policies for all state-owned lands will require certain statutory and administrative rule amendments.

All activities affecting title to state-owned lands not directly attributable to, or authorized by the Board of Trustees, are potential encumbrances on title. Therefore, for management consistency, the Board should control all activities affecting title on those lands to which they hold title. In the absence of such a comprehensive management system, the Board of Trustees may find its management authorities curtailed on given parcels by unrecognized but legally defensible encumbrances by other entities.

### **C. Develop a state lands management program that provides for a parcel-specific determination of "maximum benefit and use"**

The statutory phrase "...to insure maximum benefit and use" should set the philosophical direction of the Plan. This directive has been interpreted by some as calling for a determination of the "highest and

best use" of each parcel. Care must be taken, however, to insure that this phrase is not defined in an unnecessarily restrictive manner. Such action could deter the development of a truly comprehensive management plan.

The traditional connotation of "highest and best use" has been associated with market place economics. In this context, a given parcel is categorized according to the highest economic return that can be expected from the use of that property. This narrow interpretation of "highest and best use" is not suited for the management of state-owned lands.

For the purposes of managing state-owned lands, it would appear reasonable to interpret "maximum benefit and use" as "balanced public utilization". The term "balanced public utilization" implies that parcel-specific management decisions are predicated upon a broad array of factors, including environmental constraints, economics, recreation, sociological and aesthetics. The form and funding of acquisition, such as the Chapter 259 and 375 programs, will also influence management decisions.

The fully developed state lands management program should contain sufficient implementation procedures to insure that each parcel of land is managed according to the concept of "balanced public utilization". Conversely, the system should discourage management activities that do not provide "maximum benefit and use", and prohibit incompatible activities, which lack "overriding public value".

### **III. OBJECTIVES**

#### **A. Develop a state land management program that adequately accommodates the scope and directives of existing state law.**

Chapter 253, Florida Statutes, requires that the Plan address, at a minimum, "acquisition, management and disposition of state-owned lands so as to insure maximum benefit and use".

This statute also establishes a number of management responsibilities and processes for state-owned lands vested in the Board of Trustees. It is imperative that the state lands management program address fully the statutory constraints and directives outlined in Chapters 197, 270, 258, and 259, Florida Statutes, as well as Chapter 253, Florida Statutes, and other appropriate statutes.

#### **B. Encourage the identification and resolution of statutory conflicts affecting the management of state-owned lands.**

Over the years, a number of special-purpose legislative actions affecting state-owned lands have become law and influence the management of those lands. Murphy Act Lands, for instance, have to be treated somewhat different than other state lands because of differing statutory requirements. In the interest of updating and improving the statutory basis for state land management decisions, the statutes should be reviewed periodically and brought into conformity with current public attitudes and professional management criteria.

#### **C. Formulate a general planning approach that will accommodate a large amount of parcel-specific data.**

Although state-owned lands should be managed under a generalized approach, day-to-day management decisions involving the use of state-owned lands should be predicated upon parcel-specific data. Development of a parcel-specific database that includes the physical/cultural profile of the state-owned property is under way. The adequacy of the parcel-specific database is the most important facet of the state lands management program. The database covers past and present land use, physiography, environmental factors, and current encumbrance information. This information is the basis for an initial recommendation of management practices for parcels of state-owned lands.

The Board must evaluate the proprietary constraints of each parcel as well as the more traditional management factors. These constraints arise from such things as prior leases and/or easements, legislative



and/or executive directives, and statutory limitations. These management constraints do not occur in any uniform manner, nor are they predictable.

Development of the parcel-specific database involves the implementation and maintenance of a computerized data storage and retrieval system, including the continuous update of the state-lands inventory. New entries are documented on coding forms in preparation for computer input. Information regarding leases, easements, mineral rights, submerged lands, and uplands is a part of the parcel-specific management data.

**D. Structure the planning process to provide direction for state lands management decisions.**

The Plan must reflect a fully integrated management system that encompasses all program areas affecting the use and protection of state lands. The management evaluation process has been ongoing concurrent with the planning program. As part of the overall management process, a procedural and organizational framework is being established to improve the existing procedures.

**E. Adopt a planning framework that will accommodate policies contained in the State Comprehensive Plan and other Legislatively mandated Plans to minimize potential management conflicts.**

One of the most important objectives of the Plan is to avoid duplication. Therefore, it is important that all staff planning activities be conducted with the full knowledge of, and coordinated with, other public agencies planning efforts.

It is desirable to utilize, to the extent practicable, general natural systems data and recommended policies developed by other state programs. The rationale behind this proposal includes a desire to economize on staff expertise and time, and to produce a plan that is philosophically compatible with other legislatively mandated plans.

**F. Use a planning process that allows for input from affected state agencies, local government, and the general public.**

The development and implementation of the Plan will have broad implications. To avoid many of the potential problems associated with programs of this type, the Board must be committed to program coordination on several distinct, but interrelated levels. Where compatible and appropriate, state lands management should help to accomplish other statutory objectives of the State.

There are several reasons for including state agencies in a coordination program. First, state agencies such as the Department of Agriculture and Consumer Services, and the Department of General Services originally acquired many of the lands to which the Board presently holds title, or are actively engaged in some type of management arrangement with the Board. Also, many agencies have broad planning and/or management responsibilities that need to be considered during the development of the Plan. These agencies include the Department of Environmental Regulation, the Division of Archives, History and Records Management, and the Executive Office of the Governor/Planning and Budgeting. State agency coordination has been achieved through an inter-agency work group established by the Division of State Lands staff.

On January 22, 1980, the Board authorized staff to submit the draft Plan to the public for review and comment. Staff sent twenty copies of the draft Plan to each of the eleven regional planning councils and requested that these regional planning councils make the Plan available to those local governmental bodies and other local interests that would be affected by the eventual finalization of the Plan. Public workshops were held in Miami, Panama City, Jacksonville, and Orlando, to maximize geographical equality and public input.

Additionally, the staff provided each of the State's 67 County Commissions with review copies of the Plan. These commissions were requested to review the Plan and to provide comments, observations, and

recommendations. Other review copies were made available to various special interest such as conservation and development groups.

**G. Develop a plan that will result in consistent management decisions and greater predictability of governmental action.**

The Plan will provide the overall program superstructure for the protection and management of state-owned lands.

The state-owned lands management program encourages those activities that will provide a net return to the public while maintaining the basic values and functions of the natural environmental systems.

The Plan establishes clearly discernable management processes that are, to the extent practicable, internally consistent in their approach. The end result is a greater public awareness of the management process conducted in the stewardship of state lands.

**IV. RESOURCE AND PROGRAM ELEMENTS**

The evaluation of proposed management activities on state-owned land must consider the existing natural conditions and potential program impacts. In keeping with this concept the following categories have been established. These categories are intended to highlight certain public values associated with the physical situation of many parcels of state-owned land, and applicable program elements. In numerous cases, these public values have been formally recognized by legislative and executive action.

The following categories and policies are intentionally general, and are designed to provide an overall philosophical direction to state lands management. The categories are not exhaustive, nor are they inherently suited to parcel-specific decision making. They are, however, suitable for the establishment of state-wide consistency in the management of state-owned lands, regardless of geographic location, natural conditions, or intended use.

It is envisioned that these broad categories will form the framework into which will be inserted more detailed parcel-specific policies and recommendations. These site-specific evaluations and recommendations will be tailored to meet the individual characteristics of each parcel of land, and will provide the basis for determining the advisability of committing public resources.

**V. RESOURCE ELEMENT POLICIES**

**A. Upland Vegetation**

Upland vegetation is, to a great extent, determined by the underlying soils and prior land uses. It represents a changing and often overlooked resource that must be managed to insure its perpetuation in a desirable condition.

Based upon inventory information and projected utilization of specific parcels, a direction should be established to manage vegetation for a variety of benefits (aesthetics, wildlife habitat improvement, watershed management, recreation, forage, and timber management). Where appropriate in single and multiple-use management, agencies will be encouraged to incorporate all of the above disciplines into one management philosophy--management that will be of the greatest benefit, to the largest number of people, over the longest period of time.

Policies

1. Manage state-owned lands in a manner that maintains a desirable vegetation cover while providing multiple-use benefits to the citizens of the State of Florida.



2. Require multiple-use management of all state-owned land where appropriate.
3. Encourage, when appropriate, the use of silvicultural activities, which maintain a healthy, stable vegetative cover, (prescribed burning, tree planting, removal of diseased trees, etc.).
4. Prohibit the use of off-road vehicles on all state-owned lands, except in such areas specifically designated in approved agency land use plans or by administrative rules adopted by the Board for use by such vehicles.
5. Encourage the harvesting and sale of timber products from appropriate state-owned timberlands, whenever such harvesting and sale are compatible with program priorities and the provisions of Section 253.034, Florida Statutes.
6. Encourage the use of management practices on state-owned land, which are endorsed as Best Management Practices for minimizing non-point source pollution.
7. Encourage the establishment or reestablishment and management of plant species that are indigenous to specific sites (i.e., emphasize hardwood management on hardwood sites; manage for pines on areas where fire would normally retard hardwoods; encourage both hardwoods and conifers on suitable sites)
8. Encourage the protection of endangered and threatened plants, and plants and plant communities which serve as important food sources and habitat for endangered and threatened animal species.
9. Encourage the location and removal of noxious exotic plant species.

## **B. Soils**

Soils are a resource having tremendous influence over the active management of state-owned lands. As such, it is important that the parcel-specific database contain as much up-to-date soils information as is available.

Soil types and associations physically and economically affect various types of management activities, ranging from agricultural uses to the construction of public buildings. Therefore, each parcel-specific management evaluation and recommendation should rely heavily upon inherent characteristics, suitabilities, and limitations.

Due to their public significance, soils categorized as "prime" or "unique" agriculture lands should receive special consideration. The state lands management program should discourage those management activities that would preempt future agricultural use of state-owned parcels containing "prime" or "unique" agricultural soils.

### Policies

1. Encourage the use of detailed soils surveys and interpretations in determining parcel-specific management recommendations.
2. Encourage management activities that recognize natural topographic features and avoid extreme slope and site modification.
3. Encourage conservation practices in all management activities that will minimize erosion and sedimentation.
4. Maintain water levels as high as feasible on organic soils to reduce oxidation, consistent with balanced management programs.
5. Prohibit off-road vehicular traffic in areas sensitive to damage.

6. Discourage activities that will effectively preclude future agricultural use of "prime" and/or "unique" soils on state-owned lands.

### **C. Archeological and Historical Resources**

Archaeological and historical resources represent tangible links with our past. Florida, due to its environmental amenities and colorful history, contains numerous archaeological and historical sites of public importance. Each of these sites contains unique and irreplaceable information concerning our cultural heritage.

Sites on state-owned lands should be managed as valuable public resources. Adequate protection of these resources can be best achieved through a coordinated effort between the Board and the Department of State, Division of Archives, History and Records Management.

#### Policies

1. Coordinate all proposals for changes in the character or use of state lands, with the Division of Archives, History and Records Management, in order to mitigate potential damage or disturbance of, or to preserve, archaeological and historical sites and properties.
2. Encourage the systematic location and evaluation of all significant archaeological and historical sites on state-owned lands.
3. Prohibit the disturbance of archaeological and historical sites on state-owned lands, unless prior authorization has been obtained from the Division of Archives, History and Records Management.

### **D. Water Resources (Quality and Quantity)**

In Florida, the availability and quality of water often influence the type and number of management options available for a parcel of land. In recognition of this situation, the state lands management program should fully consider potential impacts upon water resources prior to making a parcel-specific determination of "maximum benefit and use".

The management evaluation process must address water resources from at least two perspectives. The first consideration should delineate those natural systems that require a certain quantity, and/or periodicity of water for their control existence and productivity. (Examples of this type of natural system would include coastal estuarine and riverine wetlands).

The second consideration is an evaluation of the sustained availability of water for water-consumptive management activities such as agricultural irrigation and certain mining operations. The amount of water available for such activities is difficult to quantify, but it is a valid management criterion that should be considered.

Water quality classifications also must be included in the determination of all management recommendations. These classifications often represent potential constraints for management, especially when Class I, Class II, and Outstanding Florida Waters are involved. Management activities on state-owned lands should comply with State water quality standards and classifications and their intent.

#### Policies

1. Coordinate state lands acquisition, planning and management with water management programs to insure the long-range maintenance and improvement of water quantity and quality.
2. Encourage the retention and storage of surface water in naturally occurring storage areas, such as lakes and wetlands, consistent with the maintenance of the area's long-term productivity and stability.



3. Utilize management practices, which prevent the over-drainage of land and soils.
4. Require agricultural and industrial users of state-owned lands to conduct their activities in a manner consistent with sound water management and conservation practices.
5. Encourage the provision of sufficient water and maintenance of natural hydroperiods to insure the long-term productivity and stability of self-maintaining natural ecosystems on state-owned lands.
6. Manage state-owned lands in a manner that provides maximum protection for the waters of the State especially those used for public drinking water supply, shellfish harvesting, public recreation, fish and wildlife propagation and management.
7. Encourage waste water re-use wherever possible to relieve pressure on water resources.
8. Encourage the use of nonstructural water management strategies for flood control and water supply to protect and enhance natural resources and conserve energy.
9. Require, at a minimum, that management activities on state-owned land comply with State water quality standards and classifications and their intent.

### **E. Fish and Wildlife Resources**

Fish and wildlife are important components of Florida's appeal as a tourist state and as a place to live. Fish and wildlife habitat is diminishing in quantity and quality due to the direct and indirect effects of urbanization, and also due to land and water management activities, which do not adequately address this resource. state-owned lands will play an increasingly important role as enclaves of habitat diversity and as public outdoor recreational areas.

#### Policies

1. Where significant fish and wildlife habitat exists, encourage those management activities, which maintain a natural diversity of habitats and balanced fish and wildlife population.
2. Coordinate proposed management activities potentially affecting significant tracts of fish and wildlife habitat with the Game and Fresh Water Fish Commission.
3. Encourage the public use, either consumptive or non-consumptive, of the fish and wildlife resources on state lands where compatible with management goals.
4. Continue and, where possible, accelerate the inventory of fish and wildlife habitats on state-owned lands.

### **F. Endangered Species**

In the recent past, many of Florida's indigenous plants and animals have seriously diminished in number and in some cases have disappeared completely. In most cases, the elimination of these plants and animals has resulted from the unintentional side-effects of increased urbanization and associated changes in land use and land cover.

As population growth continues in Florida, the availability of natural habitat for many plants and animals is reduced. In light of this situation state-owned lands, especially large acreage tracts, are increasing in importance as enclaves and refuges for endangered species. Consequently, management of state-owned lands should be conducted in a manner that recognizes the importance of maintaining endangered species habitat.

Policies

1. Provide for the continued protection of threatened and endangered species habitat on state-owned lands.
2. Encourage the location, identification, and protection of presently unknown areas of threatened and endangered species habitat located on state-owned lands.
3. To minimize adverse effects, coordinate proposed management activities involving endangered plants and animals with the Division of Forestry and Plant Industry, Florida Department of Agriculture and Consumer Services and the Game and Fresh Water Fish Commission.
4. Encourage the re-establishment and restoration of endangered species and habitat.

**G. Beaches and Dunes**

Florida's beaches and dunes are important economic and environmental assets. They serve dual purposes as sources of recreational activity and as protective barriers from storms.

Beaches and dunes play a prominent role in creating and maintaining the "tourism image" Florida enjoys. The tourist industry forms one of the cornerstones of the state's economy and a majority of these tourists visit beaches.

From an environmental perspective, beaches and their associated dune systems are vital to the well-being and integrity of Florida's coastal areas. These systems, under natural conditions, provide for sand transport, depletion, and accretion, which is essential to the maintenance of these beaches and dunes. In addition to the primary function of shoreline stabilization, beaches and dunes provide a protective buffer against storm tides and winds.

In some areas, the beaches and associated dune systems are experiencing severe erosion. These erosion problems are the result of man-made modifications to the beach and dune system and natural erosion such as hurricanes. The Department of Natural Resources has the statutory responsibility to remove unnecessary structures that adversely affect Florida's beach and dune systems, to control construction of all new structures affecting these systems, and to assist in beach nourishment and coastal protection programs designed to return beach and dune systems to their natural equilibrium. Management of state-owned lands should recognize these statutory responsibilities and ensure the future protection and enhancement of state-owned beaches and dunes.

Policies

1. Encourage management activities that will ensure that continued protection of the physical and environmental integrity of state-owned beaches and dunes.
2. Encourage the non-structural use of state-owned beaches and dunes for purposes such as public recreation (protection structures such as sand, fences and dune walkovers excepted)
3. Support, when justified by comprehensive analysis, dune stabilization and beach protection and restoration projects in areas where significant erosion and damage have occurred.
4. Require placement of all beach compatible dredge materials on beaches, whenever possible.

**H. Natural Hazard Areas**

Throughout the State of Florida, certain areas contain natural conditions that constrain development. Additionally, these areas, if improperly utilized, may adversely affect human health and welfare.



Examples of natural hazard areas include river flood plains, the 100-year hurricane flood zone, barrier islands, and areas with active sinkhole potential. State-owned lands classified as natural hazard areas should be managed in a manner that discourages structural development, unless such structures are specifically designed and built to compensate for the hazard factors. It is especially important to discourage permanent or semi-permanent human habitation in such areas, and the use of state lands for such purposes should generally be prohibited. Allowable management activities within natural hazard areas may include, consistent with other natural and institutional factors, agricultural and timber production, outdoor recreation, and other nonstructural uses.

#### Policies

1. Control the use and construction of public buildings and other structures within state-owned natural hazard areas to insure structural integrity, resource protection, and public safety.
2. Encourage the utilization of natural hazard areas for nonstructural purposes (e.g. timber production, recreation).

### **I. Submerged Grass Beds**

Submerged native grasses are valuable public resources. They occur throughout the state's marine, estuarine, and fresh water bodies.

Submerged grasses perform a number of "free" environmental services of public benefit, including water quality maintenance, natural turbidity control, bottom stability, and they offer habitat for aquatic organisms. Due to their location, they are also one of the most difficult resources to inventory and protect.

Submerged grasses are fairly fragile and are easily adversely impacted by man's activities. Changes in water quality, quantity, and periodicity, increased turbidity, and competition from non-native aquatic vegetation, can significantly affect this resource.

Management of state-owned lands should recognize the natural values associated with submerged grass beds. Proposed activities requiring a commitment of submerged lands and upland development activities on state-owned lands that will potentially impact water bodies containing submerged grasses, should be strongly discouraged. Projects that will adversely impact significant submerged grass beds should be prohibited unless the project is determined to be of overriding public importance with no reasonable alternatives and adequate mitigation measures are included.

#### Policies

1. Encourage the location and evaluation of submerged grass beds in state ownership.
2. Control the use of submerged lands to maintain essentially natural conditions and protect the values and functions of submerged grass beds.
3. Prohibit development activities that adversely impact significant beds of submerged grasses, unless determined to be of overriding public importance with no reasonable alternatives, and adequate mitigation measures are included.
4. Encourage the continuation of control programs for noxious and non-native species of aquatic vegetation.
5. Encourage, whenever practical, the use of physical and biological removal techniques rather than chemical applications in aquatic weed control programs.

## **J. Swamps, Marshes, and Other Wetlands**

In recent years, environmental researchers have become increasingly aware of the values associated with swamps, marshes, and other wetlands. These wetlands function as natural filtration for upland run-off, natural water storage areas, and natural hydroperiod control devices. They also provide shoreline stability and protection, and are excellent wildlife habitat. The detrital production of these wetlands are a major component of riverine and estuarine food chains.

Historically, wetlands have been viewed as wastelands', useful only for filling, ditching, and draining for development. Such treatment of wetlands is no longer acceptable. Management of state-owned lands must recognize the functions and public values associated with the protection and maintenance of wetlands.

### Policies

6. Require management activities on state-owned lands to protect wetlands and to maintain essentially natural conditions.
7. Encourage the re-establishment of previously modified wetlands in state ownership, where practical.
8. Prohibit the draining of wetlands on state-owned lands for agricultural, forestry, and other purposes.
9. Discourage the removal of natural shoreline vegetation.

## **K. Mineral Resources**

The State of Florida contains quite a diversity of mineral resources that make a significant contribution to the state's economy. The most notable resources, insofar as revenue potential is concerned, include oil and gas, phosphate, clays and limestone. Other minerals present include dolomite, sand, gravel, aggregates, and heavy minerals (zircon, ilmenite, rutile, monazite).

Management of state-owned mineral resources should be subject to more careful scrutiny than is normally the case for the other types of natural resources. The stewardship of these nonrenewable resources must insure that their extraction and utilization serves the best long-range public purposes. Additionally, active extraction of many types of minerals often results in drastic changes to the physical integrity of a parcel of land. A decision to mine must be made with the full realization that most future management options available for that parcel of property will be eliminated.

State-owned mineral resources should be treated as public reserves, and should not be necessarily subject to general market considerations. This is especially true for oil, gas, and phosphate, which are essential for the production of food and fiber. Extraction and utilization of the public mineral resources should attempt to insure their availability for essential products such as pharmaceutical supplies, fertilizers, and pesticides.

### Policies

1. Encourage detailed inventories and evaluation of state-owned mineral resources.
2. Control management activities on state-owned land that would preclude or seriously impair the ability to extract significant mineral resources.
3. Allow extraction of state-owned mineral resources in environmentally sensitive areas only upon demonstration that the extraction is of overriding public importance, that all reasonable steps will be taken to minimize adverse environmental impacts, and that there are no reasonable alternatives.
4. Discourage all future releases of state-owned mineral reservations, excepting right-of-entry and exploration.



5. Require that all state-owned lands subjected to mining be reclaimed or restored and left in such condition so as to maximize future public uses and values.

## **L. Unique Natural Features**

This is a generalized resource category designed to accommodate certain natural areas and features. The primary public significance of these features is that they are uncommon in Florida.

Unique natural features include such things as coral reefs, natural springs and their associated runs, caverns and large sinkholes, virgin timber stands, scenic vistas, exceptional vegetation and habitat areas, scenic natural rivers and streams, coquina outcrops, and bird rookeries. The management of state-owned lands should recognize the public values associated with these unique resources and seek to protect their integrity.

### Policies

1. Encourage the location and evaluation of unique natural features on state-owned lands.
2. Discourage management activities on state-owned land that will adversely impact unique natural features.
3. Encourage public utilization of unique natural areas consistent with the protection of the natural values and functions.

## **M. Ecological Reserves**

Ecological Reserves are designated as outstanding examples of native Florida landscapes. They contain relatively unaltered flora, fauna, and geologic conditions, and preservation from the adverse influences of human activity will permit the biophysical systems to function and interact naturally. The primary value and present use of ecological reserves is the preservation of the systems and their functions, leaving all options open for future use of resources and research.

The components of ecological reserves are:

Research Natural Areas where natural processes are allowed to dominate, and the only management is to preserve a given ecosystem or feature, or to allow natural succession. Such areas must be protected against activities that directly or indirectly modify ecological processes or alter the ecosystem being preserved. The only activities allowed in these areas would be collection of baseline data and monitoring of ecosystem function.

Experimental Ecological Areas where experiments or management techniques can be carried out on wildland ecosystems to provide new scientific knowledge of those systems. Research and management must be essentially non-disruptive.

During the management evaluation process, state lands would be assessed for potential as ecological reserves, using these criteria:

\*Ecological reserves must contain outstanding, or the only remaining, examples of Florida landscapes.

Recognizing that very little of Florida can be considered pristine, ecological reserves must be areas where natural systems predominate or where restoration of the native systems is economically and ecologically feasible.

\*Ecological reserves should be of a size and configuration that allow natural processes to be the dominant management tools. Ideally, it should be possible to buffer them from intensive land use areas.

Policies

1. Preserve examples of natural ecosystems on state-owned land.
2. Preserve the full range of genetic diversity in native plant and animal populations.
3. Encourage collection of baseline data on natural ecosystems, which will aid in detecting environmental changes that result from human activity.
4. Provide research and educational opportunities for scientists and advanced students within the framework of a planned research program on applicable state-owned land.

**VI. PROGRAM ELEMENT POLICIES**

**A. State Land Acquisition**

Section 253.03(7), Florida Statutes requires that acquisition of state-owned lands be specifically addressed in the plan. Under most circumstances, other state agencies purchase or otherwise obtain lands for various purposes, and title is taken in the name of the Trustees, consistent with the provisions of Section 253.025, Florida Statutes.

Upon completion of acquisition, the original deed and title insurance policy are transmitted to the Bureau of State Lands Management for permanent filing. When this information is received, the new acquisition is entered upon the State-Owned Lands Inventory, and documents are prepared to assign the newly acquired property to the appropriate management agency or agencies.

Effective October 1, 1979, voluntary negotiated acquisitions of land, title to which will vest in the Board of Trustees of the Internal Improvement Trust Fund, became subject to specific acquisition and review procedures established pursuant to Chapter 79-255, Laws of Florida (Section 253.025, Florida Statutes)<sup>1</sup>. This law strengthens the Board's administrative supervision over title acquisition, and provides an opportunity for all interested and affected parties to coordinate their land needs and intended management activities with the Division of State Lands, acting for the Board.

Policies

1. Establish and implement an evaluation process to determine relative assets and liabilities of each parcel of property to be obtained by state agencies prior to acquisition and formal acceptance of title by the Board of Trustees.
2. Require that future state agency acquisition of lands, to which title will be vested in the Board, be for specific public purposes as outlined by Legislative Act, executive directive, and/or formally approved work programs and plans.
3. Require state agencies to coordinate projected land needs with the Board to insure that these needs are adequately considered in the acquisition process.
4. Require state agencies to meet their land needs, whenever practical, through the use of existing state-owned lands where the intended use is compatible with the approved uses and natural characteristics of the land.

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<sup>1</sup> Florida Statutes have been revised substantively since 1979. See chapters 253 and 259, F.S., for current acquisition, management and administrative procedures for lands titled to the Board of Trustees.



## **B. Dispositions**

Public land sales may be initiated by the Board either upon its own initiative or pursuant to application. Sales are accomplished by negotiation between a prospective purchaser and the Board, or by sealed bids to the highest qualified bidder.

Murphy Act land sales may also be initiated either upon the Board's own initiative or pursuant to application. All such sales are to the highest bidder by sealed bids, except the cases where an applicant qualifies as a hardship applicant.

Before a sale is consummated, all state agencies and the appropriate county and municipal bodies are notified to determine if there is a public need for the subject parcel.

The sale of sovereignty submerged lands falls into two categories: lands riparian to uplands, and lands not riparian to uplands. Purchase of sovereignty lands riparian to uplands is normally by the upland owner. Sale of non-riparian sovereignty lands, including sovereignty islands, sand bars, and exposed tidal flats, must be by competitive bid. All sales of sovereignty lands must be determined by the Board to be in the public interest, and upon such terms, prices, and conditions, as the Board deems appropriate. In addition, the Board will determine to what extent a sale of sovereignty land will interfere with normal marine activity and the maintenance of essentially natural conditions, and will consider any other factors, immediate or long-range, affecting the public interest.

In all land sales by the Board, excepting those transactions referenced in Section 253.62, Florida Statutes, there shall be reserved for the Board and its successors, an undivided three-fourths interest in, and title to all the phosphate, minerals, and metals that are or may be in, on, or under the said land, and an undivided one-half interest in all the petroleum that is or may be in, or under the said land with the privilege to mine and develop the same (Section 270.11, Florida Statutes).

### Exchanges

Exchanges of public land may be initiated by the Board, either upon its own initiative or pursuant to application. The Board is authorized to pay or receive a sum of money in order to equalize an exchange. Exchanges, like other public conveyances, must satisfy the applicable public interest requirements, and the Board must receive, at a minimum, properties and/or other considerations, worth no less than the property relinquished in the exchange.

In all disposition transactions, the Board should assume a positive negotiating posture and exercise its proprietary responsibilities in regard to accepting or setting the terms and conditions of each transaction affecting state land. Since it is counter to present disposition policy to sell state lands for the purpose of generating revenue, it should be demonstrated that all dispositions of state lands are in the public interest.

As a method for disposition, land exchanges are usually preferred and should be the first option explored. The state benefits by such transactions and does not diminish its capital assets because of the equal-terms minimum requirement. Land exchanges also provide a viable management vehicle for the consolidation and enhancement of the state-owned land inventory. For example, many small or otherwise unmanageable parcels can be offered in exchange for tracts adjacent to existing state landholdings.

Sales of state-owned lands should be considered only after all possible land exchange proposals have been exhausted, and the Board is satisfied that the sale is not contrary to the public interest, or in the case of sovereignty lands, that the sale is in the public interest. Historically, the Board, in the interest of internal improvement, has sold millions of acres of state land to private citizens, railroads, and other corporations. This effort to attract new citizens and to develop the State of Florida by the sale of public land is no longer necessary or desirable. Under certain conditions, land sales can prove beneficial by reducing the management liabilities of the Board, while supplementing a county tax roll. Also, situations may occur in which the disposition or leasing of land for institutional, industrial and research and development parks would further such State objectives as creating and building Florida industries and

encouraging permanent employment for citizens. When considering a land sale, the Board should regard the appraised value of the parcel as the base bid or negotiable price, and agree only to those transactions that benefit the people of Florida.

#### Policies

1. Land exchanges shall be the first disposition option considered by the Board so as to consolidate the state-owned land inventory and to protect the public's proprietary interests.
2. Outright sales of state land should be directed at reducing the management liabilities of the state-owned land inventory, and utilized only after the land exchange option has been exhausted.
3. In all disposition transactions, the appraised value of the subject state land parcel shall constitute the base price of any bidding or negotiating procedure.
4. In all dispositions of state land, the Board shall endeavor to retain 100% interest in, and title in and to, all of the minerals and petroleum products that are or may be in, on, or under said land with right of ingress and egress and the privilege to mine and develop the same.

### **C. Sale or Release of Reserved Title Interest**

*(minerals, road rights-of-way, canal rights-of-way)*

Reserved title interests are commodities of value. Section 253.02(7), Florida Statutes calls for a management plan for state-owned lands that will "insure maximum benefit and use" of each parcel of land. A shift from the traditional situation of releasing mineral reservations for a set fee to a process of acquisition and/or subordination based upon potential mineral value more appropriately reflects the statutory directives of Section 253.02(7), Florida Statutes. The Board now issues releases of rights-of-entry and exploration instead of granting full releases. Provisions for the outright purchase of reserved mineral interest are available should the release of rights-of-entry and exploration be insufficient for the surface owners' purpose.

Procedures for releasing reserved road and canal rights-of-way are being evaluated to determine if any changes should be made. The primary areas of evaluation center around existing statutory authorities and ensuring that the procedures adequately reflect sound management principles, and are not counter to the public interest (i.e. achieve "maximum benefit and use")

#### Policies

1. Encourage public recognition of the fact that reserved title interests in real property represent commodities of value.
2. Discourage future releases or subordinations of reserved title interests held by the Board, unless determined to be not contrary to the public interest and in exchange for just compensation.
3. Encourage the inclusion of reserved title interests (i.e. reserved mineral interests) in the state lands management program, and subject these reserved interests to the same management criteria applicable to state-owned lands, consistent with the degree of state title control.

### **D. Murphy Act Lands**

Murphy Act lands are those having outstanding tax certificates that, by virtue of Chapter 18296, Laws of Florida 1937, became absolutely vested in the State of Florida on June 9, 1939. The provisions of the Murphy Act specifically provide for those management activities that also pertain to other categories of state land, such as selling, leasing, exchanging, granting of easements, and withdrawing from public sale. In addition, the Board of Trustees is vested and charged with the administration, management, control,



supervision, conservation, and protection of these lands and the products on, under, and growing out of, or connected with Murphy Act lands, and laws relating to the lands of the Board shall be applicable. However, due to the perceived "uniqueness" of Murphy Act lands at its inception, this category of lands historically has been handled differently than other state-owned lands.

The primary activity since the early 1940' has been to sell these lands. Since that time, approximately 78,000 Murphy Act deeds have been issued, as well as a great number of releases on the conveyed parcels. There are approximately 8,500 parcels currently on the Murphy Act inventory.

The problem with Murphy Act lands that prevents their assimilation into the inventory of all state-owned lands is essentially a question of title, and as these questions are resolved, the Murphy Act lands should be managed in a manner consistent with other state lands under the state lands management program.

#### Policies

1. Establish a process whereby existing private claims to Murphy Act lands can be equitably settled without resorting to the judicial system. (Note Section 197.387, Florida Statutes in Appendix F).
2. Eliminate all special management considerations for those Murphy Act lands not subject to private ownership claims, and integrate these lands into the general state lands management program.
3. Develop a process whereby small, isolated parcels of Murphy Act land that have no unique public values and are determined to be surplus, are sold, exchanged, or disposed of by other means.
4. Utilize small Murphy Act parcels as exchange items to consolidate larger holdings of state-owned lands that possess good management opportunities.

### **E. Management Agreements and Leases**

In the past, long-term leases have been extensively utilized in the management of state-owned lands. Leases to state agencies, for example, have traditionally been for 99 years. Over the years, the cumulative effect of this practice has been the removal of a sizable percentage of state-owned upland property from active management consideration by the Board of Trustees.

While long-term (e.g. 99 years) leases have allowed many state agencies to successfully engage in their own management programs, they have also created problems for the Board. Due to changing public attitudes, some parcels of state-owned land under long-term leases are not being utilized to their maximum public advantage. It is, in fact, impractical to commit the use of public lands for long periods of time without risking preemption of some future uses of greater public importance.

In the interest of insuring "maximum benefit and use" of state-owned lands, all future leases for nonstructural purposes shall be specifically related to the existing or planned life cycle or amortization of the improvements. The intent of this proposal is not to interfere with existing agency programs or responsibilities, but to ensure that the Board exercises its responsibilities as owner and administrator. A reduction in the standard lease period, accompanied by specific renewal options, should allow the uninterrupted continuation of those agency programs requiring the use of state-owned land. It will also provide specific opportunities for the evaluation of public benefits associated with lease renewal. In the event that the lease renewal evaluation demonstrates a significant departure in use and/or public benefits from the original lease agreement, renewal will be allowed only upon a determination that the modified use is consistent with the concept of "maximum benefit and use" (Section 253.03(7) and 253.034(2), Florida Statutes).

#### Policies

1. Prohibit the issuance of 99-year or other long-term leases on state-owned lands, unless a specific need can be demonstrated for such duration.

2. Limit the duration of leases, agreements or other instruments authorizing the use of state-owned land to a period that is no greater than is necessary to provide for the reasonable use of the land for the existing or planned life cycle or amortization of the improvements.
3. Limit the duration of leases on state-owned lands that are proposed for use as building sites or for other structural improvements, to a time not exceeding the projected useful life of the building or structure.
4. Require thorough management evaluations of all state-owned lands that are subject to lease requests, prior to issuance of leases or other similar instruments.
5. Encourage the use of management agreements in lieu of leases, whenever practical.
6. Require the inclusion of specific management requirements and responsibilities in each management agreement, lease or similar instrument issued by the Board.
7. Actively pursue the termination of all outstanding leases that do not conform to the original management objectives contained in these leases.
8. Prohibit the lessee of state-owned lands from issuing sub-leases, easements, assignments, and other instruments affecting condition of title, without prior approval of the Board.
9. Ensure that all financial, structural and other liabilities accruing to a parcel of state-owned land during the lease period become the sole responsibility of the lessee, unless it is determined that said liabilities are unrelated to the actions of the lessee.
10. Encourage the identification and marking of boundaries of all upland parcels of state-owned lands to allow orderly and effective management.

#### **F. Submerged Land Leases**

Leases on those submerged lands in which title is vested in the Board of Trustees of the Internal Improvement Trust Fund fall into six categories:

1. Commercial/Industrial docking facility
2. Aquaculture
3. Oyster and shellfish
4. Dead shell
5. Oil and Gas
6. Campsite (stilt houses)

All commercial/industrial docking facilities located on or over sovereign submerged lands, except those in existence prior to March 10, 1970, are required to obtain leases from the Board. These leases are available to the upland riparian owner only, for a maximum term of five years, and are subject to renewal. The annual fee on the leased area is currently \$.037 per square foot or \$187.00 whichever is greater.

Aquaculture leases may be for experimental or commercial activities on submerged lands. Applications for aquaculture leases must include a statement indicating the said lease is in the public interest, and a statement outlining the impact of the proposed use of the subject parcel on the ecology of the area. The leased parcel shall be identified, well marked, and shall provide for reasonable public access for boating, swimming, and fishing, except where said activities will interfere with the development of plant and animal life being cultivated by the lessee. Any limitations on the public use of the subject parcel as proposed in the lease shall be clearly posted in conspicuous places by the lessee. The lessee shall also



comply with all rules and regulations of the Department of Natural Resources, Department of Environmental Regulation, U.S. Coast Guard, and U.S.A. Corps of Engineers.

Oyster and shellfish leases are presently processed by the Division of Marine Resources, D.N.R., pursuant to Section 370.16, Florida Statutes. Leases are issued subject to the rules and regulations of the Division. The lessee is required to stake off and otherwise identify the leased property. Dredging for dead shells in live oyster beds is prohibited and the D.N.R. is empowered to prohibit any and all dredging of dead shells when it is determined that said dredging will adversely affect the oyster industry.

Oil and gas leases on submerged lands may be issued to the highest bidder after receipt of sealed bids by applicants pursuant to public advertising by the Board. The term of said leases shall be for a maximum of ten years, and for a fee and royalty schedule as decided upon by the Board. The lessee is required to submit to the Board the percentage of mineral interest held by the Board and a list of all other state oil and gas leases held by the lessee. Such leases processed within the corporate limits of a municipality or within three miles thereof, or within three miles of an improved beach cannot be issued without prior consent of the applicable public body.

Campsite leases on submerged lands are also referred to as stilt house leases. New leases of this type are no longer being issued by the Board, which has adopted a policy of phasing out existing stilt houses. All existing stilt houses are subject to lease provisions and local building and health codes.

There are specific constitutional, judicial and legislative requirements, which must be considered in the leasing of submerged (sovereignty) lands. These include:

1. Florida Constitution, Article IX, Section 11. "Sovereignty lands. The title to lands under navigable waters, within the boundaries of the state, which have not been alienated, including beaches below mean high water lines, is held by the state, by virtue of its sovereignty, in trust for all the people. Sale of such lands may be authorized by law, but only when in the public interest. Private use of portions of such lands may be authorized by law, but only when not contrary to the public interest."
2. Hayes V. Bowman (Florida, 91 So.2d795) "it is well settled in Florida that the State holds title to lands under tidal navigable waters and the foreshore thereof (land between high and low water marks). As at common law, this title is held in trust for the people for purposes of navigation, fishing, bathing and similar uses. Such title is not held primarily for purposes of sale or conversion into money. Basically it is trust property and should be devoted to the fulfillment of the purposes of the trust, to wit: the service of the people."
3. Section 258.42(1), Florida Statutes, "No further sale, lease, or transfer of sovereignty submerged lands shall be approved or consummated by the trustees except when such sale, lease, or transfer is in the public interest."
4. Section 253.034(1) (a), Florida Statutes, in part - "All submerged lands shall be considered single use lands, and shall be managed primarily for the maintenance of essentially natural conditions, the propagation of fish and wildlife, and public recreation; including hunting and fishing where deemed appropriate by the managing agency." The public's interests in the areas of navigation, recreation, and riparian rights, as well as the ecological importance and aesthetic appeal of the subject parcel should also be considered by the Board prior to issuance of the lease.

#### Policies

1. All submerged lands shall be considered single-use lands and shall be managed primarily for the maintenance of essentially natural conditions, the propagation of fish and wildlife and public recreation, including hunting and fishing where deemed appropriate by the managing agency.

2. Require that all proposed private or public uses of state-owned submerged land for profit be subject to Board action, and that just compensation be paid in return for this exclusionary privilege, using economic principles such as percentages of the assessed unimproved upland property value.
3. Require management consistency evaluations prior to Board action on any state-owned submerged land leases.
4. Discourage, to the extent practicable, all private, exclusionary uses of state-owned submerged lands.
5. Issue oil, gas, and other petroleum drilling leases on state-owned submerged lands only when the proposed lease area is at least one mile seaward of the outer coastline of Florida as defined in *United States v. Florida*, 425 U.S. 791, 48 L. Ed., 2d 388, 96 S. Ct. 1840, upon adequate demonstration that the proposed activity is in the public interest, that the impact upon aquatic resources has been thoroughly considered, and that every effort has been made to minimize potential adverse impacts upon sport and commercial fishing, navigation and national security.
6. Maintain an inventory of all state-owned submerged land title encumbrances.
7. Require that the use of state-owned submerged lands be restricted to water-dependent activities, unless the Board specifically determines that a greater public purpose would be served by allowing exceptions to the contrary, as determined by a case-by-case evaluation.
8. Prohibit all future state-owned submerged land leases for the construction and maintenance of stilt houses ("campsite leases")
9. Actively pursue the termination of all unauthorized activities on state-owned submerged lands.
10. Require that specific management consideration be given to the use of state-owned submerged lands within aquatic preserves, as defined by Chapter 258, Florida Statutes.
11. Ensure that all activities on state-owned submerged lands avoid adverse impacts upon other authorized uses of submerged lands.
12. Develop a uniform system of subdividing the state-owned submerged lands into easily described parcels to allow the development of an inventory and provide for the management of such activities as offshore oil and gas leasing.

## **G. Marinas <sup>2</sup>**

The Board recognizes the tremendous values of the submerged lands of the state and the enjoyment and economic benefit that is derived from or depended upon these valuable lands by the boating public. Therefore, it is the policy of the board to preserve the ability of the state's land to meet the public demands for food, recreation, and transportation. Environmental and aesthetic values must continue to be assured prior to the state authorizing encroachment and development.

The Board encourages proper public use of these valuable natural resources, but demands that environmental integrity be maintained to the fullest extent of the laws of the state. Preemptive uses shall only be granted on a fair and equitable basis with riparian rights considered.

### Policies

1. Water dependent uses such as marinas and boating shall take precedence over non-water dependent uses. Extra caution and consideration shall be given prior to authorizing uses of areas with high

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<sup>2</sup> *The Board of Trustees adopted paragraph "G" on March 15, 1983 (Agenda Item #9).*



environmental values such as aquatic preserves, Outstanding Florida Waters, and marine and estuarine sanctuaries, and important archaeological sites.

2. Locations which are currently or have historically been used for water access or boating related activities should be maintained for such uses. New sites should be located near well-flushed deep waters with reasonable access and sufficient public demand where possible. The Board shall not allow significant degradation of its waters and shall recognize that each body of water is different in natural quality and strive to maintain proper balance of allowable uses against the ability of the resource to continue to support such uses.
3. Priority should be given to the expansion of existing facilities, if environmentally sound, over new facilities. Location of marinas in previously disturbed areas that have historically been used for marine related activities should be encouraged.
4. Marinas should be located as close as possible to demand.
5. Marina development should be encouraged where adequate uplands are available to develop related support activities and allow for future expansion.
6. Hurricane protection needs for marinas should be considered.
7. Input from local government should be considered in evaluating lease requests.
8. Location of marinas in highly productive habitat should be discouraged.
9. Location of marinas in or near well-flushed, deep water areas should be encouraged.
10. Piling construction and other non-dredge and fill techniques should be utilized where possible to minimize habitat destruction.
11. Pollution prevention including sanitation and spill containment needs should be assessed and safeguards required as appropriate.
12. Impact upon the endangered manatee should be considered, particularly marina locations, or design features which threaten manatees should be considered.

## **H. Spoil Islands**

Spoil islands are formed from the deposition of material from dredge and fill operations. These islands are generally not for sale, except where an overriding public need will be satisfied by such a conveyance.

Spoil islands should be left in their natural state unless a greater public purpose would be served by either development or the reuse for spoil deposition. Proposals for public development of spoil islands may be authorized after comments have been solicited and received from the appropriate public agencies determining that the public interest would be served by the development. Upon such authorization, said development will be administered by management agreement, lease, or other similar instrument from the Trustees, rather than sale of the spoil island. The instrument will be consistent with the guidelines set forth in Section 253.111, Florida Statutes. In addition, instruments for development of spoil islands should be granted only for water dependent and recreational activities, except where the public would be better served by other types of development, preferably nonstructural.

Dwellings and other structures not owned or authorized by the Board that have been constructed on spoil islands, as on other state-owned land, should be removed, either by the individuals claiming a possessory interest in the structures within a reasonable period of time or by appropriate state agencies with assistance from local government officials. Permanent human habitation of any spoil island under the management control of the Board should be prohibited.

### Policies

1. No sale, lease, or transfer of spoil islands, title to which is vested in the Board of Trustees, shall be allowed, unless there is a demonstrable public need and the proposal is in the public interest.
2. Development of state-owned spoil islands shall be limited to water dependent and recreational activities, except as provided by the Board to accommodate overriding public interest factors.
3. Where practical, and when in the public interest, encourage the reuse of existing spoil islands rather than the creation of new ones.
4. No unauthorized structures shall be allowed to exist on state-owned spoil islands.
5. There shall be no permanent human habitation of any state-owned spoil islands, except for public purposes.
6. Authorization to conduct activities on state-owned spoil islands shall, to the extent practicable utilize leases, management agreements, and other similar instruments rather than outright sales.
7. Actively pursue the immediate termination of all unauthorized uses of state-owned spoil islands.

### **I. Leasing of the State's Mineral Interest**

The leasing of the State's mineral interest has traditionally been limited to oil and gas exploration and drilling. Although numerous reservations have been retained on many prior conveyances, very few mining leases have been issued. This could partly be attributed to the fact that the leasing of the state's exploitable resources traditionally has been initiated by private citizens interested in particular parcels of lands. Presently, all oil and gas drilling leases granted by the state originated from an applicant (usually an oil exploration company or a speculator) requesting the Board to put up certain acreage for lease.

A second factor which has hindered the widespread leasing of the state's mineral interest has been the lack of a correct, updated mineral interest inventory. As a result, the state has been dependent upon the information provided by the individual applicants. At times, oversights have occurred and revenues lost due to the state's passive leasing policy. Every effort should be made to complete and maintain state-owned lands mineral inventory.

By encouraging the development of a planned program for assessing mineral exploration and recovery the state can realize numerous benefits. Improved inventories can aid in determining the optimum distribution in terms of rate and location of activity allowable in the interests of both the public and the resource. Factors such as the environmental sensitivity of a proposed exploration/recovery site should be weighed with the restorative potential and resource availability as well as other economic and social considerations. On one hand, there may be some areas where other considerations may override the desirability of recovery; while on the other hand, the desirability of maintaining the future recovery potential may dictate interim uses that would not foreclose such an option.

### Policies

1. Encourage the timely development of accurate mineral resource inventories and evaluations for all state-owned lands.
2. Encourage the establishment of an exploration lease program, covering all minerals that will assist the Board in assessing future management directions and needs.
3. Consider the active exploitation of mineral resources on state-owned lands when determined to be consistent with market economics, projected mineral reserve requirements, present and projected public land use needs, environmental acceptability, and other public interest factors.



4. Encourage public recognition that state-owned mineral interests and resources are commodities of value, and should be managed accordingly.
5. Require land reclamation plans in advance of issuance of hard mineral mining leases that would involve substantive surface disturbance of state-owned lands.
6. Discourage extensive, permanent structural development on state-owned lands possessing known commercial mineral potential so as not to unnecessarily preempt recovery and utilization of the mineral resource.

## **J. Leases for Sanitary Landfills**

In the past, the Board has issued leases allowing placement of sanitary landfills on state-owned lands. Future management of state-owned lands should strongly discourage placement of sanitary landfills or other similar facilities on state-owned lands. Activities of this nature often preclude or severely restrict management options. Additionally, use of state-owned property for purposes such as sanitary landfills rarely benefits the public at large. Instead, such uses usually benefit only a very limited segment of the population. It is questionable whether using state-owned lands for sanitary landfills meet the statutory test of "maximum benefit and use".

### Policies

1. Discourage use of state-owned lands for sanitary landfills and similar facilities and uses.
2. Consider use of state-owned lands for sanitary landfills, or similar activities, only when no alternative locations are available. Such instances will require a detailed land reclamation plan acceptable to the Board.
3. Phase out existing sanitary landfill leases as expeditiously as possible.
4. Prohibit non-state agency sanitary landfills and similar facilities on state-owned lands.

## **K. Easements**

The request for and issuance of easements has been and continues to be, a major component of the management program for state-owned lands. As part of the management program, it is important that the current procedures covering easements be thoroughly evaluated and modified.

"Easements in gross" comprise the majority of requests received by the Board. An easement in gross is defined as an easement "not appurtenant to any estate in land (or not belonging to any person by virtue of his ownership of an estate in land) but mere personal interest in, or right to use, the land of another". Examples of easements of this type normally processed by the Bureau of State Lands Management include public utility corridors, pipeline crossings, and public road rights-of-way.

Investigations into an appropriate fee schedule for easements across lands titled to the Board indicate that certain types of easements should be exempted from such charges. Easements requested by public entities for public purposes are examples of easements that should be exempted from charges.

Charges for easements other than these specifically exempted appear to be very much in order. It is recommended, however, that the Board reserve the right to waive the fee requirement for those non-exempt easement requests that are determined to be in the public interest and will result in a benefit to the public at large.

Proposed easements that will be subject to charges or fees should be categorized according to the degree and type of impact the easements will have on current, future, and/or traditional management activities or uses. In general, such easements can be described as either exclusionary or non-exclusionary.

Exclusionary easements are those easements that, due to their nature, preclude in whole or in part, current or traditional uses (usually by the public) of the land for which the easement is sought. Non-exclusionary easements will have little or no effect upon the traditional or current uses. It is recommended that the easement fee schedule recognize a distinction between exclusionary and non-exclusionary easements.

#### Policies

1. Encourage the elimination of the granting of perpetual easements across state-owned lands.
2. Establish a realistic fee schedule applicable to all "easements in gross" that reflects a distinction between exclusionary and non-exclusionary uses.
3. Discourage the granting of "easements in gross" that will significantly affect the Board's ability to manage state-owned lands in a manner that achieves "maximum benefit and use."
4. Establish a procedure whereby the Board may, at its discretion, waive the fee requirements for "easements in gross" that are determined to be in the public interest and will result in a benefit to the public at large.

### **L. Artificial Reefs**

In most cases, the construction of artificial reefs involves the use of state-owned lands. In such cases, the agency, organization, or individual desiring to construct an artificial reef must obtain permission from the Board.

Artificial reefs are normally built to enhance the submerged bottom habitat so as to attract increased numbers of marine organisms. These organisms in turn, attract various species of fish, resulting in an increase in the exploitable productivity of fishing areas.

Reasons for constructing artificial reefs usually fall within two general categories. The first category would include construction for limited scientific research and exclusionary purposes. One of the basic factors of this type of construction is the need and/or desire to restrict access to and use of the reef area. Requests falling into this category should be handled under lease or easement, and subject to the same management requirements as aquaculture leases.

The second category includes construction of artificial reefs strictly for the enhancement of fishing habitat, and access and use of the completed reef is open to the general public. This type of proposal could effectively be handled by issuance of a letter of consent, rather than a lease or easement. The letter of consent would be valid only during the original construction period and would constitute permission to trespass. Upon completion of the reef, the letter of consent would expire. All right to the completed reef would vest in the Board and the reef would be open to the public for recreational use.

#### Policies

1. Encourage placement of artificial reefs seaward of the near-shore areas in order to avoid potential conflicts with the riparian rights of upland owners.
2. Encourage full public access to and enjoyment of the benefits resulting from artificial reefs.
3. Minimize administrative requirements and processing time for the construction proposals that benefit the general public.
4. Require that the construction of artificial reefs recognize and avoid long-term water quality and navigation problems.
5. Insure that the artificial reef construction does not adversely impact environmentally fragile areas or infringe upon areas under active lease (e.g. oyster leases), or active potentially conflicting public use.



6. Insure that reefs are constructed in a manner that minimizes safety hazards.

### **M. Aquatic Preserves**

During 1975, the Legislature recognized the importance and value of state-owned submerged lands by setting aside certain areas of exceptional biologic, scientific, or aesthetic values as aquatic preserves for the benefit of future generations. These submerged lands and the water over them offer economic and environmental to the present and future generations. They provide natural beauty in settings suited to recreation for residents and tourists. Unique plant and animal communities in the preserves are not only of interest to scientists but are the breeding grounds for important fin and shellfish.

Some preserves are virtually natural. In others, man's activities have altered natural conditions to varying degrees. Some alterations have been so great as to threaten the natural benefits that attracted man.

The responsibility for the land management within the preserves was delegated by statute to the Board of Trustees of the Internal Improvement Trust Fund. Rules to regulate human activities within the preserves have been adopted by the Board (CH. 16Q-18, and 20, F.A.C.). Management of aquatic preserves will be consistent with both the legislative intent of the Aquatic Preserve Act and with the overall goals, objectives and policies of the State Lands Management Plan.

#### Policies

1. No sale, lease or transfer of state-owned submerged lands within aquatic preserves shall be approved unless it is in the public interest.
2. No bulkhead line shall be located or relocated waterward of the mean high water line in an aquatic preserve unless necessitated by a road or bridge construction project where no reasonable alternative exists and the project is not contrary to the public interest.
3. There shall be no drilling of gas or oil wells within any aquatic preserve.
4. There shall be no excavation of minerals within aquatic preserves except the dredging of dead oyster shells as approved by the Department of Natural Resources.
5. (a) There shall be no dredging of state-owned lands within aquatic preserves for the purpose of providing upland fill.  
(b) There shall be no dredging or filling of submerged lands within aquatic preserves except minimum dredging and spoiling as may be necessary for the following activities: -
  - i) public navigation projects
  - ii) maintenance of existing navigation channels
  - iii) creation and maintenance of marinas, piers, docks and their attendant navigation channels
  - iv) public utility installation or expansion
  - v) installation and maintenance of fuel transportation facilities
  - vi) alterations necessary to enhance the quality or utility of the preserve or the public health generally
6. No structures shall be erected within a preserve except:
  - (a) Private docks for reasonable ingress or egress of riparian owners.
  - (b) Commercial docking facilities shown to be not contrary to the use or management criteria of the preserve.

- (c) Shore protection structures, approved navigational aides, or public utility crossings authorized under policy #5b.
7. No wastes or effluents which substantially inhibit the accomplishment of the purposes of the Aquatic Preserve Acts shall be discharged into an aquatic preserve.
  8. Management of human activities within aquatic preserves will not unreasonably interfere with traditional public uses such as fishing, boating and swimming.
  9. Management of aquatic preserves shall not infringe upon the traditional rights of riparian landowners within or adjacent to an aquatic preserve.
  10. Other uses of an aquatic preserve may only be approved subsequent to a formal finding of compatibility with the purpose of the Aquatic Preserve Acts and rules, and of the type designation of the preserve in question.

## **N. Erosion Control Lines and Beach Restoration**

Erosion control lines are established by the Board in conjunction with publicly financed beach nourishment or restoration programs permitted by the Department of Natural Resources. Such lines represent the landward extent of claim of the state in its capacity as sovereign titleholder of the submerged bottoms and shores of the Atlantic Ocean, the Gulf of Mexico, and the bays, lagoons, and other tidal reaches. Such line becomes effective on the date of the recording of the survey showing the area of the beach to be nourished or restored and the location of the erosion control line.

An erosion control line can be established only upon the recommendation and certification of the Department of Natural Resources, customarily through its Bureau of Beaches and Shores, and upon the written consent of the owners of a majority of the lineal feet of contiguous riparian property which either abuts the erosion control line or would abut such line if established at the mean high water line.

### Policies

1. Ensure that proposed erosion control lines do not adversely affect title interests to state-owned lands.
2. Ensure that erosion control projects do not infringe upon the private property rights of riparian landowners.
3. Ensure that sources of beach nourishment material containing environmentally fragile resources or located in or adjacent to areas frequently utilized by sports and/or commercial fishermen are avoided to the extent practicable.
4. Erosion control lines shall be set at or as near as practicable to the existing mean high water line. However, based upon assurances and fiscal commitments by a local government sponsor such as periodic maintenance and renourishment of the beach, reconstruction and protection of dunes, conservation easements, and increased public access, the Board may consider setting the line waterward of the existing mean high water line.

## **O. Conservation and Recreation - Environmentally Endangered Lands**

Public concern that Florida's unique natural systems were rapidly being destroyed resulted in the Land Conservation Act of 1972 (Chapter 259, Florida Statutes), commonly known as the Environmentally Endangered Lands (E.E.L.) acquisition program, funded through a \$200 million statewide bond issue overwhelmingly passed by the voters of Florida. In 1979, the Conservation and Recreation Lands (C.A.R.L.) Program and Trust Fund were created by legislative action as a continuation of the E.E.L. program, with expanded authority to acquire various types of land in the public interest. Annual funding of up to \$20 million is provided from a portion of the severance taxes on solid minerals, oil and gas.



The Division of State Lands is charged with the administration of the C.A.R.L. Program. Following the compilation of a priority list by the Land Selection Committee and approval of the list by the Board, money may be allocated for acquisition on an annual basis in each of the following categories and proportions:

- 1) Up to seventy percent for lands qualified as environmentally endangered as defined in Chapter 259, Florida Statutes, or
- 2) Up to seventy percent for other lands in the public interest.
- 3) Also, up to ten percent of the annual allotment may be spent for management of lands purchased and up to five percent for the compilation of a statewide natural areas inventory.

Under the Land Conservation Act, the purchase of 22 environmentally endangered land projects was initiated between 1972 and 1979, with acquisition completed on ten. Following the first year of activities through the C.A.R.L. Program, a priority list of 27 projects was approved in December 1980.

#### Policies<sup>3</sup>

1. Encourage the continuation of state interagency and general public involvement in all facets of the C.A.R.L./ Environmentally Endangered Lands Program.
2. Encourage the refinement of evaluation and selection procedures for C.A.R.L./Environmentally Endangered Lands projects, which will help ensure the acquisition of the most vital, sensitive, and important areas for public enjoyment and long-term environmental protection.
3. Minimize the acquisition of C.A.R.L./Environmentally Endangered Lands with outstanding title reservations and/or other management encumbrances.
4. Encourage multiple-use management of C.A.R.L./Environmentally Endangered Lands where compatible and consistent with statutory and natural resource limitations and the purposes of acquisition.
5. Manage C.A.R.L./Environmentally Endangered Lands by management agreements rather than long-term, blanket leases.
6. Actively discourage any request for leases, easements, or other forms of approval to use state owned E.E.L or C.A.R.L. lands for any purpose not specifically authorized by Ch. 259, F.S. Such requests may be considered by the Board only if no reasonable alternative exists. Additionally such requests may be approved only if the Board determines and is assured that there will be adequate mitigation, compensation, or other consideration that will result in a net positive benefit to the affected parcel.
7. Any request for approval to use E.E.L. or C.A.R.L. parcel shall be subject to a thorough management evaluation using the criteria listed in Appendix A.

#### **P. Compensation for the Use of State-Owned Lands**

Many activities involving state-owned land do not directly benefit the general public as a whole. In such cases, the Board should obtain compensation in some form, for the private use and/or preemption of portions of the public domain. To the extent practicable, the Board should rely on principles of private enterprise to establish fee schedules or other rates of compensation.

Traditionally, fee appraisals have been used by the Board to establish reasonable rates of compensation in exchange for private uses of state-owned land. This is especially true for those activities with private

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<sup>3</sup> *The Board of Trustees adopted policies #6 and #7 of Paragraph "O" on July 7, 1981 (Agenda Item #14).*

counterparts, such as grazing leases or private easements. Due to the staff limitations, however, individual appraisals are not generally suitable in establishing user fees for those activities normally restricted to state-owned lands (i.e. submerged land leases) or when the number of applications is so great as to render individual appraisals unworkable.

Specific fee criteria that are not established by individual fee appraisals are now established through administrative rule making. This appears to be the most appropriate way to establish or modify fee schedules for certain uses of state-owned land. Use of the administrative rule format permits individualized attention to the compensation question without depending entirely on fee appraisals or other similar approaches.

#### Policies<sup>4</sup>

1. The Board shall require equitable compensation when the use of state-owned lands by private or public entities, except for state agencies exempted by law, generates revenue or profits for the user, or general public use is limited or preempted.
2. To the extent practical, the Board should use principles of private enterprise in establishing fee schedules or other methods for ensuring just compensation.
3. The Board shall require a reasonable return for any private use authorized by lease, easement or other use agreement. The structure for the formula for assuring a reasonable return may vary depending on circumstances and may include a flat fee per time unit, per area of quantity unit, a percentage of the assessed upland property value, a royalty fee or some other form of compensation or combination thereof.
4. The Board shall require the periodic reassessment of the terms and conditions of all leases, easements and use agreements that exceed one year to insure a continued equitable rate of compensation.
5. The Board may consider a waiver of fees if the use of state-owned land does not generate revenues or profits and the land is open to the general public without charge.
6. Any request to use E.E.L., C.A.R.L., or other state lands that are managed primarily for the conservation and protection of natural resources, such as state parks, preserves, forests, wilderness areas, and wildlife management areas, which would preclude or affect in whole or in part, current or future uses, shall be required to provide a net positive benefit to the affected parcel. Net positive benefit shall not be solely monetary compensation, but shall include mitigation and other consideration related to environmental or management benefits. Any compensation/mitigation proposal shall be related to the affected parcel.

#### **Q. Surplus Lands**

The state land acquisition and management programs would benefit from the development and implementation of a surplus lands program. Such a program would contain a procedure for defining and identifying surplus lands. However, land would not be labeled surplus nor disposed of in a manner that would reduce the value of the land inventory of the state, which is the corpus of the Trust. Land is a valuable fixed capital asset.

Surplus lands should first be used in land exchanges to obtain inholdings and other parcels which would enhance the management and value of existing state-owned lands. Some parcels, such as Murphy Act lots, may be too small or scattered to be effectively used in land exchanges. These should be disposed of through competitive bidding after the minimum bid has been set by the fee appraisals.

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<sup>4</sup> The Board of Trustees adopted policy #6 of Paragraph "P" on July 7, 1981 (Agenda Item #14).



In addition to Murphy Act and other remnant parcels, the purchase of large acreages through the E.E.L. and C.A.R.L. acquisition program may result in the acquisition of parcels which are not essential to the original project boundary design. However, because of common ownership it may have been necessary to acquire those with the parcels essential to manageable boundary configuration. Such remnant parcels should be identified in a process of developing management plans for the newly acquired parcels, on the front end prior to acquisition.

All proceeds from the sales of state lands should be used to acquire additional state lands. This would insure that the state land inventory would never be reduced in value.

The management evaluation criteria (see Appendix A) would be used to identify surplus lands. Individual parcels would be evaluated to determine whether the legal, physical, environmental and other factors are positive or negative in terms of their management potential. Basically, the process for identifying surplus lands is the same as the process for developing management recommendations and plans. Except in the case of surplus lands, the analysis would show that there are encumbrances, physical restrictions or liabilities that make it difficult or impossible to effectively manage or use the parcel for maximum public benefit.

Section 253.034(5), Florida Statutes, requires the Board and each state agency managing state-owned lands to identify those lands surplus to their needs every five (5) years. The most effective way to implement the surplus lands program would be in conjunction with the development and review of land management plans required by Section 253.034(3), Florida Statutes. Since every state agency managing lands owned by the Board must submit a land management plan to the Board at least every five (5) years, and the criteria used to prepare management plans is essentially the same as the criteria for determining surplus lands, the two requirements should be accomplished simultaneously. Such a surplus land review would logically occur simultaneously with all state land acquisitions.

#### Policies

1. A surplus lands program shall be developed and implemented in conjunction with the review and approval of land management plans under 253.034(3), Florida Statutes.
2. Surplus lands should first be used in land exchange to obtain inholdings and other parcels which would enhance the management of existing state-owned lands.
3. Sales of surplus land shall be by competitive bid with the appraised market value as the minimum bid.
4. All proceeds from the sales of state lands should be placed in state land acquisition funds.

## **VII. Appendix**

### **A. Management Evaluation Criteria**

#### Legal

1. Type and degree of state title interest
2. Outstanding leases, easements, reverter clauses or other legal encumbrances or liabilities
3. Legislative or executive designations or directives
4. Relationship to local government comprehensive plans adopted pursuant to Chapter 163, Florida Statutes

#### Physical

1. Size and configuration
2. Location and access
3. Encroachments/recognized and unrecognized
4. Proximity to public lands, population centers

#### Environmental

1. Wetlands
2. Beaches and dunes
3. Unique, threatened and endangered species and habitat
4. Unique features (caves, sinkholes, springs)
5. Water resources (quality and quantity)
6. Submerged lands (grass beds, coral, shellfish areas)
7. Natural hazard areas (hurricane and other flood zones)
8. Soils (prime and unique agricultural land, development suitability)
9. Fish and wildlife resources
10. Areas of special environmental concern (aquatic preserve, ecologic reserve, and E.E.L. and C.A.R.L. lands)

#### Cultural

1. Archaeological and/or historical resources (Indian mounds)
2. Recreational resources (canoe trails, picnicking, public hunting)
3. Aesthetic resources (scenic vista, wilderness)

#### Economic

1. Oil, gas and mineral resources
2. Agricultural resources
  - a. timber
  - b. prime and unique agricultural lands
  - c. grazing
3. Prime development areas (institutional, industrial, research and development park)
4. Aquaculture (oyster leases)
5. Public transportation facilities
6. Exchange potential/sale to acquire more desirable parcels



## **B. Walk-Through Example #1: Specific Purpose Acquisition**

1. Agency inquiries as to the availability of existing state-owned lands.
2. Board accepts title to property acquired by the Division of Forestry for the purpose of constructing a fire tower.
3. Division of Forestry requests management control of subject property from the Board.
4. Staff conducts a management evaluation of the subject property and determines that the land can properly accommodate the intended management use.
5. Staff processes appropriate management instrument for Board consideration and action.
6. Board approves Management Agreement, and Division of Forestry initiates intended management action.
7. Division of Forestry determines that their management interest in the subject property is no longer necessary for their program continuity.
8. Division of Forestry releases their management interest in the subject property back to the Board.
9. Staff to the Board subjects property to a management evaluation, and determines that due to limited size, parcel isolation, and the absence of unique or significant environmental, cultural, recreational, or economic resources, the property should be disposed of by either exchange or outright sale.
10. Application for a land exchange is received by the Board as a result of public advertisements initiated by staff.
11. Staff successfully negotiates a value-for value exchange whereby the Board will receive title to an inholding within the Blackwater River State Forest in return for title to the subject property.
12. Board approves the proposed exchange based upon improved management capability and positive economic considerations.
13. Application is made to the Board by the Division of Forestry for the addition of the recently acquired inholding into their current management lease agreement covering the Blackwater River State Forest.
14. Board approves requested lease amendment based upon favorable staff recommendations and public interest factors.
15. Division of Forestry extends their active management practices into the recently acquired inholding.

## **Walk-Through Example #2: Unspecified Purpose Acquisition**

1. The Board accepts title to a section of land (640 acres) donated to the State of Florida without use restrictions.
2. Staff conducts a physical and cultural assessment of the subject property. The public land inventory is searched for other state property in the area.
3. The result of the assessment indicates several unique physical features on the property, as well as an Indian mound. Also, the soil types and overall topographical features of the parcel appear to be ideal for recreational activities. The public land inventory indicates no other state land within 10 miles.
4. Staff contracts the Division of Recreation & Parks, DNR<sup>5</sup> about the subject parcel, and provides full documentation from the physical/cultural assessment. Similarly, the Division of Archives, History & Records Management<sup>6</sup>, Department of State is coordinated with regarding the possibility of archaeological remains on the subject property.
5. Recreation & Parks evaluates the property further and indicates a desire to manage the parcel within the state parks system.
6. Archives & History evaluates the Indian mound evidence, and finds that the site is listed in their site inventory and should be preserved.
7. Staff processes appropriate management instrument for Board consideration and action.
8. Board approves Management Agreement with Recreation & Parks to manage the parcel as a state park, and recognizes the titular interest held by Archives & History for any cultural resources that may be present on the property.
9. Recreation & Parks initiates management action specified in approved management agreement.

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<sup>5</sup> Now the DEP (Department of Environmental Protection).

<sup>6</sup> Now the Division of Historical Resources.

## C. Glossary

Appraisal – An estimation of value of real property.

Assignment – A transfer of one’s rights to another.

Conveyance – An instrument or transfer of title of land from one person to another.

Easement – The legal right to enter on another’s property, which creates an interest in the real property.

Encroachment - A physical intrusion onto the property of another, resulting in an infringement on the other party's rights.

Encumbrance – A liability to and/or restriction of title rights to real property.

Inventory – A detailed list or schedule of property, containing a designation or description of each specific article.

Lease – A contract between owner and tenant establishing terms and conditions for the use and occupancy of real property.

Management Agreement – A contractual agreement between the board and two or more parties, which does not create an interest in real property but merely authorizes conduct of certain management activities on lands held by the board.

Plan – A recommended course of action that, when adhered to, will produce specific results.

Policies – Guidelines for the decision-making process whereby programs, services, and actions of the State are implemented, consistent with existing law.

Proprietary rights – Those rights which an owner of property has by virtue of his ownership.

Real Property – Land and permanent improvements that are located, thereon/and/or affixed thereto.

Right-Of-Way – The right of passage over the property of another.

Riparian Rights – The rights of the owners of lands on the banks of watercourses, relating to the water, its use, ownership of soil under the stream, accretions, etc.

State Lands Management Program – The Combined total of the Conceptual State Lands Management Plan, administrative rules, legislation, and parcel-specific management procedures, evaluations, data and recommendations.

Subordinate – Placed in a lower class, order or rank, such as causing a first mortgage to become a second mortgage.

Title – The evidence of right, which a person has to the possession of property.



#### **D. CHAPTER 79-255**

*The original plan included in this appendix the Committee Substitute for Senate Bill 793 as enacted by the 1979 Legislature and incorporated as Chapter 79-255 in the Laws of Florida. Chapter 79-255 established: (1) the Division of State Lands within the Department of Natural Resources, which has since been reorganized under the Department of Environmental Protection; (2) acquisition, management, and administration procedures for lands titled to the Board of Trustees of the Internal Improvement Trust Fund; (3) a new land acquisition program -- the Conservation and Recreation Lands program -- to succeed and incorporate the Environmentally Endangered Lands and Outdoor Recreation and Conservation Lands programs; and (4) the interagency Land Acquisition Selection Committee. Florida Statutes have been revised substantively since 1979. Thus, the relevance of this bill to this plan has been diminished and is supplanted by current statutes. Therefore, Chapter 79-255, Laws of Florida, has been **intentionally omitted**. See chapters 253 and 259, Florida Statutes, for current acquisition, management and administrative procedures for lands titled to the Board of Trustees.*

#### **E. CHAPTER 80-280**

*The original plan included in this appendix House Bill 715 as enacted by the 1980 Legislature and incorporated as Chapter 80-280 in the Laws of Florida. Chapter 80-280 established section 253.034, Florida Statutes, which provided land management definitions and land management planning, disposition and administration procedures for lands titled to the Board of Trustees of the Internal Improvement Trust Fund. Florida Statutes have been revised substantively since 1980. Thus, the relevance of this bill to this plan has been diminished and is supplanted by current statutes. Therefore, Chapter 80-280, Laws of Florida, has been **intentionally omitted**. See chapters 253 and 259, Florida Statutes, for current management planning, disposition and administrative procedures for lands titled to the Board of Trustees.*

#### **F. Section 197.387 from 1980 Supplement To Florida Statutes 1979**

*The original plan included in this appendix section 197.387 from the 1980 Supplement to the 1979 Florida Statutes, which addressed conveyance issues for Board of Trustees lands that were acquired under the provisions of the Murphy Act – Chapter 18296, Laws of Florida, 1937. This section of statutes has been repealed and is no longer applicable. Therefore, s. 197.387, F.S., has been **intentionally omitted**. Relevant language similar to what appeared in s. 197.387 now is located in s. 253.82, F.S.*

## G. State Lands Management Plan Interagency Advisory Committee<sup>7</sup>

**PURPOSE:** To assist the Division of State Lands in the development and acceptance of the conceptual State Lands Management Plan.

**MEETINGS:** On call, as needed, depending on development status of the State Lands Management Plan.

**EXPENSES:** Non-paid

### MEMBERS:

Mr. Daniel T. Penton  
Bureau of State Lands  
Department of Natural Resources  
3900 Commonwealth Boulevard  
Tallahassee, Florida 32303  
904/488-2291

Mr. George W. Percy  
Division of Archives, History and  
Records Management  
Department of State  
R.A. Gray Building  
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904/487-2333

Mr. W. R. Helm, Jr. (Jim Grubbs)  
Division of Forestry  
Department of Agriculture and  
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Mr. George Reinert  
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Commission  
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904/488-9730

Mr. Frank McClain (Percy Folsom)  
Facility Services  
Department of Corrections  
Tallahassee, Florida 32301  
904/487-1330

Mr. Angus Franklin  
Florida Correctional Industries  
Department of Corrections  
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Mr. James W. Mayne  
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Mr. Wayne Nesmith  
Planning and Budgeting  
Board of Regents  
Collins Building  
Tallahassee, Florida 32304

Mr. Paul O'Connell  
Bureau of Construction  
Department of General Services  
Larson Building  
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904/488-6754

Mr. Ney Landrum  
Division of Recreation and Parks  
Department of Natural Resources  
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Mr. Steve Windham  
Bureau of Geology  
Department of Natural Resources  
Gunter Building  
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904/488-3636

Mr. Fred Breeze  
House Natural Resources  
Committee  
Room 214, House Office Building  
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904/488-1564

Mr. Edwin A Joyce  
Division of Marine Resources  
Department of Natural Resources  
3900 Commonwealth Boulevard  
Tallahassee, Florida 32304  
904/488-6058

Mr. James A. Stidham  
Water Resources Division  
North West Florida Water  
Management District  
Quincy, Florida 32351

Mr. Dan Fernandez  
Senate Natural Resources  
Committee  
Room 416, Senate Office Building  
Tallahassee, Florida 32304  
904/488-1710

<sup>7</sup> Original participants, agencies, addresses & telephone numbers no longer applicable.



### A.3 / Aquatic Preserve Resolution

WHEREAS, the State of Florida, by virtue of its sovereignty, is the owner of the beds of all navigable waters, salt and fresh, lying within its territory, with certain minor exceptions, and is also the owner of certain other lands derived from various sources; and

WHEREAS, title to these sovereignty and certain other lands has been vested by the Florida Legislature in the State of Florida Board of Trustees of the Internal Improvement Trust Fund, to be held, protected and managed for the long-range benefit of the people of Florida; and

WHEREAS, the State of Florida Board of Trustees of the Internal Improvement Trust Fund, as a part of its overall management program for Florida's state-owned lands, does desire to insure the perpetual protection, preservation and public enjoyment of certain specific areas of exceptional quality and value by setting aside forever these certain areas as aquatic preserves or sanctuaries; and

WHEREAS, the ad hoc Florida Inter-Agency Advisory Committee on Submerged Land Management has selected through careful study and deliberation a number of specific areas of state-owned land having exceptional biological, aesthetic and scientific value, and has recommended to the State of Florida Board of Trustees of the Internal Improvement Trust Fund that these selected areas be officially recognized and established as the initial elements of a statewide system of aquatic preserves for Florida;

NOW, THEREFORE, BE IT RESOLVED by the State of Florida Board of Trustees of the Internal Improvement Trust Fund:

THAT it does hereby establish a statewide system of aquatic preserves as a means of protecting and preserving in perpetuity certain specially selected areas of state-owned land: and

THAT specifically described, individual areas of state-owned land may from time to time be established as aquatic preserves and included in the statewide system of aquatic preserves by separate resolution of the State of Florida Board of Trustees of the Internal Improvement Trust Fund; and

THAT the statewide system of aquatic preserves and all individual aquatic preserves established hereunder shall be administered and managed, either by the said State of Florida Board of Trustees of the Internal Improvement Trust Fund or its designee as may be specifically provided for in the establishing resolution for each individual aquatic preserve, in accordance with the following management policies and criteria:

(1) An aquatic preserve is intended to set aside an exceptional area of state-owned land and its associated waters for preservation essentially in their natural or existing condition by reasonable regulation of all human activity which might have an effect on the area.

(2) An aquatic preserve shall include only lands or water bottoms owned by the State of Florida, and such private lands or water bottoms as may be specifically authorized for inclusion by appropriate instrument from the owner. Any included lands or water bottoms to which a private ownership claim might subsequently be proved shall upon adjudication of private ownership be automatically excluded from the preserve, although such exclusion shall not preclude the State from attempting to negotiate an arrangement with the owner by which such lands or water bottoms might be again included within the preserve.

(3) No alteration of physical conditions within an aquatic preserve shall be permitted except: (a) minimum dredging and spoiling for authorized public navigation projects, or (b) other approved activity designed to enhance the quality or utility of the preserve itself. It is inherent in the concept of the aquatic preserve that, other than as contemplated above, there be: no dredging and filling to create land, no drilling of oil wells or excavation for shell or minerals, and no erection of structures on stilts or otherwise unless associated with authorized activity, within the confines of a preserve - to the extent these activities can be lawfully prevented.

(4) Specifically, there shall be no bulkhead lines set within an aquatic preserve. When the boundary of a preserve is intended to be the line of mean high water along a particular shoreline, any bulkhead line subsequently set for that shoreline will also be at the line of mean high water.

(5) All human activity within an aquatic preserve shall be subject to reasonable rules and regulations promulgated and enforced by the State of Florida Board of Trustees of the Internal Improvement Trust Fund and/or any other specifically designated managing agency. Such rules and regulations shall not interfere unduly with lawful and traditional public uses of the area, such as fishing (both sport and commercial), hunting, boating, swimming and the like.

(6) Neither the establishment nor the management of an aquatic preserve shall infringe upon the lawful and traditional riparian rights of private property owners adjacent to a preserve. In furtherance of these rights, reasonable improvement for ingress and egress, mosquito control, shore protection and similar purposes may be permitted by the State of Florida Board of Trustees of the Internal Improvement

Trust Fund and other jurisdictional agencies, after review and formal concurrence by any specifically designated managing agency for the preserve in question.

(7) Other uses of an aquatic preserve, or human activity within a preserve, although not originally contemplated, may be permitted by the State of Florida Board of Trustees of the Internal Improvement Trust Fund and other jurisdictional agencies, but only after a formal finding of compatibility made by the said Trustees on the advice of any specifically designated managing agency for the preserve in question.

IN TESTIMONY WHEREOF, the Trustees for and on behalf of the State of Florida Board of Trustees of the Internal Improvement Trust Fund have hereunto subscribed their names and have caused the official seal of said State of Florida Board of Trustees of the Internal Improvement Trust Fund to be hereunto affixed, in the City of Tallahassee, Florida, on this the 24th day of November A. D. 1969.

CLAUDE R. KIRK, JR, Governor TOM ADAMS, Secretary of State

EARL FAIRCLOTH, Attorney General FRED O. DICKINSON, JR., Comptroller

BROWARD WILLIAMS, Treasurer FLOYD T. CHRISTIAN, Commissioner of Education

DOYLE CONNER, Commissioner of Agriculture

As and Constituting the State of Florida Board of Trustees of the Internal Improvement Trust Fund

#### **A.4 / Florida Statutes**

##### **Florida Statutes, Chapter 253: State Lands**

[http://www.leg.state.fl.us/Statutes/index.cfm?App\\_mode=Display\\_Statute&URL=0200-0299/0253/0253.html](http://www.leg.state.fl.us/Statutes/index.cfm?App_mode=Display_Statute&URL=0200-0299/0253/0253.html)

##### **Florida Statutes, Chapter 258: State Parks and Preserves**

[http://www.leg.state.fl.us/Statutes/index.cfm?App\\_mode=Display\\_Statute&URL=0200-0299/0258/0258.html](http://www.leg.state.fl.us/Statutes/index.cfm?App_mode=Display_Statute&URL=0200-0299/0258/0258.html)

##### **Part II (Aquatic Preserves):**

[http://www.leg.state.fl.us/Statutes/index.cfm?App\\_mode=Display\\_Statute&Search\\_String=&URL=0200-0299/0258/0258PARTIIContentsIndex.html](http://www.leg.state.fl.us/Statutes/index.cfm?App_mode=Display_Statute&Search_String=&URL=0200-0299/0258/0258PARTIIContentsIndex.html)

##### **Florida Statutes, Chapter 259: Land Acquisitions for Conservation or Recreation**

[http://www.leg.state.fl.us/Statutes/index.cfm?App\\_mode=Display\\_Statute&URL=0200-0299/0259/0259.html](http://www.leg.state.fl.us/Statutes/index.cfm?App_mode=Display_Statute&URL=0200-0299/0259/0259.html)

##### **Florida Statutes, Chapter 379: Fish and Wildlife Conservation**

[http://www.leg.state.fl.us/statutes/index.cfm?App\\_mode=Display\\_Statute&URL=0300-0399/0379/0379.html](http://www.leg.state.fl.us/statutes/index.cfm?App_mode=Display_Statute&URL=0300-0399/0379/0379.html)

##### **Florida Statutes, Chapter 403: Environmental Control**

(Statute authorizing DEP to create Outstanding Florida Waters is at 403.061 (27))

[http://www.leg.state.fl.us/Statutes/index.cfm?App\\_mode=Display\\_Statute&URL=0400-0499/0403/0403.html](http://www.leg.state.fl.us/Statutes/index.cfm?App_mode=Display_Statute&URL=0400-0499/0403/0403.html)

##### **Florida Statutes, Chapter 597: Aquaculture**

[http://www.leg.state.fl.us/Statutes/index.cfm?App\\_mode=Display\\_Statute&URL=0500-0599/0597/0597.html](http://www.leg.state.fl.us/Statutes/index.cfm?App_mode=Display_Statute&URL=0500-0599/0597/0597.html)

#### **A.5 / Florida Administrative Code (F.A.C.)**

All rules can be found according to number at: <https://www.flrules.org/Default.asp>

##### **Florida Administrative Code, Chapter 18-20: Florida Aquatic Preserves**

<http://www.dep.state.fl.us/legal/Rules/shared/18-20.pdf>

##### **Florida Administrative Code, Chapter 18-21: Sovereignty Submerged Lands Management**

<http://www.dep.state.fl.us/legal/Rules/shared/18-21.pdf>

##### **Florida Administrative Code, Chapter 18-23: State Buffer Preserves**

<http://www.dep.state.fl.us/legal/Rules/shared/18-23.pdf>

##### **Florida Administrative Code, Chapter 62-302: Surface Water Quality Standards**

(Rule designating Outstanding Florida Waters is at 62-302.700)

<http://www.dep.state.fl.us/legal/Rules/shared/62-302/62-302.pdf>



FDACS CONTRACT #  
016599

**MEMORANDUM OF  
UNDERSTANDING (MOU)**

**APALACHICOLA REGIONAL  
STEWARDSHIP ALLIANCE**

**Participating Agencies/Organizations**

Florida Fish and Wildlife Conservation Commission  
Florida Department of Environmental Protection  
Florida Division of Forestry  
The Nature Conservancy  
Northwest Florida Water Management District  
U. S. Fish and Wildlife Service  
U. S. Forest Service  
Bureau of Land Management  
National Interagency Prescribed Fire Training Center

**I. Background**

The Parties agree to collectively initiate and implement a strategy for the conservation and stewardship of the natural resources managed by the participants within the alliance known as the Apalachicola Regional Stewardship Alliance (ARSA) in northwest Florida. ARSA is a unique public/private landowner collaboration seeking to address conservation needs and opportunities on over one million acres in northwest Florida. Northwest Florida has been identified by The Nature Conservancy as a national "hot spot" of biodiversity due to the region's remarkable assemblage of plants and animals and the threats posed by incompatible development and habitat fragmentation. This area encompassed by ARSA consists of the Apalachicola River corridor, barrier islands, a large portion of the Big Bend, and hundreds of thousands of acres of longleaf pine and wiregrass habitats (i.e. sandhill, mesic flatwoods, wet flatwoods and upland pine). This diverse and complex landscape is host to Department of Defense installations, a National Forest, two National Wildlife Refuges, State Forests and Wildlife Management Areas, State Parks and Coastal/Aquatic Managed Areas, Northwest Florida Water Management District properties and abundant forested privately owned properties.

Due to the complex and resource intensive nature of land management in the region, no one landowner or agency consistently has the capacity to address all of the stewardship issues that arise. However, it is recognized that within the group of participants, meaningful partnerships could be made for mutual benefit to address these land management challenges. Chief among these challenges for all Partners is prescribed fire. Not only is this activity complex and resource intensive, but also it is the most important ecological process for the majority of the ARSA

region. With few exceptions, Florida's plant and animal communities have co-evolved with the presence of routine and wide ranging fires. Once a product of natural ignitions, fire has in recent history been utilized as a tool first by the Native Americans, then by the European settlers. Because of this familiarity with fire, many of our native plant and animal species are now dependent upon the presence of various cycles of fire from the two to three year burning rotation of a longleaf pine-wire-grass savannah to the burn cycles of scrub and basin swamps which are measured in decades.

As responsible environmental managers, it is our mission to keep the natural process of fire within our remaining natural areas. Fire can be used as a method of ecosystem maintenance, to maintain a population of threatened plants or animals and as a successful method to reduce the natural buildup of flammable vegetation. The positive results of prescribed fire are consistently observed as large wildfires lose momentum when they spread into areas recently treated with prescribed fire. Also, cost relationships associated with fighting wildfire vs. applying prescribed fire have been estimated conservatively to be 50 to 1.

Although restoring the natural fire regime to partner lands is an important focus of ARSA; we also recognize that there are many other areas of land management expertise that could potentially be shared between alliance partners including the following:

- Ground cover restoration
- Hydrologic restoration
- Invasive exotic species control
- Rare species management
- Ecological monitoring
- Law enforcement
- Timber and/or vegetation management
- Cultural resources
- Visitor management
- Outreach and Public Affairs
- Volunteer Opportunities

Therefore all parties to this MOU may not necessarily be involved in fire management, or be able to participate in collaborative fire events, as discussed in a subsequent section of this MOU.

## **II. Objectives**

This Memorandum of Understanding (MOU) is hereby entered into this \_\_\_\_ day of \_\_\_\_\_, 2010 between The Florida Department of Agriculture, Division of Forestry (FDOF), Florida Department of Environmental Protection, (DEP), the Florida Fish and Wildlife Conservation Commission (FWC), the US Fish and Wildlife Service (USFWS), US Forest Service (USFS), Bureau of Land Management (BLM), National Interagency Prescribed Fire Training Center, (PFTC), Northwest Florida Water Management District (NFWFMD) and The Nature Conservancy (TNC), (collectively, "Parties" or "Partners"), covering reciprocal fire use, as well as providing mutual assistance for other land management activities, sharing information, and communicating to the public our mutual management successes in meeting both individual and common goals related to this MOU. This MOU establishes the Apalachicola Regional



Stewardship Alliance (ARSA), which will provide staffing and equipment to conduct prescribed fires on lands administered by the participating Parties, cooperate with fire training and education opportunities, and will promote public understanding and acceptance of prescribed fire in this region. In many instances a prescribed burning program is limited by its personnel, equipment, or local weather. It is the intent of this cooperative effort that by uniting skills, tools, and abilities that the combined burning accomplished by the ARSA will exceed the sum total of the respective agencies and entities on their own. This MOU also provides for the sharing of information concerning land management and ecosystem restoration techniques. Lastly, it is the intent that this MOU serve as a vehicle for sharing of resources to promote ground cover restoration. These resources could include but would not be limited to seed collecting and planting equipment, personnel, as well as providing sites for the collection of native ground cover seed.

### **III. Goals**

- (1) Protect, restore and manage lands that will sustain the high biodiversity of the region.
- (2). Conduct biannual meetings (location to rotate amongst Partners) to share information concerning the land management expertise identified above, share updates related to ongoing projects and to discuss/schedule potential resource needs.
- (3) Increase the fire management capacity of all Partners involved with this MOU.
- (4) Continuously maintain a chairperson whose term will not exceed one year. Chair will rotate amongst participating Partners. Nominations and voting will be conducted at the end of each chairperson's one-year term.

To achieve these goals within the ARSA, the Parties will, subject to each Party's legal authorities, regulations, policies, programmatic priorities and availability of funding:

- Freely share land management expertise and resources as practicable and per agency/landowner policy.
- Enhance communication and coordination among participants and other interested parties to identify opportunities for collaborative fire events. Among other benefits, this will facilitate coordination and operational success during emergency incidents such as wildfire and tropical weather.
- Seek federal, state, regional, local and private funding to support prescribed fire activities and training.
- Promote the education of interested private individuals and corporate landowners on fire management activities.
- Work to achieve landscape-level conservation through increased sharing of ecosystem management goals across agency boundaries.

- Provide opportunities for both prescribed fire and wildfire training for all participants in the form of standardized National Wildfire Coordinating Group (NWCG) training and on the ground mentoring.

#### **IV. Statement of Mutual Benefit and Interest**

The U. S. Fish and Wildlife Service desires to work with others to conserve, protect and enhance fish, wildlife, and plants and their habitats for the continuing benefit of the American people. The Service desires to fulfill this mission by working in cooperation with agencies, individuals, non-profit organizations and other entities.

The U.S. Forest Service desires to support acquisition and management initiatives to deal more effectively with fire and fuels build up, invasive species, loss and fragmentation of open spaces, and unmanaged recreation as they relate to the adjoining Apalachicola National Forest and the Florida National Scenic Trail corridor.

The Florida Department of Environmental Protection desires to sustain biodiversity, protect water resources, link protected natural areas, and provide outdoor recreation opportunities to a growing population of residents and tourists.

The Florida Department of Agriculture and Consumer Services, Division of Forestry, desires to protect and manage Florida's forest resources through a stewardship ethic assuring these natural resources will be restored, conserved and maintained so as to provide sustainable forest management, sound resource protection, and maximum responsible public access for recreational opportunities now and for future generations.

The Florida Fish and Wildlife Conservation Commission desires to create a sustainable and healthy future for Florida's fish, wildlife, and their habitats and to provide recreational opportunities that foster stewardship of natural resources. FWC will contribute to a landscape-level approach by integrating its habitat management into the landscape matrix, leveraging partnerships and collaborating with other scientific disciplines.

The Northwest Florida Water Management District desires to conserve and protect water resources, including aquifer recharge area, wetlands, springs, lakes and streams, while providing public access, general public recreation and restoration and protection of habitats in their natural state and condition.

The Nature Conservancy desires to preserve the plants, animals, and natural communities that represent global diversity of life by protecting the lands and waters they need to survive. The Nature Conservancy will work with partners to preserve and manage high priority conservation areas and functioning natural systems across the ecoregion by cooperating in joint prescribed fires and joint fire training sessions.



The Bureau of Land Management desires to support partnerships and management initiatives that enhance habitat improvement for native and special status species, promote species recovery, use fire to restore and maintain fire dependent plant communities, use effective integrated pest management techniques to control invasive species, and reduce excessive fuels on forest lands.

The National Interagency Prescribed Fire Training Center desires to participate with hosting agencies and organizations to train prescribed fire specialists, and conduct prescribed fire operations in accordance with prescribed fire plans that address a wide-range of land management objectives set forth in Land Management Plans.

## **V. Liability**

Each Party agrees that it will be responsible for any and all risks of personal injury and property damage attributable to the negligent acts or omissions of itself and its officers, employees, and agents acting within the scope of their employment to the extent provided by law. Nothing herein shall constitute a waiver of sovereign immunity under Florida Statute 768.28 or the Federal Tort Claims Act.

Each Party agrees that it will be responsible for repairs to its own equipment which may become damaged through negligent acts or normal wear and tear during the course of a prescribed burn or other land management activities or as a result of their employee's actions. Damage to its equipment through negligent acts by another Partner's employees will be reimbursed for the cost of repair to the equipment by the damaging Partner.

No Party, just by entering into this agreement, shall create or increase its liability. This provision is solely for the benefit of the Parties signing and shall not confer any rights to any persons not signing.

## **VI. Prescribed Burning Operations and Responsibilities**

### **A. Common Responsibilities**

1. All prescribed burns performed under this MOU will be conducted in complete compliance with all laws regulating the use of prescribed fire; specifically Chapter 590.125(3) F.S., Chapter 5I-2.006 F.A.C. and, when applicable, the specific policies regarding prescribed burning of a Party. Specific prescribed burning policies of the Parties are listed in Appendix B. (Specific Agency/Organization Requirements)
2. Each Party to the MOU will be responsible for providing its own Personal Protective Equipment (PPE) for its participating employees.
  - a. Required PPE minimums must be National Fire Protection Agency (NFPA) certified:
    - Nomex clothing
    - Hardhat
    - Leather gloves

- Leather boots
- Eye protection
- Fire shelter
- Hand held radio

These minimums are for the general MOU only. More stringent requirements may apply on prescribed burns at sites of certain Parties to this MOU. See Appendix B (Specific Agency/Organization Requirements) for additional PPE needed for burns conducted with that specific Party to the MOU.

3. Minimum Training Requirements for Parties:  
National Wildfire Coordinating Group (NWCG) Courses

- a.
- S130 – Basic Wildland Fire Suppression
  - S190 – Introduction to Wildland Fire Behavior
  - I100 – Introduction to the Incident Command System
  - L180 – Human Factors on the Fire Line
- Or
- Florida Inter-agency Basic Prescribed Fire Training Course

b. Burn boss must be state of Florida certified burner that has participated in at least 10 prescribed burns.

Specific training requirements may be needed to participate on prescribed burns at sites of certain Parties to this MOU. See Appendix B (Specific Agency/Organization Requirements) for training required for burns conducted with that specific Party to the MOU.

Parties to this MOU are encouraged to involve trainees in prescribed burning operations. In all cases, however, such persons will be identified as trainees and will work under the direct supervision of qualified personnel.

4. Prescribed burning assistance conducted under this MOU will not be reimbursable to any Party participating in ARSA unless otherwise provided through separate interagency agreements. Each Party will absorb the costs incurred by it in performing tasks associated with this initiative. Nothing contained herein shall be construed to limit any Party’s ability to apply for or receive any federal or state grants for work hereunder.

**B. Responsibility of Requesting Party**

1. The requesting Party will assume all responsibilities for prescribed burns conducted on its property or property for which it has management authority, including:
- Preparing burn prescriptions
  - Preparing smoke screening plans and smoke mitigation



- Preparing site for burning and managing the burn
  - Obtaining Prescribed Burn Permits or Authorizations
2. Prior to the burn, the requesting Party must supply the following to other Parties providing assistance with the burn:
    - Burn operations plan and site map(s). Burn prescription will be provided if requested
    - Safety and operational briefings
    - Radio access for each person as deemed appropriate by the Burn Manager
  3. The requesting Party will make every effort to have its own Certified Burn Manager in charge of the burn.
  4. Any rented or contracted private sector resources (equipment or personnel) will be paid for by the Party ordering those resources.
  5. Subject to the liability provisions of Section V, suppression costs for escaped prescribed burns conducted under this MOU will be paid by the Requesting Party.

**C. Responsibility of Assisting Party**

1. It shall be the goal of this working group that all Parties to this MOU will attempt to participate in at least two interagency prescribed burns per year. Participation is defined as providing available personnel and equipment to burn operations.
2. Parties providing assistance agree to work under the direction of the requesting Party or their designee(s) and will perform their duties in a safe and efficient manner.

**VII. Publicity & Media Relations**

Public relations and media contacts associated with any ARSA burning operations will be managed by the Party to this MOU managing the burn. During media events, every effort will be made to promote the cooperative, inter-agency nature of any burn being conducted by the ARSA. In order for one Party to use another Party's name, logo or insignia on any published media, such as Web page, printed publication or audiovisual production, permission must be granted from such other Party. A written request must be submitted and approval granted in writing.

**VIII. Miscellaneous**

1. Nothing in this MOU authorizes any of the Parties to obligate or transfer any funds. Specific work projects or activities that involve the transfer of funds, or property among the various agencies and offices will require execution of separate agreements and be contingent upon the availability of appropriated funds. Such activities must be

independently authorized by appropriate statutory authority. This MOU does not provide such authority. Negotiation, execution, and administration of each such agreement must comply with all applicable statutes and regulations. Each party operates under its own laws, regulations, and policies, subject to the availability of appropriated funds. Nothing in this MOU is intended to alter, limit, or expand the agencies' statutory and regulatory authority.

2. This MOU takes effect upon the signature of all parties and shall remain in effect for five years from the date of execution. Modifications within the scope of this MOU must be made by mutual consent of the parties, by the issuance of a written modification signed and dated by all properly authorized, signatory officials, prior to any changes being performed. Requests for modification should be made, in writing, at least 30 days prior to implementation of the requested change. Any Party to this MOU may terminate or withdraw membership at any time before the date of expiration by providing written notice to all other Parties to this MOU at the addresses set forth in Appendix A.
3. The terms and conditions contained in the MOU will be reviewed annually by participating Parties in order to consider possible changes to the MOU, including the addition of new Parties. Amendments to this MOU must be in writing and signed by all of the Parties hereto.
4. Any information furnished to any government agency under this instrument is subject to the Freedom of Information Act (5 U.S.C. 552) and the public records laws of the State of Florida. This MOU in no way restricts any of the Parties from participating in similar activities with other public or private agencies, organizations, and individuals. All Parties will handle their own activities and utilize their own resources, including the expenditure of their own funds, in pursuing these objectives. Each Party will carry out its separate activities in a coordinated and mutually beneficial manner. This MOU is not intended to, and does not create, any right, benefit, or trust responsibility, substantive or procedural, enforceable at law or equity, by a Party against the United States, its agencies, its officers, or any person.
5. Any communications affecting the operations covered by this MOU given by any of the parties is sufficient only if in writing and delivered in person, mailed, or transmitted electronically by e-mail or fax, as follows:  
  
To the Program Manager listed for that agency, at the address specified in Appendix A of this MOU.  
  
Notices are effective when delivered in accordance with this provision, or on the effective date of the notice (if specified therein), whichever is later.
6. Pursuant to 41 U.S.C. 22, no United States member of, or United States delegate to, Congress shall be admitted to any share or part of this MOU, or benefits that may arise therefrom, either directly or indirectly.



7. **AUTHORIZED REPRESENTATIVES.** By signature below, the Partner certifies that the individuals listed in this document as representatives of the Partner are authorized to act in their respective areas for matters related to this MOU.

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**Appendix A: Participating Agency / Organization Contacts and \*Addresses**

**Florida Division of Forestry**

Ken Weber  
Tallahassee Forestry Center Manager  
865 Geddie Road  
Tallahassee, FL 32304  
850-414-1131

**Bureau of Land Management**

Bruce Dawson  
Field Manager, Jackson Field Office  
411 Briarwood Drive, Suite 404  
Jackson, MS. 39206  
601-977-5400

**Florida Department of Environmental Protection**

Parks Small  
Mail Station 530  
3900 Commonwealth Blvd.  
Tallahassee, FL 32399  
850-245-3104

**Florida Fish and Wildlife Conservation Commission**

Philip (Phil) D. Manor  
Apalachicola River WEA Field Office  
558 South Murphy Road  
Wewahitchka, FL 32465  
850-827-2934 (Office)  
850-819-9534 (Mobile)

**Northwest Florida Water Management District**

Tyler Macmillan  
Chief, Bureau of Land Management Operations  
81 Water Management Drive  
Havana, FL 32333-4712  
850-539-5999

**US Fish and Wildlife Service**

James Burnett  
North Florida Refuges Complex Manager  
P. O. Box 68  
St. Marks, FL 32355  
850-925-6121

**U.S. Forest Service**

Marcus Beard  
Apalachicola National Forest District Ranger  
57 Taff Drive  
Crawfordville, FL 32327  
850-926-3561 (Office)  
850-570-9103 (Mobile)

**The Nature Conservancy**

Zachary Prusak  
222 S. Westmonte Drive; Suite 300  
Altamonte Springs, FL 32714  
407-682-3664 (Office)

**National Interagency Prescribed Fire Training Center**

Mike Dueitt  
Center Director  
3250 Capital Circle SW  
Tallahassee, FL 32310  
850-523-8631

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**\*Address of where the document will be controlled.**



**Appendix B:  
Specific Agency/Organization Requirements.**

**Agency/Organization Name:** Florida Division of Forestry

**Primary Point of Contact for Party:**

Name: Ken Weber

Position Title: Tallahassee Forestry Center Manager

Address: 865 Geddie Road  
Tallahassee, FL 32304

Phone: 850-414-1131

**Additional PPE requirements (for parties helping your agency/organization).**

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**Training requirements (for parties helping your agency/organization).**

S130 – Basic Wildland Fire Suppression, S190 – Introduction to Wildland Fire Behavior, 1100 – Introduction to the Incident Command System, and L180 – Human Factors on the Fireline (collectively)

Or

Florida Inter-agency Basic Prescribed Fire Training Course

**Additional rules or stipulations regarding equipment/personnel lending to other agencies/organizations.**

- Prescribed fires conducted on DOF properties will require a DOF employee as burn boss and they must be qualified as a Certified Burn Manager
- When burn parameters seem extreme or unsafe, DOF may opt out of participating in scheduled burns

- DOF existing agreements will not be superseded by the ARSA agreement. However any DOF participation in prescribed burns, in which fees are not assessed, will be considered as fulfilling the ARSA agreement
- DOF aircraft is not offered for inclusion as potential shared resources.

**Further Partner specific concerns, regulations, requirements, or information not addressed or mentioned in main body of MOU document.**

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**Appendix B:  
Specific Agency/Organization Requirements.**

**Agency/Organization Name:** Florida Department of Environmental Protection (DEP)

**Primary Point of Contact for Party:**

Name: Parks Small

Position Title: Chief, Bureau of Natural and Cultural Resources

Address: Division of Recreation and Parks  
Mail Station 530  
3900 Commonwealth Blvd.  
Tallahassee, FL 32399

Phone: 850-245-3104

**Additional PPE requirements (for parties helping your agency/organization).**

Requirements outlined in Section 6.2.a are acceptable; additional requirements may be added on a case-by-case basis at the burn boss or site manager's discretion in accordance with DEP standards.

**Training requirements (for parties helping your agency/organization).**

Requirements outlined in Section 6.3.a are acceptable for crew; additional requirements for crew boss or burn boss may be added on a case-by-case basis at the burn boss or site manager's discretion in accordance with DEP standards.

**Additional rules or stipulations regarding equipment/personnel lending to other agencies/organizations.**

No DEP vehicles will be loaned unless operated by a DEP employee.

**Further Partner specific concerns, regulations, requirements, or information not addressed or mentioned in main body of MOU document.**

None

**Appendix B:  
Specific Agency/Organization Requirements.**

**Agency/Organization Name:** FL Fish and Wildlife Conservation Commission

**Primary Point of Contact for Party:**

**Name:** Philip (Phil) D. Manor

**Position Title:** District Biologist – Northwest Region/Eastern District

**Address:** Apalachicola River WEA Field Office  
558 South Murphy Road  
Wewahitchka, FL 32465

**Phone:** 850-827-2934 (Office)  
850-819-9534 (Mobile)

**Additional PPE requirements (for parties helping your agency/organization).**

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**Training requirements (for parties helping your agency/organization).**

S130 – Basic Wildland Fire Suppression, S190 – Introduction to Wildland Fire Behavior,  
I100 – Introduction to the Incident Command System, and Standards for Survival (collectively)

Or

Florida Inter-agency Basic Prescribed Fire Training Course

**Additional rules or stipulations regarding equipment/personnel lending to other agencies/organizations.**

Any loan of motor-operated equipment by the Florida Fish and Wildlife Conservation  
Commission must be accompanied by an agency employee-operator.

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**Further Partner specific concerns, regulations, requirements, or information not addressed or mentioned in main body of MOU document.**

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**Appendix B:  
Specific Agency/Organization Requirements**

**Agency/Organization Name:** Northwest Florida Water Management District

**Primary Point of Contact for Party**

Name: Tyler Macmillan

Position Title: Chief, Bureau of Land Management Operations

Address: 81 Water Management Drive  
Havana, FL 32333-4712

Phone: (850) 539-5999

**Additional PPE requirements (for parties helping your agency/organization).**

Same as listed in Section IV.A.2a.

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**Training requirements (for parties helping your agency/organization).**

S130 – Basic Wildland Fire Suppression, S190 – Introduction to Wildland Fire Behavior,  
I100 – Introduction to the Incident Command System, and Standards for Survival (collectively)

Or

Florida Inter-agency Basic Prescribed Fire Training Course

**Additional rules or stipulations regarding equipment/personnel lending to other agencies/organizations.**

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**Further Partner specific concerns, regulations, requirements, or information not addressed or mentioned in main body of MOU document.**

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**Appendix B:  
Specific Agency/Organization Requirements**

**Agency/Organization Name:** Apalachicola National Forest

**Primary Point of Contact for Party**

Name: Marcus Beard

Position Title: District Ranger

Address: 57 Taff Drive, Crawfordville, FL 32327

Phone: 850-926-3561

**Additional PPE requirements (for parties helping your agency/organization).**

Standard PPE requirements required for all resources. Handheld radios are issued for  
in accordance with "Redbook" (Interagency Standards for Fire and Fire Aviation Operations  
NFES 2424) guidance on supervisory span of control, but not all personnel will have a radio.

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**Training requirements (for parties helping your agency/organization).**

S130 – Basic Wildland Fire Suppression, S190 – Introduction to Wildland Fire Behavior,  
1100 – Introduction to the Incident Command System, and Standards for Survival  
Only NWCG PMS 310-1 fully-qualified personnel and trainees shall be engaged in interagency  
wildland and prescribed fire operations.

**Additional rules or stipulations regarding equipment/personnel lending to other agencies/organizations.**

Prescribed fires conducted on USFS lands will require a USFS employee as burn boss.

When two or more burn parameters are extreme, USFS may opt out of participating in  
scheduled burn.

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USFS aircraft or leased aircraft is not offered for inclusion as potential shared resources.

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**Further Partner specific concerns, regulations, requirements, or information not addressed or mentioned in main body of MOU document.**

The parties shall acknowledge U.S. Forest Service support in any publications, audiovisuals, and electronic media developed as a result of this MOU.

Any of the parties' contributions made under this MOU do not by direct reference or implication convey U.S. Forest Service endorsement of that party's products or activities.

Any of the parties shall immediately inform the U.S. Forest Service if they or any of their principals are presently excluded, debarred, or suspended from entering into covered transactions with the federal government according to the terms of 2 CFR Part 180. Additionally, should any of the parties or any of their principals receive a transmittal letter or other official Federal notice of debarment or suspension, then they shall notify the U.S. Forest Service without undue delay. This applies whether the exclusion, debarment, or suspension is voluntary or involuntary.

**Appendix B:  
Specific Agency/Organization Requirements**

**Agency/Organization Name:** The Nature Conservancy

**Primary Point of Contact for Party**

Name: Zachary Prusak  
Position Title: Fire Manager  
Address: 222 S. Westmonte Dr, Suite 300  
Altamonte Springs, Fl, 32714  
Phone: (407) 682-3664

**Additional PPE requirements (for parties helping your agency/organization).**

Standard PPE requirements needed for all resources.  
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**Training requirements (for parties helping your agency/organization).**

S130 – Basic Wildland Fire Suppression, S190 – Introduction to Wildland Fire Behavior,  
I100 – Introduction to the Incident Command System, and Standards for Survival (collectively)  
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**Additional rules or stipulations regarding equipment/personnel lending to other agencies/organizations.**

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**Further Partner specific concerns, regulations, requirements, or information not addressed or mentioned in main body of MOU document.**

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**Appendix B:  
Specific Agency/Organization Requirements**

**Agency/Organization Name:** Bureau of Land Management

**Primary Point of Contact for Party**

Name: Bruce Dawson  
Position Title: Field Manager, Jackson Field Office  
Address: 411 Briarwood Drive, Suite 404  
Jackson, MS. 39206  
Phone: 601-977-5400

**Additional PPE requirements (for parties helping your agency/organization).**

Standard PPE requirements required for all resources. Handheld radios are issued for  
in accordance with "Redbook" (Interagency Standards for Fire and Fire Aviation  
Operations NFES 2424) guidance on supervisory span of control, but not all personnel will  
have a radio.

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**Training requirements (for parties helping your agency/organization).**

- S130- Basic Fire Suppression
- S190- Introduction to Wildland Fire Behavior
- I100- Introduction to the Incident Command System
- L180 Human Factors on the Fireline
- Standards for Survival
- At least one certified burner acting as a burn boss that has participated in at least 10 prescribed burns.
- One certified ignition specialist.



**Additional rules or stipulations regarding equipment/personnel lending to other agencies/organizations.**

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**Further Partner specific concerns, regulations, requirements, or information not addressed or mentioned in main body of MOU document.**

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**Appendix B:  
Specific Agency/Organization Requirements**

**Agency/Organization Name:** US Fish & Wildlife Service

**Primary Point of Contact for Party**

Name: James Burnett  
Position Title: North Florida Refuges Complex Manager  
Address: P. O. Box 68, St. Marks, FL 32355  
Phone: 850-925-6121

**Additional PPE requirements (for parties helping your agency/organization).**

Standard PPE requirements required for all resources. Handheld radios are issued for in accordance with "Redbook" (Interagency Standards for Fire and Fire Aviation Operations NFES 2424) guidance on supervisory span of control, but not all personnel will have a radio.

**Training requirements (for parties helping your agency/organization).**

S130 – Basic Wildland Fire Suppression, S190 – Introduction to Wildland Fire Behavior, I100 – Introduction to the Incident Command System, and Standards for Survival (Collectively). Only NWCG PMS 310-1 fully-qualified personnel and trainees shall be engaged in interagency wildland and prescribed fire operations. Signatories to the NWCG recognize the qualifications of the other signing agency's or organization's personnel. Contractors and consultants hired by the USFWS must meet PMS 310-1 qualifications for the position they will be filling.



**Additional rules or stipulations regarding equipment/personnel lending to other agencies/organizations.**

When a USFWS employee is requested to serve as a Prescribed Burn Boss for a cooperating organization, a written Prescribed Burn Plan is required, and must meet the content requirements of the Interagency Prescribed Burn Plan Template. The written Prescribed Burn Plan shall contain a listing of contingency resources and the standard operating procedures for converting or transitioning a prescribed burn to a wildfire.

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**Further Partner specific concerns, regulations, requirements, or information not addressed or mentioned in main body of MOU document.**

The FWS can treat fuels on private lands under the authority of the Wyden Amendment which is Codified in the Title 16, Chapter 18, Section 1011 of the Code of Federal Regulations or the Interior Appropriation Act. To comply with the CFR there must be a signed agreement between the FWS and the specific private landowner. The roles, responsibilities, and risk and liability concerns need to be reflected in an appropriate formal agreement between the FWS and the specific landowner.

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The FWS's Partners for Fish & Wildlife program under the authority of the Fish and Wildlife Coordination Act (16 U.S.C. 661 et seq.), Fish and Wildlife Coordination Act 16 U.S.C. 742a-j), and partners for Fish and Wildlife Act of 2006 (16 U.S.C. 3771 et seq.) provides opportunity for additional prescribed burning assistance and an appropriate funding mechanism to private landowners under appropriate formal agreement.

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**Federal personnel engaged in fire operations must be supervised by NWCG-qualified individuals or by individuals authorized to perform such duties by an organization that is a signatory to the NWCG.**

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**Appendix B:  
Specific Agency/Organization Requirements**

**Agency/Organization Name:** National Interagency Prescribed Fire Training Center

**Primary Point of Contact for Party**

**Name:** Mike Dueitt  
**Position Title:** Center Director  
**Address:** 3250 Capital Circle SW, Tallahassee, FL 32310  
**Phone:** 850-523-8631      **Cell Phone:** 850-766-1254

**Additional PPE requirements (for parties helping your agency/organization).**

Standard PPE requirements required for all resources. Handheld radios are issued for in accordance with "Redbook" (Interagency Standards for Fire and Fire Aviation Operations NFES 2424) guidance on supervisory span of control, but not all personnel will have a radio.

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**Training requirements (for parties helping your agency/organization).**

NWCG PMS 310-1.  
S130 – Basic Wildland Fire Suppression, S190 – Introduction to Wildland Fire Behavior, I100 – Introduction to the Incident Command System, and Standards for Survival (Collectively). Only NWCG PMS 310-1 fully-qualified personnel and trainees shall be engaged in interagency wildland and prescribed fire operations. Signatories to the NWCG recognize the qualifications of the other signing agency's or organization's personnel.

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**Additional rules or stipulations regarding equipment/personnel lending to other agencies/organizations.**

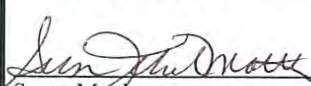
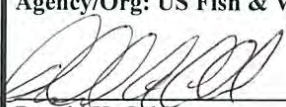
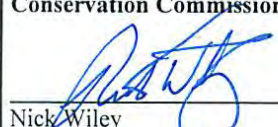
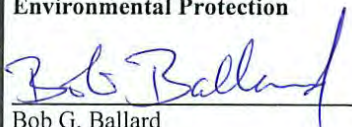


When a NIPFTC team member is requested to serve as a Prescribed Burn Boss for a cooperating organization, a written Prescribed Burn Plan is required, and must meet the content requirements of the Interagency Prescribed Burn Plan Template. The written Prescribed Burn Plan shall contain a listing of contingency resources and the standard operating procedures for converting or transitioning a prescribed burn to a wildfire.

**Further Partner specific concerns, regulations, requirements, or information not addressed or mentioned in main body of MOU document.**

NIPFTC teams will have a designated Chief of Party. In the event that the Chief of Party determines that the prescribed burn project can not be safely implemented, or has serious concerns about the advisability of burning, and is unable to reach agreement to rectify the situation, he or she reserves the right to decline participation.

**Federal personnel engaged in fire operations must be supervised by NWCG-qualified individuals or by individuals authorized to perform such duties by an organization that is a signatory to the NWCG.**

**Signature Page**

<p><b>Approved:</b></p> <p><b>Agency/Org: US Forest Service</b></p> <p> 8-24-10          Susan Matthews Date          Forest Supervisor National Forests in Florida</p> <p>USDA Forest Service National Forests in Florida          325 John Knox Road          Suite F-100          Tallahassee, FL 32303</p>	<p><b>Approved:</b></p> <p><b>Agency/Org: US Fish &amp; Wildlife Service</b></p> <p> 8-25-10          Donald H. Calder Date          Chief, Division of Contracting &amp; General Services</p> <p>US Fish &amp; Wildlife Service          Southeast Region          1875 Century Blvd NE, Suite 400          Atlanta, GA 30345</p>
<p><b>Approved:</b></p> <p><b>Agency/Org: Florida Fish and Wildlife Conservation Commission</b></p> <p> 8-16-10          Nick Wiley Date          Executive Director</p> <p>Florida Fish and Wildlife Conservation          Commission          620 S. Meridian St.          Tallahassee, FL 32399-1600</p>	<p><b>Approved:</b></p> <p><b>Agency/Org: Florida Department of Environmental Protection</b></p> <p> 8/30/10          Bob G. Ballard Date          Deputy Secretary</p> <p>Office of Land and Recreation          Douglas Bldg. 1021 D          3900 Commonwealth Blvd.          Tallahassee, FL 32399-3000</p>
<p><b>Approved:</b></p> <p><b>Agency/Org: Florida Division of Forestry</b></p> <p> 9/15/10          Mike Gresham Date          Director of Administration</p> <p>Florida Department of Agriculture and Consumer          Services – Division of Forestry          407 South Calhoun Street          Tallahassee, FL 32399-0800</p>	<p><b>Approved:</b></p> <p><b>Agency/Org: The Nature Conservancy</b></p> <p> 7/24/10          Jeff Darter Date          State Director</p> <p>The Nature Conservancy          222 South Westmonte Drive, Suite 300          Altamonte Springs, FL 32714-4269          Legal Review: J. Wilson – 5/4/10</p>





FDACS CONTRACT #

014620

**MEMORANDUM OF AGREEMENT**

**BETWEEN THE**

**FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION  
OFFICE OF COASTAL AND AQUATIC MANAGED AREAS**

**AND THE**

**FLORIDA DEPARTMENT OF AGRICULTURE AND CONSUMER SERVICES  
DIVISION OF FORESTRY**

This Memorandum of Agreement (MOA) is entered into this 22 day of JANUARY, 2008, by and between the Florida Department of Environmental Protection, Office of Coastal and Aquatic Managed Areas, acting by and through its Director, under the authority of Chapter 258, Florida Statutes, hereinafter referred to as CAMA; and the Florida Department of Agriculture and Consumer Services, Division of Forestry, acting by and through its Director, under the authority of Chapters 589 and 590, Florida Statutes, hereinafter referred to as the DOF.

WHEREAS, CAMA manages certain state lands to provide protection to aquatic ecosystems which represent the original domain of the state; and

WHEREAS, CAMA manages these ecosystems but often seeks the advice of other agencies which share or exceed their expertise in particular areas; and

WHEREAS, CAMA in its ongoing ecosystem restoration activities periodically plans to remove or thin timber stands as one step of the restoration, which in some cases will also include replanting appropriate native species; and

WHEREAS, the DOF has expertise in timber management and silviculture operations; and

WHEREAS, CAMA and the DOF have cooperated on many occasions in the planning and contracting of restoration harvests, native seed harvesting, nursery services and other matters; and

WHEREAS, Section 253.036, Florida Statutes requires that timber management assessments be conducted for public lands which are greater than 1,000 acres if the lead management agency determines that the timber management is not in conflict with the primary management objectives of the parcel; and

WHEREAS, the Legislature intends that each lead management agency, whenever practicable and cost effective, use the services of the DOF or other qualified foresters in completing such feasibility assessments and implementing timber resource management;



WHEREAS, CAMA and the DOF have previously entered into an MOA, dated 5/2/07 and stamped FDACS Contract #012707, which was executed for similar purposes; they both wish to allow for completion of current contracts under that MOA and have all services rendered after execution of this MOA be governed by this MOA.

NOW THEREFORE, the parties hereto, for and in consideration of the mutual covenants and agreements hereinafter contained hereby covenant and agree as follows:

1. CAMA agrees:

A. To determine the CAMA managed parcels (1,000 acres or greater) where timber resource management is not in conflict with the primary management objectives of the parcel.

B. To use qualified professional foresters from its own staff, qualified private sector professional foresters, or the DOF to conduct the required timber management assessments and prepare a timber management component for the CAMA ten-year management plans for said parcels as specified in Section 253.036, Florida Statutes. If the DOF is requested to participate, CAMA and the DOF will jointly develop stand objectives for the timber management component.

C. Annually prepare a prioritized list of proposed timber sales that they wish to conduct on the above-mentioned parcels in conjunction with the DOF during the upcoming State of Florida fiscal year. CAMA shall submit this list to the DOF for review by June 1 of each year, and the two agencies will agree on a finalized list by June 30. CAMA may submit requests for additional sales to the DOF in writing with a reasonable amount of lead time.

CAMA may, if mutually agreed upon in advance, assist DOF with field administration of timber sales due to the remote location of CAMA properties. Such assistance may include activities such as site visits and tallying trucks.

D. To compensate the DOF for services performed under this MOA according to the following methods:

1. *Timber Sale Preparation and Administration:*

a. *Revenue/payment structure.* The DOF shall receive revenues from all timber sales it administers on behalf of CAMA pursuant to this MOA. The DOF will be paid the greater of: (a) **15%** of the total sales revenue or (b) the actual cost of sale preparation plus 5% of the total sales revenue for an administrative fee. Timber sale proceeds will be received from buyers in two checks. One check will be made payable to **Florida Department of Environmental Protection, CAMA** for **85%** of the total sales revenue. The other check shall be made payable to the **Florida Department of Agriculture and Consumer Services** for **15%** of the total sales revenue. If,

at the completion of the sale, DOF determines that the actual cost of sale preparation and administration exceeds the 15% of revenue that was paid to the DOF, DOF shall request a transfer of the additional funds due from CAMA to the DOF. CAMA shall journal transfer these funds within forty-five (45) days of the request.

b. Costs:

i. If option D.1.a.(b) above is the amount for which the DOF is paid, the following shall be considered in calculating the total:

"Actual cost of sale preparation" shall include the cost of field consultation with CAMA staff, field reconnaissance to prepare the sale package, necessary timber cruising or marking, and purchase of expendable field supplies.

"Administrative fee" shall include the cost of solicitation and receipt of bids, execution of contracts, and supervision of the sale while in progress. These costs are not to be included in the actual costs of sale preparation but are considered liquidated by virtue of the 5% of total sales revenue.

ii. Accessibility- The cost for materials or other construction activities necessary for access to CAMA lands for the purpose of removing timber may, at the DOF's discretion, be paid for from CAMA's portion of the receipts of timber. Before the purchases of any materials are made, or the initiations of any construction activities necessary for access are made, the logger must consult with and receive the approval of the Forester-In-Charge and the CAMA land manager. The logger may deduct these expenses from sales receipts before submitting payments to the Forester-In-Charge. A copy of all receipts for materials must be included with payments.

iii. Post Harvest Road Repair- The timber sale contract shall hold the harvesting contractor responsible for repairing damages to roads, bridges, and culverts that occurred as a result of their operation.

*2. Timber Resource Assessment and Management Plan Development:* The CAMA shall reimburse the DOF for expenses related to developing reforestation plans for specific areas, assessing the feasibility of conducting a timber sale in a particular stand, or to provide input to ten-year Land Management Plans. Reimbursement shall consist of billable hours attributable to the project based upon the hourly rate for non-supervisory personnel as published in the most current DOF Fire Manual, plus vehicle mileage at the current State of Florida reimbursement rate, plus any applicable per diem.

*3. Other Silvicultural Activities:* CAMA shall reimburse the DOF for the supervision and management of other land management activities (not including prescribed fire) in the amount of 10% of the contract amount. CAMA shall solicit and receive all bids, execute all contracts, and pay all



contractors. DOF shall assist with field consultation, bid package preparation, and field management and supervision.

2. The DOF agrees:

A. To conduct the required timber management assessments for the CAMA unit management plans for said parcels, as specified in Section 253.036, Florida Statutes, when requested by CAMA and when feasible according to DOF's staff availability. If the DOF is requested to participate, CAMA and the DOF will jointly develop stand objectives for the timber management component.

B. To respond to requests from CAMA for assistance and complete agreed upon timber management assessments, timber sales, and reforestation activities in a timely manner.

i. Timber sale activities include, but are not limited to, sale preparation (field consultation with CAMA staff, field reconnaissance to prepare the sale package and timber cruising or marking) and administration (solicitation and receipt of bids, execution of contracts, supervision of the sale while in progress and expense and revenue tracking). The timber sale contract shall hold the harvesting contractor responsible for repairing damages to roads, bridges, and culverts that occur as a result of their operation.

C. To maintain books, records, and documents directly pertinent to performance under this MOA, including all invoices, purchase orders, bids, contracts, travel, and other receipts, in accordance with generally accepted accounting principles consistently applied, and to retain and allow DEP, the State of Florida, or their authorized agents access to those records during the term of this MOA and for five years following termination of this MOA.

3. The DOF and CAMA mutually agree:

A. CAMA may request the DOF to help conduct timber management assessments, as well as plan and manage timber harvests and reforestation on any other parcel managed by CAMA. These services are reimbursable to the DOF by the above methods or by other mutual agreement.

B. CAMA may request the DOF to provide assistance in prescribed burning, fire line rehabilitation and other forest management services. These services are reimbursable to the DOF by mutual agreement.

C. Written amendments to this MOA may be proposed by either party and shall become effective upon signature by both parties.

D. Either party may terminate this MOA by providing sixty (60) days written notice to the other party. Unless terminated by written notice, this MOA will indefinitely remain in effect.

E. This MOA may be unilaterally canceled by either party for refusal by the other party to allow public access to all documents, papers, letters, or other material made or received by either party in conjunction with this Agreement, unless the records are exempt from Section 24(a) of Article I of the Florida Constitution and Section 119.07(1), Florida Statutes.

F. Each party shall be solely responsible for the negligent or wrongful acts of its employees and agents. However, nothing contained herein shall constitute a waiver by either party of its sovereign immunity or the provisions of Section 768.28, Florida Statute.

G. Any and all notices shall be hand delivered or sent by United States Postal Service (certified mail) to the parties at the following addresses:

CAMA  
Larry Nall or successor  
Department of Environmental Protection  
Office of Coastal and Aquatic Managed Areas  
3900 Commonwealth Blvd., Mail Station 235  
Tallahassee, FL 32399-3000

DOF  
Jim Grubbs or successor  
Forest Management Bureau  
Division of Forestry  
3125 Conner Blvd.  
Tallahassee, FL 32399-1650

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IN WITNESS WHEREOF, the Florida Department of Agriculture and Consumer Services, Division of Forestry, and the Department of Environmental Protection, Office of Coastal and Aquatic Managed Areas, have caused this MOA to be duly executed and effective as of the date last written below.

STATE OF FLORIDA  
DEPARTMENT OF AGRICULTURE AND  
CONSUMER SERVICES

WITNESSES:

Karen A. Meyer  
Susan P. Buehl

CHARLES H. BRONSON, COMMISSIONER

BY: Mike Gresham  
MIKE GRESHAM, DIRECTOR  
DIVISION OF ADMINISTRATION

WITNESSES

[Signature]  
Sherry A. Eri

STATE OF FLORIDA  
DEPARTMENT OF ENVIRONMENTAL  
PROTECTION

BY: Lee Edmiston  
LEE EDMISTON, DIRECTOR  
OFFICE OF COASTAL AND AQUATIC  
MANAGED AREAS

Approved as to form and legality

[Signature]  
DEP Attorney

DATE: 11/22/09

Other Agreements

Magnolia Bluff Sublease

DIVISION LOG # W1246-A

CONTRACT NUMBER 99234 <sup>443</sup>

CONTRACT ROUTING REVIEW FORM

CONTRACTOR NAME FWC/DEP-CAMA/DSL

VENDOR ID NO. \_\_\_\_\_ PROCUREMENT METHOD\*/BID/RFP NO. \_\_\_\_\_

BRIEF TITLE SUBLEASE TO LEASE 3584

NEW  RENEWAL  EXTENSION  AMENDMENT (See Reverse for Definitions)

CONTRACT BEGIN DATE EXECUTION 1/10/2001 END DATE 10/10/03 OPTION FOR \_\_\_\_\_ YEARS

ORIGINATOR/CONTACT P DOERR <sup>CS</sup> PHONE 8-3831 DIV./OFFICE/MAIL DOW/BWM

TOTAL CONTRACT AMOUNT \$ \_\_\_\_\_ PAYMENT AMOUNT \$ \_\_\_\_\_

BILLING PERIODS:  MONTHLY  QUARTERLY  ANNUALLY  OTHER \_\_\_\_\_

EXPENDITURE  REVENUE  AGREEMENT  EASEMENT/DEED  LEASE (INCLUDES WMA OR FMA LEASES)

BUILDING INSURANCE TO BE INCURRED BY THE COMMISSION  YES  NO (Notify Property Administrator)

ORG. CODE	E.O.	OBJECT CODE	AMOUNT	PROJECT ID	FY

Certified Minority:  Yes  No  Not Available  Not Appl. Minority Category \_\_\_\_\_ (See reverse side for options)

Division/offices Are to forward executed Original Contract and Routing Slip to The Bureau of Office Operations.

Class/group Code \_\_\_\_\_ FLAIR:  Yes  No FSAA Checklist  Yes  No

Routing Order for Approval	Approval (Signature)	Date	Comments
1. Project Leader★	<i>[Signature]</i>	12-7-00	
2. Proj. Budget Mgr. (Expenditure Only)			Budget Authority: <input type="checkbox"/> Existing <input type="checkbox"/> New
3. Div./Reg./Inst./Off. Dir. ★	<i>MAS</i>	12-8-00	
4. Bur. of Office Operations★	<i>[Signature]</i>	12-8-00	
5. Legal	<i>P PR</i>	12-11-00	
6. Dir. of Auditing (Expenditure/Revenue)			
7. Bureau of Accounting			Funds Availability: <input type="checkbox"/> Yes <input type="checkbox"/> No
8. Exec./Div./Reg./Inst./Off. Dir. review (check below): ★			
<input type="checkbox"/> Expenditure Contracts: Return to Originator for Contractor signature.			Expenditure Contracts: After Contractor signs, send to Exec./Div./Reg./Inst./Off. Director for signature and dating.
<input type="checkbox"/> Other documents: Send to (circle)			
<input type="checkbox"/> Exec./Div./Reg./Inst./Off. Dir. for signature. ★			
9. Exec./Div./Reg./Inst. Dir. execute ★	<i>[Signature]</i>	14-DEC-00	was not notarized returned.
Originator to Bur. of Office Ops.			to DSL 12/20 00
Copy to Accounting			
Bur. of Office Ops. to Central Files	<i>[Signature]</i>	1-9-01	

★Routing of Federal Aid Documents



## MEMORANDUM

**TO:** Contract Reviewers

**FROM:** Frank Montalbano, Director, Division of Wildlife

**SUBJECT:** Sublease 01 to Lease Number 3584 (Apalachicola River  
WEA)

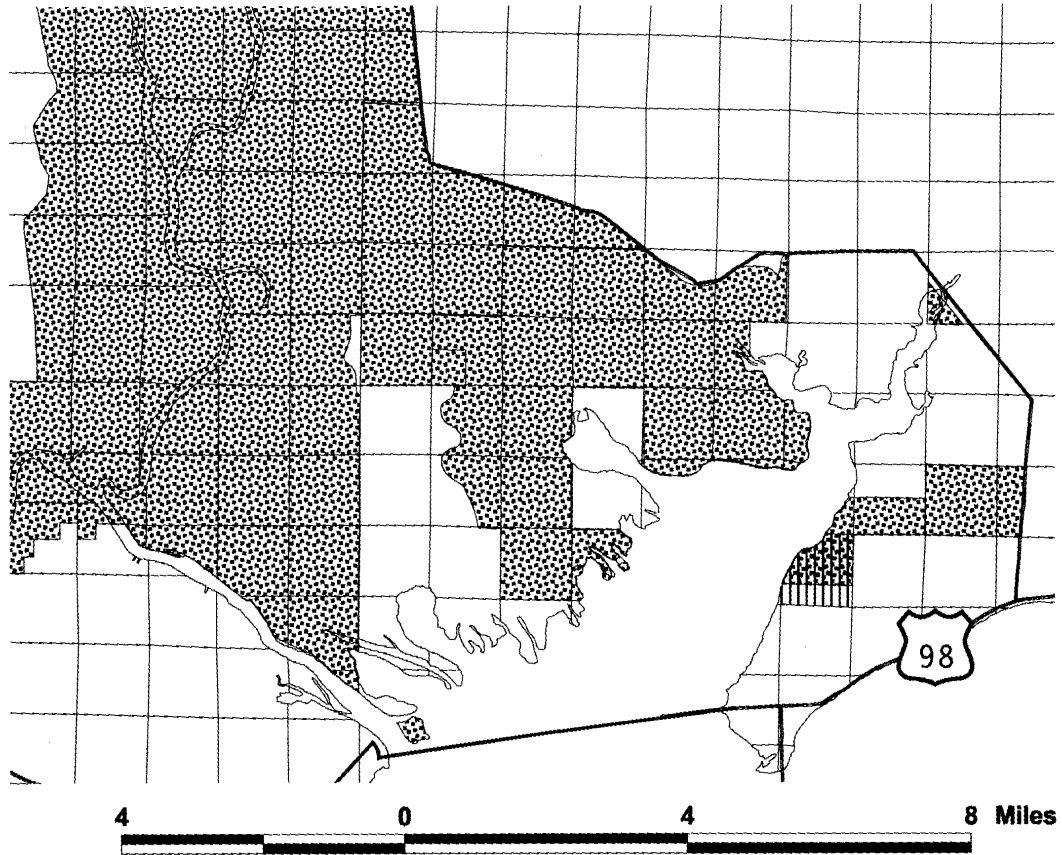
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Attached are three originals of Sublease 01 to Lease Number 3584 between the Board of Trustees, the State of Florida Fish and Wildlife Conservation Commission and the Florida Department of Environmental Protection, Office of Coastal and Aquatic Managed Areas (CAMA) subleasing 203.6 acres to CAMA. The sublease will allow CAMA to continue management of the property for operation of an administrative office, land base and maintenance shop. The Commission will still be lead manager for this property, however CAMA will be responsible for all fees associated with the building site.

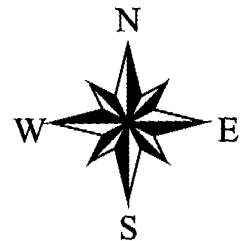
Thank you for your consideration of this matter.

LEG 8-5  
DP/pd  
bwm/patti/contracts/dsl/3584-01.mem  
Attachment

# Magnolia Bluff Sublease



-  Magnolia Bluff Sublease within this portion
-  Apalachicola River WEA
-  Roads





SAS1

FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION

SUBLEASE AGREEMENT

Sublease Number 3584-01

THIS SUBLEASE AGREEMENT, is made and entered into this 12<sup>TH</sup> day of January 2001, between the FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION hereinafter referred to as "SUBLESSOR" and the FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF COASTAL AND AQUATIC MANAGED AREAS hereinafter referred to as "SUBLESSEE."

WITNESSETH:

In consideration of covenants and conditions set forth herein, SUBLESSOR subleases the below-described premises to SUBLESSEE on the following terms and conditions:

1. ACKNOWLEDGMENTS: The parties acknowledge that title to the subleased premises is held by the Board of Trustees of the Internal Improvement Trust Fund ("TRUSTEES") and is currently managed by SUBLESSOR as the Magnolia Bluff Tract under TRUSTEES' Lease Number 3584.
2. DESCRIPTION OF PREMISES: The property subject to this sublease, is situated in the County of Franklin, State of Florida, and is more particularly described in Exhibit "A" attached hereto and hereinafter referred to as the "subleased premises."
3. TERM: The term of this sublease shall be for a period concurrent with Lease Number 3584, unless sooner terminated pursuant to the provisions of this sublease.
4. PURPOSE: SUBLESSEE shall manage the subleased premises only

for the establishment and operation of administrative office, land base and maintenance shop, along with other related uses necessary for the accomplishment of this purpose as designated in the Management Plan required by paragraph 6 of this sublease.

5. QUIET ENJOYMENT AND RIGHT OF USE: SUBLESSEE shall have the right of ingress and egress to, from and upon the subleased premises for all purposes necessary to the full quiet enjoyment by said SUBLESSEE of the rights conveyed herein.

6. MANAGEMENT PLAN: SUBLESSEE shall prepare and submit a Management Plan for the subleased premises, in accordance with Section 253.034, Florida Statutes, and subsection 18-2.021(4), Florida Administrative Code, within twelve months of the effective date of this sublease. The Management Plan shall be submitted to the TRUSTEES for approval through SUBLESSOR and the Division of State Lands. The subleased premises shall not be developed or physically altered in any way other than what is necessary for security and maintenance of the subleased premises without the prior written approval of the TRUSTEES and SUBLESSOR until the Management Plan is approved. The Management Plan shall emphasize the original management concept as approved by the TRUSTEES on the effective date of this sublease which established the primary public purpose for which the subleased premises are to be managed. The approved Management Plan shall provide the basic guidance for all management activities and shall be reviewed jointly by SUBLESSEE, SUBLESSOR and the TRUSTEES at least every five years. SUBLESSEE shall not use or alter the subleased premises except as provided for in the approved Management Plan without the advance written approval of the TRUSTEES and SUBLESSOR. The Management Plan prepared under this sublease shall identify management strategies for exotic species,



if present. The introduction of exotic species is prohibited, except when specifically authorized by the approved Management.

7. CONFORMITY: This sublease shall conform to all terms and conditions of that certain lease between the TRUSTEES and SUBLESSOR dated October 11, 1983, a copy of which is attached hereto as Exhibit "B", and SUBLESSEE shall, through its agents and employees, prevent the unauthorized use of the subleased premises or any use thereof not in conformance with this sublease.

8. ASSIGNMENT: This sublease shall not be assigned in whole or in part without the prior written consent of the TRUSTEES and SUBLESSOR. Any assignment made either in whole or in part without the prior written consent of the TRUSTEES and SUBLESSOR shall be void and without legal effect.

9. RIGHT OF INSPECTION: The TRUSTEES and SUBLESSOR or their duly authorized agents shall have the right at any time to inspect the subleased premises and the works and operations thereon of SUBLESSEE in any matter pertaining to this sublease.

10. PLACEMENT AND REMOVAL OF IMPROVEMENTS: All buildings, structures, improvements, and signs shall be constructed at the expense of SUBLESSEE in accordance with plans prepared by professional designers and shall require the prior written approval of SUBLESSOR as to purpose, location, and design. Further, no trees, other than non-native species, shall be removed or major land alterations done by SUBLESSEE without the prior written approval of SUBLESSOR. Removable equipment and removable improvements placed on the subleased premises by SUBLESSEE which do not become a permanent part of the subleased premises realty will remain the property of SUBLESSEE and may be removed by SUBLESSEE upon termination of this sublease.

11. INSURANCE REQUIREMENTS: SUBLESSEE shall procure and maintain fire and extended risk insurance coverage, in accordance with Chapter 284, F.S., for any buildings and improvements located on the subleased premises by preparing and delivering to the Division of Risk Management, Department of Insurance, a completed Florida Fire Insurance Trust Fund Coverage Request Form and a copy of this sublease immediately upon erection of any structures as allowed by paragraph 4 of this sublease. A copy of said form and immediate notification in writing of any erection or removal of structures or other improvement on the subleased premises and any changes affecting the value of the improvements will be submitted to SUBLESSOR and the Bureau of Public Land Administration, Division of State Lands, Department of Environmental Protection, Mail Station 130, 3900 Commonwealth Boulevard, Tallahassee, Florida 32399-3000.

12. LIABILITY: SUBLESSEE shall assist in the investigation of injury or damage claims either for or against SUBLESSOR, the TRUSTEES or the State of Florida pertaining to SUBLESSEE'S respective areas of responsibility under this sublease or arising out of SUBLESSEE'S respective management programs or activities and shall contact SUBLESSOR regarding the legal action deemed appropriate to remedy such damage or claims.

13. ARCHAEOLOGICAL AND HISTORIC SITES: Execution of this sublease in no way affects any of the parties' obligations pursuant to Chapter 267, Florida Statutes. The collection of artifacts or the disturbance of archaeological and historic sites on state-owned lands is prohibited unless prior authorization has been obtained from the Department of State, Division of Historical Resources. The Management Plan prepared pursuant to Section 253.034, Florida Statutes, shall be reviewed by the



Division of Historical Resources to insure that adequate measures have been planned to locate, identify, protect and preserve the archaeological and historic sites and properties on the subleased premises.

14. EASEMENTS: All easements including, but not limited to utility easements, are expressly prohibited without the prior written approval of the TRUSTEES and SUBLESSOR. Any easement not approved in writing by the TRUSTEES and SUBLESSOR shall be void and without legal effect.

15. SUBSUBLEASES: This sublease is for the purposes specified herein and any subsubleases of any nature are prohibited, without the prior written approval of the TRUSTEES and SUBLESSOR. Any subsublease not approved in writing by the TRUSTEES and SUBLESSOR shall be void and without legal effect.

16. ENVIRONMENTAL AUDIT: At SUBLESSOR's discretion, SUBLESSEE shall provide SUBLESSOR with a current Phase I environmental site assessment conducted in accordance with the Department of Environmental Protection, Division of State Land's standards prior to termination of this sublease, and if necessary a Phase II environmental site assessment.

17. SURRENDER OF PREMISES: Upon termination or expiration of this sublease, SUBLESSEE shall surrender the subleased premises to SUBLESSOR. In the event no further use of the subleased premises or any part thereof is needed, written notification shall be made to SUBLESSOR and the Bureau of Public Land Administration, Division of State Lands, Department of Environmental Protection, Mail Station 130, 3800 Commonwealth Boulevard, Tallahassee, Florida 32399-3000, at least six months prior to the release of all or any part of the subleased premises. Notification shall include a legal description, the

lease number, and this sublease number and an explanation of the release. The release shall only be valid if approved by the TRUSTEES and SUBLESSOR through the execution of a release of sublease instrument executed with the same formality as this sublease. Upon termination or expiration of this sublease, all improvements, including both physical structures and modifications to the subleased premises, shall become the property of SUBLESSOR and the TRUSTEES unless SUBLESSOR gives written notice to SUBLESSEE to remove any or all such improvements at the expense of SUBLESSEE. The decision to retain any improvements upon termination of this sublease shall be at SUBLESSOR'S sole discretion. Prior to surrender of all or any part of the subleased premises, SUBLESSOR shall perform an on-site inspection and the keys to any buildings on the subleased premises shall be turned over to SUBLESSOR. If the subleased premises and improvements located thereon do not meet all conditions as set forth in paragraphs 21 and 22 herein, SUBLESSEE shall pay all costs necessary to meet the prescribed conditions.

18. BEST MANAGEMENT PRACTICES: SUBLESSEE shall implement applicable Best Management Practices for all activities conducted under this sublease in compliance with Paragraph 18-2.018(2)(h), Florida Administrative Code, which have been selected, developed, or approved by the TRUSTEES and SUBLESSOR or other land managing agencies for the protection and enhancement of the subleased premises.

19. PUBLIC LANDS ARTHROPOD CONTROL PLAN: SUBLESSEE shall identify and subsequently designate to the respective arthropod control district or districts within one year of the effective date of this sublease all of the environmentally sensitive and biologically highly productive lands contained within the



subleased premises, in accordance with Section 388.4111, Florida Statutes and Chapter 5E-13, Florida Administrative Code, for the purpose of obtaining a public lands arthropod control plan for such lands.

20. MINERAL RIGHTS: This sublease does not cover petroleum or petroleum products or minerals and does not give the right to the SUBLESSEE to drill for or develop the same. However, SUBLESSEE shall be fully compensated for any and all damages that might result to the subleasehold interest of SUBLESSEE by reason of such exploration and recovery operations.

21. UTILITY FEES: SUBLESSEE shall be responsible for the payment of all charges for the furnishing of gas, electricity, water, telephone, and other public utilities to the subleased premises and for having all utilities turned off when the subleased premises are surrendered.

22. MAINTENANCE: SUBLESSEE shall maintain the real property contained within the subleased premises and any improvements located thereon, in a state of good condition, working order and repair including, but not limited to, keeping the subleased premises free of trash or litter, maintaining all planned improvements as set forth in the approved Management Plan, meeting all building and safety codes in the location situated and maintaining any and all existing roads, canals, ditches, culverts, risers, and the like in as good condition as the same may be on the effective date of this sublease.

23. ENTIRE UNDERSTANDING: This sublease sets forth the entire understanding between the parties and shall only be amended with the prior written approval of the TRUSTEES and SUBLESSOR.

24. BREACH OF COVENANTS, TERMS, OR CONDITIONS: Should SUBLESSEE breach any of the covenants, terms, or conditions of this

sublease, SUBLESSOR shall give written notice to SUBLESSEE to remedy such breach within sixty days of such notice. In the event SUBLESSEE fails to remedy the breach to the satisfaction of SUBLESSOR within sixty days of receipt of written notice, SUBLESSOR may either terminate this sublease and recover from SUBLESSEE all damages SUBLESSOR may incur by reason of the breach including, but not limited to, the cost of recovering the subleased premises or maintain this sublease in full force and effect and exercise all rights and remedies herein conferred upon SUBLESSOR.

25. NO WAIVER OF BREACH: The failure of SUBLESSOR to insist in any one or more instances upon strict performance of any one or more of the covenants, terms, and conditions of this sublease shall not be construed as a waiver of such covenants, terms and conditions, but the same shall continue in full force and effect, and no waiver of SUBLESSOR of any one of the provisions hereof shall in any event be deemed to have been made unless the waiver is set forth in writing, signed by SUBLESSOR.

26. PROHIBITIONS AGAINST LIENS OR OTHER ENCUMBRANCES: Fee title to the subleased premises is held by the TRUSTEES. SUBLESSEE shall not do or permit anything to be done which purports to create a lien or encumbrance of any nature against the real property contained in the subleased premises including, but not limited to, mortgages or construction liens against the subleased premises or against any interest of the TRUSTEES and SUBLESSOR therein.

27. PARTIAL INVALIDITY: If any term, covenant, condition or provision of this sublease shall be ruled by a court of competent jurisdiction to be invalid, void, or unenforceable, the remainder



shall remain in full force and effect and shall in no way be affected, impaired or invalidated.

28. CONDITIONS AND COVENANTS: All of the provisions of this sublease shall be deemed covenants running with the land included in the subleased premises, and construed to be "conditions" as well as "covenants" as though the words specifically expressing or imparting covenants and conditions were used in each separate provision.

29. TIME: Time is expressly declared to be of the essence of this sublease.

30. DAMAGE TO THE PREMISES: (a) SUBLESSEE shall not do, or suffer to be done, in, on, or upon the subleased premises or as affecting said subleased premises or adjacent properties, any act which may result in damage or depreciation of value to the subleased premises or adjacent properties, or any part thereof.

(b) SUBLESSEE shall not generate, store, produce, place, treat, release, or discharge any contaminants, pollutants, or pollution, including, but not limited to, hazardous or toxic substances, chemicals, or other agents on, into, or from the subleased premises or any adjacent lands or waters in any manner not permitted by law. For the purposes of this sublease, "hazardous substances" shall mean and include those elements or compounds defined in 42 USC Section 9601 or which are contained in the list of hazardous substances adopted by the United States Environmental Protection Agency (EPA) and the list of toxic pollutants designated by the United States Congress or the EPA or defined by any other federal, state, or local statute, law, ordinance, code, rule, regulation, order, or decree regulating, relating to, or imposing liability, or standards of conduct concerning any hazardous, toxic or dangerous waste, substance,

material, pollutant or contaminant. "Pollutants" and "pollution" shall mean those products or substances defined in Chapters 376 and 403, Florida Statutes, and the rules promulgated thereunder, all as amended or updated from time to time. In the event of LESSEE'S failure to comply with this paragraph, LESSEE shall, at its sole cost and expense, promptly commence and diligently pursue any legally required closure, investigation, assessment, cleanup, decontamination, remediation, restoration, and monitoring of (1) the subleased premises, and (2) all off-site ground and surface waters and lands affected by SUBLESSEE'S such failure to comply, as may be necessary to bring the subleased premises and affected off-site waters and lands into full compliance with all applicable federal, state or local statutes, laws, ordinances, codes, rules, regulations, orders and decrees, and to restore the damaged property to the condition existing immediately prior to the occurrence which caused the damage. SUBLESSEE'S obligations set forth in this paragraph shall survive the termination or expiration of this lease. Nothing herein shall relieve SUBLESSEE of any responsibility or liability prescribed by law for fines, penalties and damages levied by governmental agencies, and the cost of cleaning up any contamination caused directly or indirectly by SUBLESSEE'S activities or facilities. Upon discovery of a release of a hazardous substance or pollutant, or any other violation of local, state, or federal law, ordinance, code, rule, regulation, order, or decree relating to the generation, storage, production, placement, treatment, release, or discharge of any contaminant, SUBLESSEE shall report such violation to all applicable governmental agencies having jurisdiction, and to SUBLESSOR, all within the reporting periods of the applicable agencies.



31. PAYMENT OF TAXES AND ASSESSMENTS: SUBLESSEE shall assume full responsibility for and shall pay all liabilities that accrue to the subleased premises or to the improvements thereon, including any and all drainage and special assessments or taxes of every kind and all mechanic's or materialman's liens which may be hereafter lawfully assessed and levied against the subleased premises during the effective period of this sublease.

32. RIGHT OF AUDIT: SUBLESSEE shall make available to the TRUSTEES or SUBLESSOR all financial and other records relating to this sublease and the TRUSTEES or SUBLESSOR shall have the right to audit such records at any reasonable time. This right shall be continuous until this sublease expires or is terminated. This sublease may be terminated by SUBLESSOR should SUBLESSEE fail to allow public access to all documents, papers, letters or other materials made or received in conjunction with this sublease, pursuant to Chapter 119, Florida Statutes.

33. NON-DISCRIMINATION: SUBLESSEE shall not discriminate against any individual because of that individual's race, color, religion, sex, national origin, age, handicap, or marital status with respect to any activity occurring within the subleased premises or upon lands adjacent to and used as an adjunct of the leased premises.

34. COMPLIANCE WITH LAWS: SUBLESSEE agrees that this sublease is contingent upon and subject to SUBLESSEE obtaining all applicable permits and complying with all applicable permits, regulations, ordinances, rules, and laws of the State of Florida or the United States or of any political subdivision or agency of either.

35. GOVERNING LAW: This sublease shall be governed by and interpreted according to the laws of the State of Florida.

36. SECTION CAPTIONS: Articles, subsections and other captions contained in this sublease are for reference purposes only and are in no way intended to describe, interpret, define, or limit the scope, extent or intent of this sublease or any provisions thereof.

37. ADMINISTRATIVE FEE: SUBLESSEE shall pay TRUSTEES an annual administrative fee of \$300 pursuant to Chapter 18-2.020(8), Florida Administrative Code. The initial annual administrative fee shall be payable within thirty days from the date of execution of this sublease agreement and shall be prorated based on the number of months or fraction thereof remaining in the fiscal year of execution. For purposes of this sublease agreement, the fiscal year shall be the period extending from July 1 to June 30. Each annual payment thereafter shall be due and payable on July 1 of each subsequent year.

38. SPECIAL CONDITION: SUBLESSEE shall allow those types of recreational uses on the subleased premises which are approved by SUBLESSOR.



IN WITNESS WHEREOF, the parties have caused this sublease agreement to be executed on the day and year first above written.

FLORIDA FISH AND WILDLIFE  
CONSERVATION COMMISSION

Brenda Calleri

Witness

Brenda Calleri  
Print/Type Witness Name

Cynthia Ward

Witness

Cynthia Ward  
Print/Type Witness Name

By: Victor J. Heller (SEAL)

Victor J. Heller  
Print/Type Name

Title: Assistant Executive Director

"SUBLESSOR"

STATE OF FLORIDA  
COUNTY OF LEON

The foregoing instrument was acknowledged before me this 14th day of December 2000, by Victor J. Heller, as Assistant Executive Director Florida Fish and Wildlife Conservation Commission who is/~~are~~ personally known to me or who has produced \_\_\_\_\_ as identification.

Jimmie C. Bevis  
Notary Public, State of Florida

JIMMIE C. BEVIS

Print/Type Notary Name

Commission Number: \_\_\_\_\_  
Commission Expires: \_\_\_\_\_  
Jimmie C. Bevis  
MY COMMISSION # CC702862 EXPIRES  
December 28, 2001  
BONDED THROUGH TROY FAIR INSURANCE, INC.

APPROVED AS TO FORM  
AND LEGAL SUFFICIENCY  
[Signature]  
Commission Attorney

STATE OF FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF COASTAL AND AQUATIC MANAGED AREAS

Ellen L Stere  
Witness  
Ellen L Stere  
Print/Type Witness Name

By: [Signature] (SEAL)  
ANNA MARIE HARTMAN  
Print/Type Name

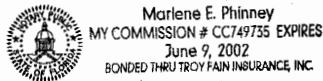
[Signature]  
Witness  
Larry E Noll  
Print/Type Witness Name

Title: Director  
"SUBLESSEE"

STATE OF FLORIDA  
COUNTY OF LEON

The foregoing instrument was acknowledged before me this 10 day of January 2001, by ANNA MARIE HARTMAN, as DIRECTOR, Office of Coastal and Aquatic Managed Areas, State of Florida Department of Environmental Protection, who is/are personally known to me or who has produced \_\_\_\_\_ as identification.

[Signature]  
Notary Public, State of Florida



Marlene E. Phinney  
Print/Type Notary Name

Commission Number: CC749735

Commission Expires: 6/9/02

Consented to by the TRUSTEES on 12th day of January 2001.

[Signature]  
GLORIA C. NELSON, OPERATIONS AND MANAGEMENT CONSULTANT MANAGER, BUREAU OF PUBLIC LAND ADMINISTRATION, DIVISION OF STATE LANDS, DEPARTMENT OF ENVIRONMENTAL PROTECTION

Approved as to Form and Legality  
By: [Signature]  
DEP Attorney



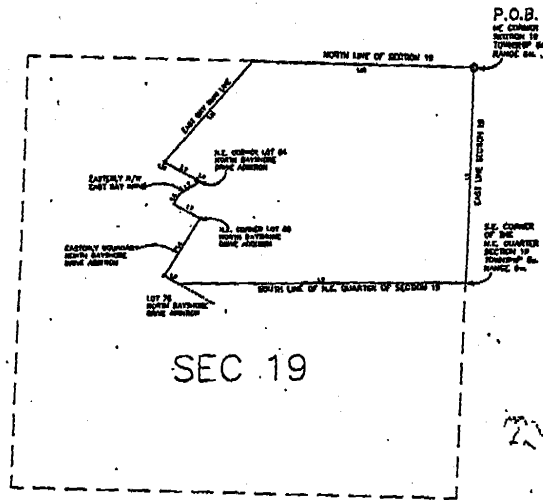
**EXHIBIT "A"**  
**Legal Description of the Subleased Premises**

Begin at the Northeast corner of Section 19, Township 8 South, Range 6 West, Franklin County, Florida; and thence run  $S02^{\circ}00'03''W$  along the East boundary of said Section 19 a distance of 2666.89 feet to the Southeast corner of the Northeast Quarter of said Section 19; thence run  $N89^{\circ}32'40''W$  along the South Boundary of said Northeast Quarter 3414.31 feet to a point on the Northeasterly boundary of Lot 76 of the North Bayshore Drive Addition (an unrecorded plat); thence run  $N59^{\circ}53'46''W$  along said boundary of lot 76 a distance of 187.46 feet to a concrete monument; thence run  $N30^{\circ}06'47''E$  along the Easterly boundary of North Bayshore Drive Addition 839.56 feet to a concrete monument marking the Northeast corner of Lot 80 of said North Bayshore Drive Addition; thence run  $N59^{\circ}53'00''W$  along the North boundary of said Lot 80 a distance of 364.69 feet to the Easterly right of way of East Bay Drive; thence  $N29^{\circ}52'32''E$  along the Eastern right of way of East Bay Drive 141.74 feet; thence run  $N58^{\circ}01'01''E$  along the Southeasterly right of way of East Bay Drive 278.98 feet to the Northeast corner of Lot 84 of said North Bayshore Drive Addition; thence run  $N59^{\circ}56'58''W$  along the North boundary of said Lot 84 a distance of 33.97 feet to a concrete monument in the centerline of East Bay Drive; thence continue  $N59^{\circ}56'58''W$  along the North boundary of said Lot 84 a distance of 434.71 feet to a concrete monument; thence continue  $N59^{\circ}56'58''W$  along the North boundary of said Lot 84 a distance of 17.00 feet to the approximate mean high water line of East Bay; thence run in a Northeasterly direction along the mean high water line of East Bay to a point on the North line of section 19 which bears  $N41^{\circ}11'24''E$  1611.05 feet; thence run  $S87^{\circ}59'57''E$  along the North line of section 19 for 2617.52 feet to the POINT OF BEGINNING.

Containing 203.6 acres more or less.

# SKETCH OF DESCRIPTION NOT A SURVEY

NOT TO SCALE



SEC 19

LINE TABLE		
LINE	LENGTH	BEARING
1	100.00	S 89° 59' 59" W
2	100.00	S 89° 59' 59" W
3	100.00	S 89° 59' 59" W
4	100.00	S 89° 59' 59" W
5	100.00	S 89° 59' 59" W
6	100.00	S 89° 59' 59" W
7	100.00	S 89° 59' 59" W
8	100.00	S 89° 59' 59" W
9	100.00	S 89° 59' 59" W
10	100.00	S 89° 59' 59" W
11	100.00	S 89° 59' 59" W
12	100.00	S 89° 59' 59" W
13	100.00	S 89° 59' 59" W
14	100.00	S 89° 59' 59" W
15	100.00	S 89° 59' 59" W
16	100.00	S 89° 59' 59" W
17	100.00	S 89° 59' 59" W
18	100.00	S 89° 59' 59" W
19	100.00	S 89° 59' 59" W
20	100.00	S 89° 59' 59" W
21	100.00	S 89° 59' 59" W
22	100.00	S 89° 59' 59" W
23	100.00	S 89° 59' 59" W
24	100.00	S 89° 59' 59" W
25	100.00	S 89° 59' 59" W
26	100.00	S 89° 59' 59" W
27	100.00	S 89° 59' 59" W
28	100.00	S 89° 59' 59" W
29	100.00	S 89° 59' 59" W
30	100.00	S 89° 59' 59" W
31	100.00	S 89° 59' 59" W
32	100.00	S 89° 59' 59" W
33	100.00	S 89° 59' 59" W
34	100.00	S 89° 59' 59" W
35	100.00	S 89° 59' 59" W
36	100.00	S 89° 59' 59" W
37	100.00	S 89° 59' 59" W
38	100.00	S 89° 59' 59" W
39	100.00	S 89° 59' 59" W
40	100.00	S 89° 59' 59" W
41	100.00	S 89° 59' 59" W
42	100.00	S 89° 59' 59" W
43	100.00	S 89° 59' 59" W
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**LEGEND:**  
 N.E. QUARTER = NORTH QUARTER, EAST, WEST  
 N.W. QUARTER = NORTH QUARTER, WEST  
 P.O.B. = POINT OF BEGINNING  
 # = CONCRETE MONUMENT  
 SEC = SECTION  
 MEAN = MEAN HIGH WATER

- NOTES:**
1. THIS IS NOT A SURVEY.
  2. THIS DESCRIPTION IS BASED ON BEARING & DISTANCE CALLS, IN DEED DESCRIPTION RECORDED IN O.R. BOOK 191, PAGE 313, FRANKLIN COUNTY, FLORIDA.
  3. THIS SKETCH IS VALID ONLY WITH SIGNATURE AND RAISED SEAL OF SURVEYOR, AND ATTACHED LEGAL DESCRIPTION, SHEET 2 OF 2.

DOUGLAS J. WOODWARD  
 FLORIDA REGISTRATION NO. 4273

	DEPT. OF ENVIRONMENTAL PROTECTION	SECTION	DATE	SCALE	COUNTY FRANKLIN
	BUREAU OF SURVEY AND MAPPING	SHAWY B/2/1	05/27/95	AS SHOWN	SEC 19 TOWNSHIP 36S R2E
3800 COLLEGGATE BLVD. TALLAHASSEE, FL 32309	(904) 488-2427	CONCRETE MONUMENT	DATE 05/27/95		SHEET 1 OF 2



EXHIBIT "B"

MULTIPLE AGENCY MANAGEMENT LEASE  
FOR  
LOWER APALACHICOLA RIVER  
ENVIRONMENTALLY ENDANGERED LANDS

LEASE NO. 770-9003 3584

THE BOARD OF TRUSTEES OF THE INTERNAL IMPROVEMENT TRUST FUND OF THE STATE OF FLORIDA, referred to herein as the "Board" and the STATE OF FLORIDA DEPARTMENT OF NATURAL RESOURCES, DIVISION OF STATE LANDS, referred to herein as "State Lands", as agent for the Board, do hereby grant to the STATE OF FLORIDA GAME AND FRESH WATER FISH COMMISSION, referred to herein as the "Commission", the STATE OF FLORIDA DEPARTMENT OF AGRICULTURE AND CONSUMER SERVICES, DIVISION OF FORESTRY, referred to herein as "Forestry", and the STATE OF FLORIDA DEPARTMENT OF STATE, DIVISION OF ARCHIVES, HISTORY, AND RECORDS MANAGEMENT, referred to herein as "Archives and History", management responsibilities for the Lower Apalachicola River Environmentally Endangered Lands (EEL), located in Gulf and Franklin County, Florida described as follows and subject to all existing encumbrances:

(See exhibit "A" attached hereto and made a part hereof)

TO HAVE AND TO HOLD the above described property for a period of twenty (20) years.

WITNESSETH:

The Board, the Commission, Forestry, and Archives and History, for and in consideration of the covenants hereinafter contained, do hereby covenant as follows:

1. The lands shall be managed in accordance with the original concept, as approved by the Board on January 9, 1977, which established the primary purposes for which this tract was acquired, including: protection of fish and wildlife values; the long-term preservation of fishery and shellfish resources in Apalachicola Bay;

protection of the natural plant communities; and the restoration and preservation of the extensive river floodplain and marsh lands for safeguarding of the Apalachicola River and Bay water quality. Activities of the parties shall be governed by and in compliance with the goals and objectives contained in the Management Plan for the Lower Apalachicola River EEL tract when approved by the Board and shall be coordinated, through the primary managing agency, with the Apalachicola River Estuarine Sanctuary Coordinator, Department of Natural Resources, Division of Recreation and Parks.

2. The Commission shall be the primary managing agency. As such, it shall coordinate and oversee all activities on the property; initiate appropriate management programs to meet the intent of the goals and objectives stated herein; coordinate preparation and periodic revision of the Management Plan; coordinate and monitor all management activities undertaken by others; and, compile and submit such reports as may be required of the managing agencies.

3. The Commission shall: provide a permanent staff position to plan and supervise management of the property; administer and regulate campsites; restore natural hydroperiods; manage wildlife habitat; provide specific management recommendations and protection for all wildlife; regulate hunting, fishing and nongame activities; and, assist in patrolling and providing required law enforcement to prevent poaching, to protect threatened and endangered species, and to protect archaeological and historic sites from looting and other unauthorized activities.

4. Forestry shall: provide advice and on-site assistance to the Commission in implementing a prescribed burning program; initiate prescribed burning on forested areas in cooperation with the Commission; respond to and take charge of any wildfire; and, oversee any timber planting and harvesting activities based on a consensus reached by all participating managing agencies. Forestry shall administer and oversee apiary leases and assist in patrol of the area.

5. Archives and History shall: evaluate the cultural resources of the property in accordance with its authority under Chapter 267,



Florida Statutes; provide recommendations to the Commission for long-range management and protection; and, review contemplated activities that might impact such cultural resources.

6. Any management conflict between any of the managing agencies shall be resolved, if possible, by consensus of the primary managing agency and the affected managing agencies which are parties to this Lease. If a consensus cannot be reached, conflicts shall be submitted through State Lands to the Board for resolution.

7. It is understood by all parties that all management activities specified by this Lease shall be designed to conserve, protect and enhance the lands covered by this Lease as provided for by Chapter 259, Florida Statutes.

8. It is further understood and agreed that in addition to the management responsibilities specified herein, the following will be applicable:

A. A Management Plan for this tract shall be prepared by the primary managing agency, in accordance with Section 253.034, Florida Statutes and in cooperation with the other managing agencies, within 12 months of the execution date of this Lease and shall be submitted to the Board for approval through State Lands, acting as agent for the Board.

The approved Management Plan shall provide the basic guidance for all management activities and shall be reviewed jointly by the managing agencies and the Board at no greater than five-year intervals. Annual work plans and management activities shall be reviewed by the primary managing agency prior to implementation and submitted to State Lands on an annual basis.

B. The managing agencies shall not use or alter the property except as provided for in the approved Management Plan without the advance written approval of State Lands, acting as agent for the Board. Any managing agency proposing an activity that requires physical alteration of the property shall notify the primary managing agency prior to initiating that activity. The primary managing

agency, in turn, shall notify other affected managing agencies.

- C. The Board may, on occasion, after discussion with and concurrence by the managing agencies, authorize compatible uses of the property by other parties during the life of this Lease.
- D. The Board, or its duly authorized agent, may at any time inspect the works and operations of the managing agencies in any matter pertaining to this Lease. Should any agency fail to keep or perform any of its responsibilities as designated by the Management Plan or program provided for herein, the Board shall notify the specific agency(ies) of such non-performance. If correction or justification is not made after sixty days of receipt of written notice, the Board may terminate any agency's participation in the Lease by providing thirty days written notice of such pending action. Any notice will be in writing from the Director of the Division of State Lands, as agent for the Board.
- E. This Lease shall remain in effect until such time as the Board may terminate it in recognition of a greater public purpose consistent with Chapter 259, Florida Statutes. If a greater public purpose should be determined, the Board, in consultation with the managing agencies, shall have the right to amend or terminate this Lease by providing a reasonable time period to effectuate such an amendment or termination of activities. Any notice of such action shall be in writing from the Director of the Division of State Lands, as agent for the Board. Each agency herein shall have the right to terminate its participation in this management lease upon 60 days written notice to the Board and shall have up to 6 months to conclude its activities hereunder.

9. This Lease and any rights and privileges contained herein are for the sole use of the managing agencies and shall not be assigned or transferred to another party without the advance approval of the

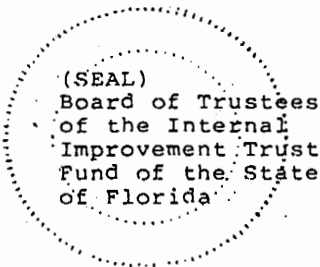


Board. The managing agencies shall have the right to enter and occupy the property for the purposes necessary to meet their designated responsibilities, including protection of the property. The agencies' agents and employees shall take all reasonable measures to provide security against property damage, property degradation and unauthorized uses.

10. The managing agencies agree to assist in the investigation of injury or damage claims either for or against the State or the Board pertaining to their respective areas of responsibilities, or arising out of their respective management programs and activities, and to contact the lead agency regarding whatever legal action they deem appropriate to remedy same.

IN TESTIMONY WHEREOF, the lawfully designated agent of the Board of Trustees of the Internal Improvement Trust Fund of the State of Florida and the State of Florida Game and Fresh Water Fish Commission, the State of Florida Department of Agriculture and Consumer Services, Division of Forestry, and the State of Florida Department of State, Division of Archives, History and Records Management have hereunto set their hands in the City of Tallahassee, Florida, on the 11<sup>th</sup> day of October, A.D. 1983.

THE BOARD OF TRUSTEES OF THE INTERNAL  
IMPROVEMENT TRUST FUND OF THE STATE OF  
FLORIDA



By: Samuel M. Matz-Jand  
DIRECTOR, DIVISION OF STATE LANDS  
AGENT FOR THE BOARD OF TRUSTEES  
OF THE INTERNAL IMPROVEMENT TRUST  
FUND OF THE STATE OF FLORIDA

FOR THE MANAGING AGENCIES

By: Robert M. Beatty  
STATE OF FLORIDA GAME AND FRESH  
WATER FISH COMMISSION

Approved as to form and legality  
By: Leslie M. Reed  
Resident Attorney

By: Derek Connor  
STATE OF FLORIDA DEPARTMENT OF  
AGRICULTURE AND CONSUMER SERVICES

By: Randall Kelley  
STATE OF FLORIDA  
DEPARTMENT OF STATE, Division of  
Archives, History and Records  
Management

Page 5 of  
Lease No. 770-9003

APPROVED AS TO  
FORM & LEGALITY  
John P. Sullivan  
DEPARTMENT ATTORNEY



Jeb Bush  
Governor

## Department of Environmental Protection

Marjory Stoneman Douglas Building  
3900 Commonwealth Boulevard  
Tallahassee, Florida 32399-3000

David B. Struhs  
Secretary

November 16, 2000

Ms. Karen Huff  
Bureau of Wildlife Management  
Division of Wildlife  
Florida Fish and Wildlife Conservation Commission  
Farris Bryant Building  
620 S. Meridian Street  
Tallahassee, FL 32399-1600

REF: **FFWCC-DEP/CAMA, Sublease No.  
33584-01, Magnolia Bluff**

*Karen*  
Dear Ms. Huff:

Attached are duplicate originals of the sublease agreement referenced above with the change in Paragraph 38 which you requested. Please send us both originals after they have been executed by both parties so the Board of Trustees can consent to the agreement. Following the consent, an original will be sent to you and the Coastal and Aquatic Managed Areas office.

If you have any questions about this, please call me at 488-2291.

Sincerely,

David B. Stevenson, Planner IV  
Bureau of Public Land Administration  
Mail Station 130

DBS/ds  
Attachments

RECEIVED

NOV 17 2000

BUREAU OF  
WILDLIFE MANAGEMENT

"More Protection, Less Process"

Printed on recycled paper.



## MEMORANDUM

**TO:** Contract Reviewers

**FROM:** Frank Montalbano, Director, Division of Wildlife

**SUBJECT:** Sublease 01 to to Lease Number 3584 (Apalachicola River WEA)

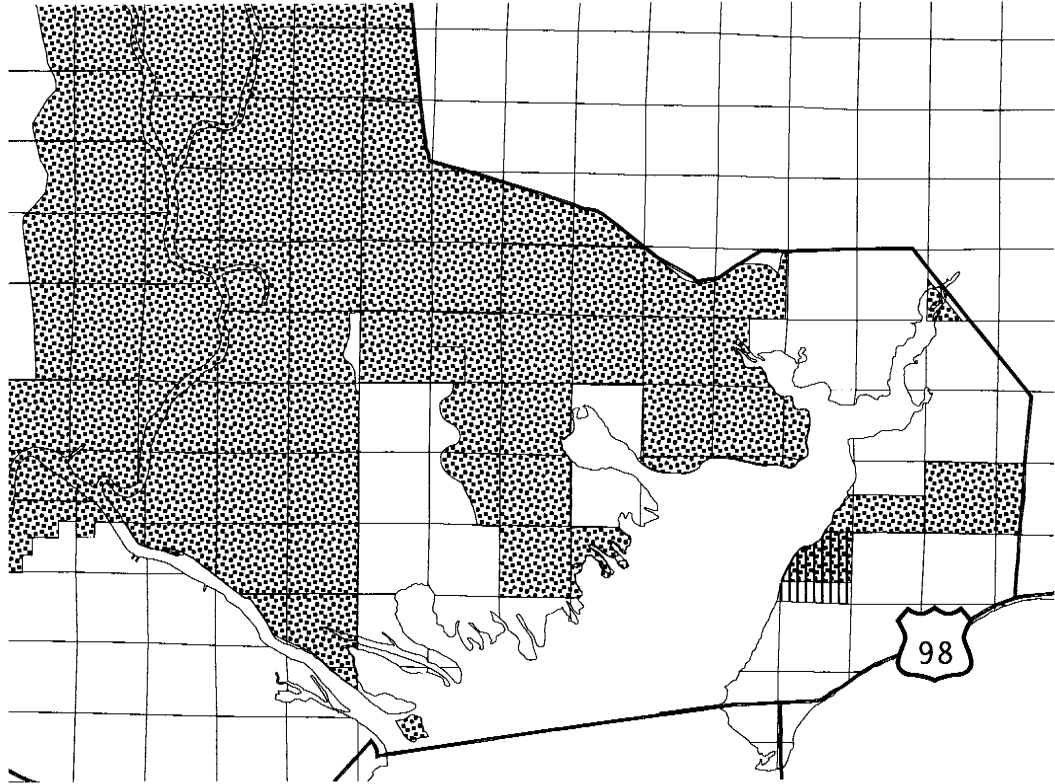
---

Attached are three originals of Sublease 01 to Lease Number 3584 between the Board of Trustees, the State of Florida Fish and Wildlife Conservation Commission and the Florida Department of Environmental Protection, Office of Coastal and Aquatic Managed Areas (CAMA) subleasing 203.6 acres to the CAMA. This sublease is necessary due to the CAMA inadvertently constructing infrastructure on lands managed by the Commission. The Commission will still be lead manager for this property, however CAMA will be responsible for all fees associated with the building site.

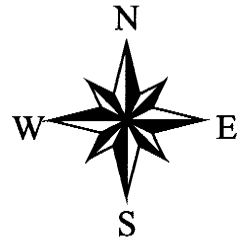
Thank you for your consideration of this matter.

LEG 8-5  
DP/pd  
bwm/patti/contracts/dsl/3584-01.mem  
Attachment

# Magnolia Bluff Sublease



-  **Magnolia Bluff Sublease within this portion**
-  **Apalachicola River WEA**
-  **Roads**







Jeb Bush  
Governor

## Department of Environmental Protection

Marjory Stoneman Douglas Building  
3900 Commonwealth Boulevard  
Tallahassee, Florida 32399-3000

David B. Struhs  
Secretary

January 16, 2001

Ms. Karen Huff  
Bureau of Wildlife Management  
Division of Wildlife  
Florida Fish and Wildlife Conservation Commission  
Farris Bryant Building  
620 S. Meridian Street  
Tallahassee, FL 32399-1600

REF: FFWCC-DEP/CAMA, Sublease No.  
33584-01, Magnolia Bluff

*Karen*  
Dear ~~Ms. Huff~~ →

Attached is an executed original of the sublease agreement referenced above consented to by the Board of Trustees. A duplicate original of the instrument is being sent to the Office of Coastal and Aquatic Managed Areas.

If you have any questions about the attachment, please call me at 488-2291.

Sincerely,

David B. Stevenson, Planner IV  
Bureau of Public Land Administration  
Mail Station 130

DBS/ds

Attachment

Cc: Ms. Ellen Stere, Office of Coastal and Aquatic Managed Areas, Department of Environmental Protection

**RECEIVED**

**JAN 17 2001**

**BUREAU OF  
WILDLIFE MANAGEMENT**

"More Protection, Less Process"

Printed on recycled paper.



Jeb Bush  
Governor

## Department of Environmental Protection

Marjory Stoneman Douglas Building  
3900 Commonwealth Boulevard  
Tallahassee, Florida 32399-3000

David B. Struhs  
Secretary

August 3, 2000

Ms. Patti Doerr  
Bureau of Wildlife Management  
Division of Wildlife  
Florida Fish and Wildlife Conservation Commission  
620 S. Meridian Street  
Tallahassee, Florida 32399-1600

REF: **FFWCC - DEP/CAMA, Magnolia Bluff  
Sublease No. 3584-01**

Dear Ms. Doerr:

Please have the three originals of Sublease Agreement 3584-01 that we sent you on March 20, 2000, signed, witnessed, notarized and returned to this office within 45 days of receipt of this request or comment in writing on desired changes. Otherwise, the project file will be inactivated resulting in a new certified sketch and application having to be submitted if a sublease is requested at a later date.

If you have any questions about the above information, call me at 850/488-2291.

Sincerely,

David Stevenson, Planner IV  
Bureau of Public Land Administration  
Mail Station 130

DS/ds

cc: Ms. Ellen Stere, Office of Coastal and Aquatic Managed Areas, Florida Department of  
Environmental Protection

*"More Protection, Less Process"*

*Printed on recycled paper.*





Jeb Bush  
Governor

## Department of Environmental Protection

Marjory Stoneman Douglas Building  
3900 Commonwealth Boulevard  
Tallahassee, Florida 32399-3000

David B. Struhs  
Secretary

November 16, 2000

Ms. Karen Huff  
Bureau of Wildlife Management  
Division of Wildlife  
Florida Fish and Wildlife Conservation Commission  
Farris Bryant Building  
620 S. Meridian Street  
Tallahassee, FL 32399-1600

REF: **FFWCC-DEP/CAMA, Sublease No.  
33584-01, Magnolia Bluff**

*Karen*  
Dear Ms. Huff:

Attached are duplicate originals of the sublease agreement referenced above with the change in Paragraph 38 which you requested. Please send us both originals after they have been executed by both parties so the Board of Trustees can consent to the agreement. Following the consent, an original will be sent to you and the Coastal and Aquatic Managed Areas office.

If you have any questions about this, please call me at 488-2291.

Sincerely,

David B. Stevenson, Planner IV  
Bureau of Public Land Administration  
Mail Station 130

DBS/ds  
Attachments

RECEIVED

NOV 17 2000

BUREAU OF  
WILDLIFE MANAGEMENT

"More Protection, Less Process"

Printed on recycled paper.

# Citizen Support Organization Agreement

## CITIZEN SUPPORT ORGANIZATION AGREEMENT

THIS AGREEMENT made the \_\_\_\_\_ day of \_\_\_\_\_, AD, 19 \_\_\_\_\_,  
between the State of Florida Department of Natural Resources, Division of  
Recreation and Parks, hereinafter called the Division, and Friends of  
the Reserve \_\_\_\_\_, hereinafter called  
the Society.

### WITNESSETH

WHEREAS, the Division is vested with jurisdiction over and control of all  
state parks in the State of Florida and is responsible for the operation and  
maintenance of such facilities and for providing visitor services in the parks  
under its jurisdiction as may be necessary, desirable or convenient for the use  
of the public for enjoyment and healthful recreation, and

WHEREAS, the Society desires to provide certain services as a Citizen  
Support Organization for Apalachicola National Estuarine  
Research Reserve \_\_\_\_\_, County of \_\_\_\_\_  
Franklin \_\_\_\_\_, State of Florida, as hereinafter described,  
and the Division desires to enter into agreement with the Society for the  
provision of said services, and

WHEREAS, the Society has met all of the requirements of Chapter 16D-2,  
Florida Administrative Code;

NOW THEREFORE, in consideration of the premises and the mutual covenants  
and conditions herein contained, it is agreed by the parties hereto as follows:

1. The Division hereby grants to the Society and the Society hereby  
accepts from the Division, an exclusive agreement to serve as the Citizen  
Support Organization in Apalachicola National Estuarine Research Reserve in  
conformance with the purpose of Chapter 258, Florida Statutes, for the period  
stated herein and subject to all terms and conditions set forth in this  
agreement and the purpose as set forth in the Articles of Incorporation of the  
Society, which shall become Exhibit "A" to this agreement.

a. This agreement shall take effect on the \_\_\_\_\_ day of \_\_\_\_\_  
\_\_\_\_\_, A.D., 19 \_\_\_\_\_, and shall continue indefinitely or until terminated  
pursuant to the provisions hereof.

b. The Department hereby provides to the Society use of the following  
facilities and space: the Robert L. Howell Building and other facilities  
and equipment associated with the Apalachicola National Estuarine Research Reserve.



1. The Society is hereby authorized to conduct the following kinds of activities, projects and events and to provide the following kinds of services: fund-raising, research and education projects, special events which promote the goals of the Research Reserve or any other mutually beneficial activity which has advance Division approval.

2. All notices and orders given to the Society may be served by mail at the following address: P.O. Box 931, Apalachicola, FL 32320

All notices given to the Division may be served by mail at the following address: 2900 Commonwealth Blvd., Tallahassee, Florida 32303

3. The Park Manager is hereby designated as the Division's agreement manager and shall be responsible for insuring performance of the terms and conditions of this agreement.

4. The Division may permit, without charge, appropriate use of the park property and facilities by the Society subject to the provisions of this section. Such use must be directly in keeping with the approved purposes of the Society as outlined in Exhibit "A" of this agreement, and may not be made at times or places that would unreasonably interfere with opportunities for the general public to use the park for established recreational purposes. In order to use property or facilities of the park, the Society must:

(a) comply with all park policies, rules and regulations;

(b) develop and submit to the agreement manager for review and prior written approval on an annual basis, if possible, a program or schedule of all projects, activities and events it plans to carry out on park property, including the designation of a specific location and time for such use;

(c) be responsible for maintaining the property or facilities assigned in a clean and orderly state; and

(d) obtain advance approval in writing from the agreement manager for any activities not covered specifically in this agreement.

5. The Society agrees that all funds generated by the Society through use of park facilities or the park's name or identity will be used for the direct benefit of the park named in paragraph 1. of this agreement or in support of the Society's stated purposes as outlined in exhibit "A" of this agreement.

6. The Society agrees to procure annual financial and compliance postaudits of the Society conducted by an independent certified public

... shall address the financial statements and give relative assurance that expenditures were made to carry out the purpose as set forth in the Articles of Incorporation of the Society, Exhibit "A" to this agreement. The audited financial statements, accompanied by the auditor's reports and which contain the auditor's opinion, shall be submitted to the Auditor General and the Division no later than sixty (60) days after the end of each agreement year.

7. Any violation of, or failure to comply with, the terms of this agreement shall, at the option of the Division, terminate this agreement after three days from receipt of notice in writing delivered or mailed to the Society's address as set forth in this agreement.

B. This agreement may be terminated by either party without cause after 90 days from the receipt of notice in writing to the other party at the address shown in this agreement.



IN WITNESS WHEREOF, the State of Florida Department of Natural Resources  
Division of Recreation and Parks has hereunto set its hands and official seal  
in Tallahassee, Florida, this \_\_\_\_\_ day of \_\_\_\_\_, 19\_\_\_\_, and

has caused these presents to be signed in its name by its proper officers, and  
its corporate seal to be affixed, attested by its secretary, the date and year  
written hereon.

ATTEST:

STATE OF FLORIDA  
DEPARTMENT OF NATURAL RESOURCES  
DIVISION OF RECREATION AND PARKS

By: \_\_\_\_\_  
Administrative Assistant

By: \_\_\_\_\_  
Ney C. Landrum  
Division Director  
Division of Recreation and Parks

Approved as to form and legality:

\_\_\_\_\_  
Attorney

ATTEST:

By: Judith Stokowski-Hall  
Secretary

By: [Signature]  
President

SOCIETY, INC.

(CORPORATE SEAL)

STATE OF FLORIDA

ISS.

COUNTY OF Franklin

On this 17<sup>th</sup> day of August, A.D., 19 87, before me  
personally came David Hines and Judith Stokowski-Hall who  
being duly sworn depose and say that they are the President and Secretary of  
the Friends of the Reserve and that they  
executed the foregoing instrument as officers of said corporation and were duly  
authorized to execute the same for the purposes therein described.

Betty Taylor  
Notary Public in and for the State of  
Florida at large

NOTARY PUBLIC, STATE OF FLORIDA  
MY COMMISSION EXPIRES: OCT. 28, 1990.  
BONDED THRU NOTARY PUBLIC UNDERWRITERS.  
My Commission expires \_\_\_\_\_

DNR 46-021  
Revised 11/15/85

# Administration Agreement for the Apalachicola National Estuarine Research Reserve

## ADMINISTRATION AGREEMENT

for the

### APALACHICOLA NATIONAL ESTUARINE RESEARCH RESERVE

WHEREAS the Apalachicola National Estuarine Research Reserve, hereinafter called the "Reserve", was established in 1979 under the authority of the Coastal Zone Management Act of 1972 (P.L. 96-583) and its amendments of 1976 (P.L. 94-370) and 1980 (P.L. 96-464) for the purpose of creating a natural field laboratory in which to gather data and make studies of the natural and human processes occurring within the coastal zone to contribute to science and education and to provide management information essential for the protection of estuarine systems of the United States; and,

WHEREAS the National Estuarine Research Reserve Program is administered at the federal level by the National Oceanic and Atmospheric Administration/Office of Coastal Resource Management (NOAA/OCRM) through the Department of Natural Resources for the State of Florida; and,

WHEREAS the Florida Department of Natural Resources hereinafter called the "DEPARTMENT", and all the parties hereto desire to enter into this Agreement in furtherance of the Reserve; and,

WHEREAS the DEPARTMENT recognizes the authority, responsibilities and interests of the local, state, and federal agencies involved in the management of lands and waters within or adjacent to the Reserve boundaries; and,

WHEREAS the governmental agencies which are a party hereto are:

#### Local Government

City of Apalachicola  
Franklin County Commission  
East Point Water and Sewer District  
City of Carabelle

#### State Government

Florida Game and Fresh Water Fish Commission



Department of Environmental Regulation  
Department of Community Affairs  
Department of Transportation  
Division of Forestry of the Department of Agriculture and Consumer  
Services  
Apalachee Regional Planning Council  
Department of Health and Rehabilitative Services  
Division of Historical Resources of the Department of State  
Department of Natural Resources

Federal Government

U. S. Fish and Wildlife Service

WHEREAS these agencies recognize the fragile nature of the Reserve environment and that the routine activities in fulfilling their duties may affect the environmental quality of the Reserve; and,

WHEREAS the parties hereto recognize the need for continuing cooperation in managing the Reserve consistent with the goals and objectives of the National Estuarine Research Reserve Programs and the DEPARTMENT; and,

WHEREAS it is mutually beneficial for Florida's National Estuarine Research Reserves to be operated on a permanent basis in a manner consistent with the guidelines and intent of the National Estuarine Research Reserve Program, the objectives of the DEPARTMENT and all other governmental agencies which are a party hereto, and the specific objectives and goals of the Reserve as defined below:

- a. The objective of the Reserve is to establish and manage, through federal-state-local cooperation, a permanent National Estuarine Reserve to provide opportunities for long-term research and education.

auditor shall address the financial statements and give relative assurance that expenditures were made to carry out the purpose as set forth in the Articles of Incorporation of the Society, Exhibit "A" to this agreement. The audited financial statements, accompanied by the auditor's reports and which contain the auditor's opinion, shall be submitted to the Auditor General and the Division no later than sixty (60) days after the end of each agreement year.

7. Any violation of, or failure to comply with, the terms of this agreement shall, at the option of the Division, terminate this agreement after three days from receipt of notice in writing delivered or mailed to the Society's address as set forth in this agreement.

B. This agreement may be terminated by either party without cause after 90 days from the receipt of notice in writing to the other party at the address shown in this agreement.



- a. actively pursue federal funding assistance available through the NOAA/OCRM for the development and operation of Reserve programs;
- b. actively pursue state funding assistance from the Florida Legislature for the development and operation of Reserve programs;
- c. operate the Reserve to the best of its ability at the level of funding and staffing provided by the Florida Legislature and NOAA;
- d. accept sole responsibility to NOAA for conformance with National Estuarine Research Reserve Program goals and objectives as well as the administrative requirements of the Reserve program designation under federal law;
- e. develop, implement and update a management plan as needed to achieve program goals;
- f. provide cooperators in this Agreement the right of advance review and comment on the management plans for all DEPARTMENT operated units within the boundaries of the Reserve (i.e., the Apalachicola Bay Aquatic Preserve, the Cape Saint George State Reserve, and the Dr. Julian G. Bruce Saint George Island State Park);
- g. provide a copy of approved management plans to each cooperator in the Agreement;
- h. provide scientific data and other information on issues affecting the Reserve and adjacent areas (this may include, but is not limited to research reports, research proposals, educational materials, scientific publications, periodic status or progress reports);
- i. actively seek the cooperation and assistance of appropriate local, state and federal agencies to enhance the Reserve's programs;
- j. recognize and acknowledge that the Reserve does not play a direct

... shall address the financial statements and give relative assurance that expenditures were made to carry out the purpose as set forth in the Articles of Incorporation of the Society, Exhibit "A" to this agreement. The audited financial statements, accompanied by the auditor's reports and which contain the auditor's opinion, shall be submitted to the Auditor General and the Division no later than sixty (60) days after the end of each agreement year.

7. Any violation of, or failure to comply with, the terms of this agreement shall, at the option of the Division, terminate this agreement after three days from receipt of notice in writing delivered or mailed to the Society's address as set forth in this agreement.

B. This agreement may be terminated by either party without cause after 90 days from the receipt of notice in writing to the other party at the address shown in this agreement.



- a. actively pursue federal funding assistance available through the NOAA/OCRM for the development and operation of Reserve programs;
- b. actively pursue state funding assistance from the Florida Legislature for the development and operation of Reserve programs;
- c. operate the Reserve to the best of its ability at the level of funding and staffing provided by the Florida Legislature and NOAA;
- d. accept sole responsibility to NOAA for conformance with National Estuarine Research Reserve Program goals and objectives as well as the administrative requirements of the Reserve program designation under federal law;
- e. develop, implement and update a management plan as needed to achieve program goals;
- f. provide cooperators in this Agreement the right of advance review and comment on the management plans for all DEPARTMENT operated units within the boundaries of the Reserve (i.e., the Apalachicola Bay Aquatic Preserve, the Cape Saint George State Reserve, and the Dr. Julian G. Bruce Saint George Island State Park);
- g. provide a copy of approved management plans to each cooperator in the Agreement;
- h. provide scientific data and other information on issues affecting the Reserve and adjacent areas (this may include, but is not limited to research reports, research proposals, educational materials, scientific publications, periodic status or progress reports);
- i. actively seek the cooperation and assistance of appropriate local, state and federal agencies to enhance the Reserve's programs;
- j. recognize and acknowledge that the Reserve does not play a direct

role in the management of lands and waters within the designated Reserve boundaries;

- k. establish a Reserve Advisory Council as established by charter and seek advice from the Council to aid program operation;
- l. pursue acquisition of privately owned lands within the Reserve boundaries until such lands are purchased or all negotiations have failed;
- m. provide the use of the auditorium, conference room, scientific library and laboratory located at the Reserve headquarters in Apalachicola, as well as equipment and personnel, as availability permits, for support to researchers, educators and cooperators in this Agreement;
- n. invite and encourage participation of cooperators in the Reserve functions such as, but not limited to, education and research workshops by written notification;
- o. monitor activities within the Reserve and report problems or violations to appropriate agencies;
- p. provide for intradepartmental coordination for all activities or plans within or adjacent to the Reserve boundaries, which may affect the Reserve, via informing the Reserve staff in advance;
- q. provide cooperators the opportunity for advance review of and comment on any management plans or administrative rules relating to the Reserve.



2. The other cooperators hereto, in order to fulfill their obligations to this Agreement, shall:
  - a. recognize the Reserve Advisory Council and its role in the Reserve as set forth in its charter;
  - b. recognize and support the Reserve management plan;
  - c. provide the DEPARTMENT the opportunity for advance review of and comment on management plans, administrative rules and policies, research proposals, restoration plans or other items applicable to areas within or adjacent to the Reserve which may affect the Reserve as defined by participating parties;
  - d. manage all lands and waters within or adjacent to the Reserve in a manner which is protective of environmental quality;
  - e. provide the DEPARTMENT with a final published copy of approved management plans;
  - f. provide the DEPARTMENT with copies of scientific data and other information, which may include but not be limited to periodic status or progress reports and scientific publications (The DEPARTMENT shall arrange for the transfer of information and incur duplication costs);
  - g. cooperate in good faith with the DEPARTMENT and all other cooperators hereto toward the goal of maximum environmental protection and public benefit;
  - h. provide the use of facilities, equipment and personnel within reasonable limits, as determined by participating parties, to assist in carrying out the Reserve duties and functions;

- f. provide the DEPARTMENT with advance notice of all activities, including but not limited to ecological burns, road construction, and dredging within or adjacent to the Reserve which may affect the Reserve;

ARTICLE III MISCELLANEOUS

This Agreement shall remain in effect until cancelled by the parties hereto.

Cancellation of the Agreement between the DEPARTMENT and individual cooperators shall not affect the other parties hereto.

Either party to this Agreement may cease its participation and attendant responsibilities with 30 days advance notice.

This Agreement may be amended from time to time upon mutual consent of the parties hereto.

This Agreement shall become effective upon the date of execution by the parties hereto and shall remain in full force and effect until terminated.

BE IT FURTHER RESOLVED that the parties agree to negotiate in good faith to deal with any points, whether or not specifically covered by this Agreement, to resolve said differences in the best interests of the Reserve program and the public.

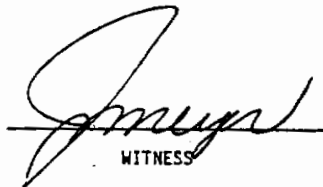



The CITY OF APALACHICOLA

The City of Apalachicola (hereinafter referred to as the "CITY"), does hereby recognize, acknowledge and agree to the obligations of the DEPARTMENT and the CITY as stated in this Agreement and in recognition of further obligations shall provide:

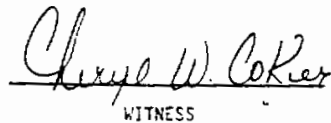
- 1) Reasonable maintenance of: a) the road leading to the Reserve headquarters building, b) the property adjacent to the Reserve; and c) the Scipio Creek boat basin/marina.
- 2) Boat slip/docking space for the Reserve boats.

IN WITNESS WHEREOF, the legally designated agents for the parties heretofore identified have caused this Agreement to be executed on this 15<sup>th</sup> day of October, 1986.

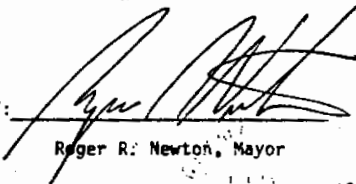
  
WITNESS

  
WITNESS

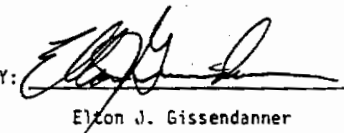
  
WITNESS

  
WITNESS

City of Apalachicola

BY:   
Roger R. Newton, Mayor  
(SEAL)

Department of Natural Resources

BY:   
Elton J. Gissendanner  
Executive Director

(SEAL)

The FRANKLIN COUNTY BOARD OF  
COUNTY COMMISSIONERS

The Franklin County Board of County Commissioners (hereinafter referred to as the "COMMISSION"), does hereby recognize, acknowledge, and agree to the obligations of the DEPARTMENT and the COMMISSION as stated in the Agreement and in recognition of further obligations shall:

Cooperate with the DEPARTMENT to establish a coordinated education program between the Franklin County School Board and the Reserve. This program shall include but not be limited to identification, research, biological studies, conservation, and management of marine resources in the area. The COMMISSION shall also appropriate funds to help defray costs of the program in an amount determined by the COMMISSION.

IN WITNESS WHEREOF, the legally designated agents for the parties heretofore identified have caused this Agreement to be executed on this 1st day of July, 1986.

Franklin County Board of  
County Commissioners

Lee B. P. Ruess

WITNESS

BY: Jimmy Mosconis  
Jimmy Mosconis, Chairman

(SEAL)

Geri P. Hill

WITNESS

Department of Natural Resources

Cheryl W. Coker

WITNESS

BY: Elton J. Gissendanner

Elton J. Gissendanner  
Executive Director

(SEAL)



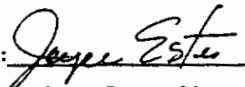
THE EAST POINT WATER AND  
SEWER DISTRICT

The City East Point Water and Sewer District (hereinafter referred to as the "DISTRICT"), does hereby recognize, acknowledge and agree to the obligations of the DEPARTMENT and the CITY as stated in this Agreement.


IN WITNESS WHEREOF, the legally designated agents for the parties heretofore identified have caused this Agreement to be executed on this 21<sup>st</sup> day of OCTOBER, 1986.

The East Point Water and  
Sewer District

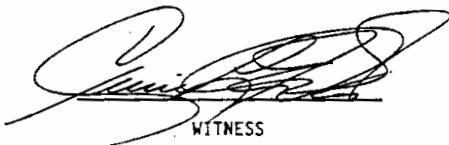
  
WITNESS

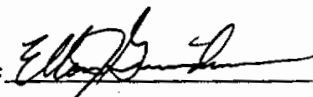
BY:   
Joyce Estes, Director  
Chairman

(SEAL)

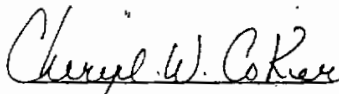
  
WITNESS

Department of Natural Resources

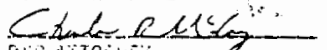
  
WITNESS

BY:   
Elton J. Gissendanner  
Executive Director

(SEAL)

  
WITNESS

APPROVED AS TO  
FORM AND LEGALITY

  
DNR ATTORNEY

The CITY OF CARABELLE

The City of Carabelle (hereinafter referred to as the "CITY"), does hereby recognize, acknowledge and agree to the obligations of the DEPARTMENT and CITY as stated in this Agreement.

IN WITNESS WHEREOF, the legally designated agents for the parties heretofore identified have caused this Agreement to be executed on this 6th day of October, 1986.

The City of Carrabelle

Charles L. Daniels

WITNESS

Charles A. Millender, Sr.

Charles A. Millender, Sr.

Mayor of Carrabelle

Edna M. Morris

WITNESS



Department of Natural Resources

Cheryl W. Oker

WITNESS

Elton J. Gissendanner

Elton J. Gissendanner

Executive Director

Cheryl W. Oker

WITNESS

(SEAL)



THE FLORIDA GAME AND FRESH  
WATER FISH COMMISSION

The Florida Game and Fresh Water Fish Commission (GFC) and the Department of Natural Resources (Department) do hereby recognize, acknowledge and agree to the obligations of the DEPARTMENT and the GFC as stated in this Agreement and the specific paragraph below:

The GFC shall be the primary point of contact for the Department in matters relating to the management of the Apalachicola Wildlife and Environmental Area (Lower Apalachicola EEL Tract). The GFC shall coordinate the activities of cooperating management agencies and keep the Department informed of management plans and activities. Input from the Reserve staff will be sought on proposed ecological burns, timber harvesting, road building, archaeological work or other work activities that involve the movement of soils or alteration of communities within the Reserve.

IN WITNESS WHEREOF, the legally designated agents for the parties heretofore identified have caused this Agreement to be executed on this 19th day of December, 1986.

Florida Game and Fresh Water  
Fish Commission

Jimmie C. Beauj  
WITNESS

By: Robert M. Brantly  
Colonel Robert M. Brantly  
Executive Director

Marcina P. Steplona  
WITNESS

(SEAL)

Department of Natural Resources

[Signature]  
WITNESS

By: [Signature]  
Elton J. Gissendanner  
Executive Director

Cheryl W. Coker  
WITNESS

(SEAL)

The DEPARTMENT OF ENVIRONMENTAL REGULATION

The Department of Environmental Regulation (hereinafter referred to as "DER"), does hereby recognize, acknowledge and agree to the obligations of the DEPARTMENT and DER as stated in this Agreement and in recognition of further obligations shall:

Contribute DER expertise to benefit the Reserve through advance review and comment on issues concerning water quality, sewage treatment, public works programs, non-point runoff pollution, solid wastes, toxic wastes, coastal zone management or other issues within DER legal authority, jurisdiction or expertise. DER is not bound by the Reserve's commenting rights, and if the Reserve fails to comment within the prescribed period, DER is not bound from taking action.

IN WITNESS WHEREOF, the legally designated agents for the parties heretofore identified have caused this Agreement to be executed on this 19<sup>th</sup> day of November, 1986.

Department of Environmental Regulation

Bela Schneidman  
WITNESS

BY: Victoria Tschinkel  
Victoria Tschinkel, Secretary

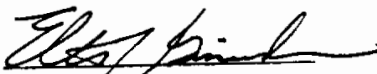
Joan A. Zank  
WITNESS

(SEAL)



Department of Natural Resources

  
WITNESS

BY:   
Elton J. Gissendanner  
Executive Director

  
WITNESS

(SEAL)

The DEPARTMENT OF COMMUNITY AFFAIRS

The Department of Community Affairs (hereinafter referred to as "DCA"), does hereby recognize, acknowledge and agree to the obligations of the DEPARTMENT and DCA as stated in this Agreement provided that such conditions are consistent with the provisions of Chapter 380.0555, F.S., which designates Apalachicola Bay an Area of Critical State Concern.

IN WITNESS WHEREOF, the legally designated agents for the parties heretofore identified have caused this Agreement to be executed on this 19<sup>th</sup> day of December, 1986.

Department of Community Affairs

Debra Percy  
WITNESS

BY: Tom Lewis, Jr.  
Tom Lewis, Jr., Secretary  
Department of Community Affairs

(SEAL)

Patricia C. Crosby  
WITNESS

Department of Natural Resources

James J. [Signature]  
WITNESS

BY: Elton J. Gissendanner  
Elton J. Gissendanner  
Executive Director

(SEAL)

Cheryl W. Coker  
WITNESS



The DEPARTMENT OF TRANSPORTATION

The Department of Transportation (hereinafter referred to as "DOT"), does hereby recognize, acknowledge and agree to the obligations of the DEPARTMENT and DOT as stated in this Agreement.

IN WITNESS WHEREOF, the legally designated agents for the parties heretofore identified have caused this Agreement to be executed on this 16<sup>th</sup> day of Sept., 1986.

Department of Transportation

Carl L. Gutierrez  
WITNESS

BY: [Signature]  
Tom Brady, Secretary

(SEAL)

[Signature]  
WITNESS

Department of Natural Resources

[Signature]  
WITNESS

BY: [Signature]  
Elton J. Gissendanner  
Executive Director

(SEAL)

Cheryl W. Coker  
WITNESS

The DIVISION OF FORESTRY  
of the FLORIDA DEPARTMENT OF AGRICULTURE  
AND CONSUMER SERVICES

The Division of Forestry of the Florida Department of Agriculture and Consumer Services (hereinafter referred to as the "DIVISION"), does hereby recognize, acknowledge and agree to the obligations of the DEPARTMENT and the DIVISION as stated in this Agreement and in recognition of further obligations shall:

Provide the DEPARTMENT, through the Florida Game and Fresh Water Fish Commission as lead agency for the Lower Apalachicola E.E.L. Tract, with the opportunity for advance review and comment on issues and activities including but not limited to: 1) administrative policy regarding apiary leases; 2) the location and time schedule of ecological burns; 3) the building of roads; 4) timber harvesting, or 5) any other activity which involves the movement of soils within or adjacent to the Reserve.

IN WITNESS WHEREOF, the legally designated agents for the parties heretofore identified have caused this Agreement to be executed on this 19th day of December, 1986.

Department of Agriculture and Consumer  
Services, Division of Forestry

Virgie Thompson  
WITNESS

BY: Doyle Conner  
Doyle Conner  
Commissioner of Agriculture

Diana R. Gaston  
WITNESS

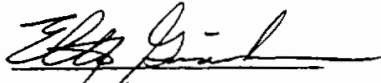
(SEAL)

Approved as to form and legality  
By: Leslie McLeod, Jr.  
Senior Attorney



Department of Natural Resources

  
WITNESS

BY:   
Elton J. Gissendanner  
Executive Director

  
WITNESS

(SEAL)

The APALACHEE REGIONAL PLANNING COUNCIL

The Apalachee Regional Planning Council (hereinafter referred to as the "COUNCIL"), does hereby recognize, acknowledge and agree to the obligations of the DEPARTMENT and the COUNCIL as stated in this Agreement and in recognition of further obligations shall:

Provide information, technical expertise and personnel assistance, to the greatest degree practicable, on issues relating to the COUNCIL'S statutory responsibilities within its jurisdiction which relate to the Reserve.

IN WITNESS WHEREOF, the legally designated agents for the parties heretofore identified have caused this Agreement to be executed on this 24<sup>th</sup> day of September, 1986.

Apalachee Regional Planning Council

Anna Jean Jeppson  
WITNESS

BY: Charles D. Blume  
Charles Blume  
Executive Director

(SEAL)

Eve C. Hayes  
WITNESS

Department of Natural Resources

Jim [Signature]  
WITNESS

BY: Elton J. Gissendanner  
Elton J. Gissendanner  
Executive Director

Cheryl W. CoKor  
WITNESS

(SEAL)



The DEPARTMENT OF HEALTH AND  
REHABILITATIVE SERVICES

The Department of Health and Rehabilitative Services (hereinafter referred to as "HRS"), does hereby recognize, acknowledge and agree to the obligations of the DEPARTMENT and HRS as stated in this Agreement and furthermore:

The HRS is authorized and charged by Section 20.19, Florida Statutes to conduct duties concerning public and environmental health. In general, the health emphasis of HRS is charged with preventing the occurrence and spread of communicable diseases, promoting the maintenance and improvement of health, disseminating health information to the public with recommendations for self-help aimed at prevention of disease and the maintenance and improvement of the health of all residents and visitors in this state. Further, HRS is required to plan and develop health resources to assure effective and efficient delivery of high quality health services fully accessible to all citizens.

Chapter 381, Florida Statutes, further provides that HRS will develop and implement a plan for addressing the public health quality of the drinking water of the state by water sampling and testing for priority pollutants and establishing epidemiological and technical capabilities for human health risk assessments and intervention strategies for toxic contamination. HRS is also charged with the responsibility of promulgating and enforcing rules relating to sanitation, such as water supplies, food establishments, sewage disposal, plumbing, rodent control, arthropod control, mobile home and recreational vehicle parks, swimming pools and bathing areas, and institutions including detention facilities. The control of communicable diseases among humans and from animals to humans as well as the prevention and control of public health nuisances, is also a primary function of HRS.

These programs are administered by HRS through 11 district structures and in the case of public health responsibilities, the majority of the

programs are administered by county health units. There is a county health unit in each of Florida's 67 counties. Environmental duties are performed by environmental health professionals located within the county health units.

HRS will cooperate with and assist local, state and federal agencies as well as private organizations and citizens with the maintenance and improvement of environmental health conditions as prescribed by Florida Statutes pertaining to the Apalachicola National Estuarine Reserve area. Specifically, HRS will continue to closely monitor and cooperate with local officials regarding onsite sewage disposal systems and private water systems.

HRS wishes to participate with the Apalachicola National Estuarine Reserve and encourage the utilization of educational research or other facilities by HRS staff and/or clients.

IN WITNESS WHEREOF, the legally designated agents for the parties heretofore identified have caused this Agreement to be executed on this 19<sup>th</sup> day of December, 1986.

Department of Health and  
Rehabilitative Services

Haney C. Graham  
WITNESS

BY: William Page  
William Page, Secretary

(SEAL)

Delores F. Anderson  
WITNESS  
Notary Public, State of Florida  
My Commission Expires March 31, 1987  
Bonded 1000.00 - Free Fall - Insurance, Inc.

Department of Natural Resources

Elton J. Gissendanner  
WITNESS

BY: Elton J. Gissendanner  
Elton J. Gissendanner  
Executive Director

(SEAL)

Cheryl W. Coles  
WITNESS



DIVISION OF HISTORICAL RESOURCES  
OF THE DEPARTMENT OF STATE

The Division of Historical Resources of the Department of State (hereinafter referred to as "DHR"), does hereby recognize, acknowledge and agree to the obligations of the DEPARTMENT and DHR as stated in this Agreement.

IN WITNESS WHEREOF, the legally designated agents for the parties heretofore identified have caused this Agreement to be executed on this 19th day of September, 1986.

Division of Historical Resources  
of the Department of State

Barbara M. Logan  
WITNESS

BY: Randall Kelley  
Randall Kelley, Director

(SEAL)

Louis P. Jones  
WITNESS

Department of Natural Resources

James P. [Signature]  
WITNESS

BY: Elton J. Gissendanner  
Elton J. Gissendanner  
Executive Director

(SEAL)

Cheryl W. Coker  
WITNESS

The U. S. FISH AND WILDLIFE SERVICE

The U. S. Fish and Wildlife Service (hereinafter referred to as the "SERVICE"), does hereby recognize, acknowledge, and agree to the obligations of the DEPARTMENT and the SERVICE as stated in the Agreement and in recognition of further obligations shall:

Provide the DEPARTMENT the opportunity of advance review and comment on its proposed management plans, major development plans, major policy changes, permit applications or other activities within or adjacent to the Reserve which may affect the environmental quality of the Reserve. This does not include minor changes in hunting schedules, policy, road grading or other minor administrative changes.

Liabilities of the parties to this Agreement shall be determined by applicable laws and regulations now or hereafter in force.

During the performance of this agreement, participants agree to abide by the terms of Executive Order 11246 on nondiscrimination and will not discriminate against any person because of race, color, religion, sex, or national origin. The participants will take affirmative action to ensure that applicants are employed without regard to their race, color, religion, sex or national origin.

No member or delegate to Congress, or resident Commissioner, shall be admitted to any share or part of this agreement, or to any benefit that may arise therefrom, but his provision shall not be construed to extend to this agreement if made with a corporation for its general benefit.



IN WITNESS WHEREOF, the legally designated agents for the parties heretofore identified have caused this Agreement to be executed on this 18th day of November, 1986.

U.S. Fish and Wildlife Service

David B. All  
WITNESS

BY: James W. Pulliam, Jr.  
James W. Pulliam, Jr.  
Regional Director

Carol L. Mabbutt  
WITNESS

(Seal)

Department of Natural Resources

Carroll J. Gissendanner  
WITNESS

BY: Elton J. Gissendanner  
Elton J. Gissendanner  
Executive Director

Cheryl W. Coker  
WITNESS

(SEAL)

STATE OF FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION  
OFFICE OF COASTAL AND AQUATIC MANAGED AREAS  
SPECIAL USE PERMIT

PERMIT NO. U-0356

THIS SPECIAL USE PERMIT is entered into this 7<sup>th</sup> day of March 2008 between the STATE OF FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF COASTAL AND AQUATIC MANAGED AREAS (hereinafter referred to as "CAMA"), and the FIRST BAPTIST CHURCH, OF ST GEORGE ISLAND, FLORIDA, INC., a Florida nonprofit corporation (hereinafter referred to as "PERMITTEE"), for the use and benefit of Boy Scout Troop 22 chartered to PERMITTEE.

WHEREAS, the Board of Trustees of the Internal Improvement Trust Fund of the State of Florida (hereinafter referred to as "TRUSTEES") is the owner of certain real property included in the Apalachicola National Estuarine Research Reserve (hereinafter referred to as "ANERR") which property is managed by CAMA under TRUSTEES' Lease No. 3862; and

WHEREAS, the PERMITTEE desires a Special Use Permit (hereafter referred to as "Permit") for the property described in Exhibit "A" (hereinafter referred to as "Permit Area"); and

WHEREAS CAMA has found that the proposed use of the Permit Area complies with the provisions of Lease No. 3862.



NOW, THEREFORE, for and in consideration of the mutual covenants and agreements hereinafter contained, CAMA grants PERMITEE a Permit over and across the Permit Area, subject to the following terms and conditions:

1. MANAGEMENT OF PERMIT AREA: This Permit is subject to the terms of TRUSTEES' Lease No. 3862, a copy of which is attached hereto as Exhibit "B" and incorporated herein by reference. Any use of the Permit Area shall conform to requirements of the applicable unit management plan.
2. TITLE DISCLAIMER: This Permit confers upon the PERMITEE a non-exclusive, revocable and limited license. Execution of this Permit does not convey to PERMITEE, any title, right or interest in or to the Permit Area. This Permit is personal to PERMITEE and the privileges granted to PERMITEE under this Permit are non-transferable and may not be assigned, transferred or sold.
3. TERM: The term of this Permit shall be for a period of five years commencing on March 7, 2008 and ending on March 6, 2013, or the date PERMITEE ceases to use the Permit area for the purpose described in paragraph 4, whichever occurs first, unless sooner terminated pursuant to the provisions of this Permit.
4. USE OF THE PERMIT AREA: PERMITEE'S privileges under this Permit shall be limited to the maintenance and use of the Permit Area for passive recreation, including but not limited to, a primitive campground and training of Boy Scouts as long as said training is not inconsistent with the applicable unit management plan. PERMITEE

shall not cause, allow or permit any ground disturbing activity, or damage to naturally occurring vegetation, without written permission from CAMA. No other use may be made of the Permit Area by PERMITTEE without written permission from CAMA and no third party has the privileges conferred upon PERMITTEE. CAMA does not warrant or represent the Permit Area is safe or suitable for the purpose for which PERMITTEE is permitted to use it and PERMITTEE assumes all risks in its use.

5. COMMERCIAL OR BUSINESS: PERMITTEE shall not use the Permit Area for commercial or business purposes. Third party commercial vehicles providing routine services to PERMITTEE are allowed if such use would not have an adverse impact on the site.

6. NON-DISCRIMINATION: No person shall, on the basis of race, color, religion, sex, national origin, age, handicap, or marital status be excluded from participation in, be denied the benefits of, or be otherwise subject to discrimination in the granting of this Permit.

7. MAINTENANCE COSTS: PERMITTEE shall maintain the Permit Area in a safe and attractive manner acceptable to CAMA. PERMITTEE is fully responsible for all maintenance costs associated with PERMITTEE'S use of the Permit Area. Any costs incurred by PERMITTEE are incurred solely at PERMITTEE'S risk.

8. COMPLIANCE WITH APPLICABLE LAWS: PERMITTEE agrees that its Permit is contingent upon and subject to PERMITTEE obtaining all applicable federal, state, county and municipal permits, and complying

with all applicable federal, state, county and municipal laws, ordinance or rules.

9. RIGHT OF INSPECTION: CAMA or its duly authorized agents, representatives or employees shall have the right at any and all times to inspect the works and operations of PERMITTEE in any matter pertaining to this Permit.

10. LIABILITY: PERMITTEE shall save and hold harmless and indemnify CAMA, the TRUSTEES and the State of Florida against any and all liability, claims, judgments or costs of whatsoever kind and nature for injury to or death of any person or persons and from loss or damage to any property resulting from the use, service, operation or performance of work under the terms of the Permit, resulting from the negligent acts of PERMITTEE, its employees, agents, representatives, contractors or invitees.

11. GOVERNING LAW: This Permit has been delivered in the State of Florida and shall be construed in accordance with the laws of Florida. Any action hereon or in connection herewith shall be brought in Leon County, Florida.

12. PROHIBITIONS AGAINST LIENS OR OTHER ENCUMBRANCES: The TRUSTEES hold fee title to the land underlying the Permit Area. PERMITTEE shall not do or allow anything to be done which purports to create a lien or encumbrance of any nature against the Permit Area including, but not limited to, mortgages or construction liens against the Permit Area or against any interest of the TRUSTEES or CAMA therein.



13. PARTIAL INVALIDITY: If any term, covenant, condition or provision of this Permit shall be ruled by a court of competent jurisdiction, to be invalid, void, or unenforceable, the remainder shall remain in full force and effect and shall in no way be affected, impaired or invalidated.

14. ENTIRE UNDERSTANDING: This Permit sets forth the entire understanding between parties. Any alterations, variations, changes, modifications, or waivers of provisions of this Permit shall only be valid when they have been reduced to writing, duly signed by each of the parties hereto and attached to the original of this Permit.

15. TERMINATION OF PERMIT: This Permit is revocable by CAMA upon sixty days written notice to PERMITTEE in the event one or more of the following occur:

A. PERMITTEE fails to comply with any of the terms and conditions of this Permit; or

B. CAMA determines that PERMITTEE'S activities are having an adverse impact on the ANERR.

Upon revocation or other termination of this Permit, PERMITTEE, if required by CAMA, shall restore the Permit Area to the same condition it was upon the effective date of this Permit. Any costs or expenses arising out of the implementation of this clause shall be borne completely, wholly and entirely by PERMITTEE. PERMITTEE agrees that upon termination of this Permit, all authorization granted by this Permit shall cease and terminate.

16. SPECIAL TERMS AND CONDITIONS: PERMITTEE and CAMA mutually agree to the following special terms and conditions incorporated as part of this Permit:

A. PERMITTEE, at CAMA'S request, will inform CAMA of any known or upcoming planned activities scheduled to take place on the Permit Area.

B. PERMITTEE agrees to maintain "leave no trace" primitive campsites for paddlers for use by the general public using paddle craft to access those sites. The sites are located at the Nick's Hole Boy Scout Area, and the east end, center and west end of Little St. George Island, at locations designated by the ANERR manager or his designee.

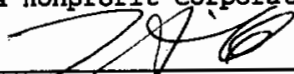
STATE OF FLORIDA DEPARTMENT OF  
ENVIRONMENTAL PROTECTION, OFFICE OF  
COASTAL AND AQUATIC MANAGED AREAS

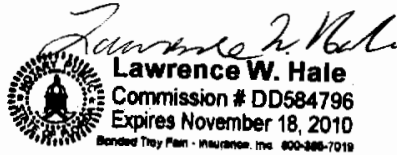
By: Stephanie Bailenson

Stephanie Bailenson  
Print/Typed Name

Title: Director

FIRST BAPTIST CHURCH, OF  
ST. GEORGE ISLAND, FLORIDA, INC.,  
a Florida nonprofit corporation

By:   
WALTER ARMISTEAD, President



(Corporate Seal)

"PERMITTEE"

Consented to by the TRUSTEES on 7th day of March,  
2008.

*Gloria C. Barber*  
GLORIA C. BARBER, OPERATIONS  
AND MANAGEMENT CONSULTANT  
MANAGER, BUREAU OF PUBLIC LAND  
ADMINISTRATION, DIVISION OF  
STATE LANDS, STATE OF FLORIDA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION



**EXHIBIT "A"**

**LEGAL DESCRIPTION OF THE PERMIT AREA**

Begin at a concrete monument marking the Southeast corner of Lot 1 of Sandpiper Village, a subdivision as per map of plat thereof recorded in Plat Book 5, Pages 8 and 9 of the Public Records of Franklin County, Florida and thence run along the Easterly boundary of said subdivision as follows: North 32°54'20" West, 275.23 feet to a concrete monument marking a point of curve to the right, thence Northwesterly along said curve with a radius of 80.73 feet, thru a central angle of 32°54'20" for an arc distance of 46.36 feet, thence South 49°07'51" West, 40.00 feet to a concrete monument, thence North 36°25'49" West 95.91 feet to a re-rod, thence North 66°46'04" West 223.09 feet to a concrete monument, thence North 60°34'20" West 220.40 feet to a concrete monument on the approximate mean high water line of Apalachicola Bay, thence leaving said Easterly boundary run North 54°04'22" East, along said mean high water line 231.04 feet to a concrete monument, thence run South 78°18'19" East, 194.31 feet to a concrete monument on the Westerly boundary of Nick's Hole, Phase II, a subdivision as per map or plat thereof recorded in Plat 5, Page 37 of the Public Records of Franklin County, Florida, thence run along said Westerly boundary as follows: South 32°54'20" East 329.09 feet to a concrete monument marking a point of curve to the right, thence Southerly along said curve with a radius of 50.00 feet, thru a central angle of 86°02'09" for an arc distance of 75.08 feet to a concrete monument marking a point of reverse curve, thence Southerly along said reverse curve with a radius of 20.73 feet, thru a central angle of 32°54'20" for an arc distance of 11.91 feet to a concrete monument, thence South 32°54'20" East 270.96 feet to a concrete monument on the Northerly right-of-way boundary of Leisure Lane, thence leaving said Westerly boundary run South 53°01'22" West, along said right-of-way boundary 60.14 feet to the POINT OF BEGINNING.

AND

Commence at a concrete monument marking the Southeast corner of Lot 1 of Sandpiper Village, a subdivision as per map or plat thereof recorded in Plat Book 5, Pages 8 and 9 of the Public Records of Franklin County, Florida and thence run along the Easterly boundary of said subdivision as follows: North 32°54'20" West, 275.23 feet to a concrete monument marking a point of curve to the right, thence Northwesterly along said curve with a radius of 80.73 feet, thru a central angle of 32°54'20" for an arc distance of 46.36 feet, thence South 49°07'51" West, 40.00 feet to a concrete monument, thence North 36°25'49" West 95.91 feet to a re-rod, thence North 66°46'04" West 223.09 feet to a concrete monument, thence North 60°34'20" West 220.40 feet to a concrete monument on the approximate mean high water line of Apalachicola Bay, thence leaving said Easterly boundary run along said mean high water line as follows: North 54°04'22" East, 231.04 feet to a concrete monument for the POINT OF BEGINNING. From Said POINT OF BEGINNING thence continuing along said approximate mean high water line North 54°03'37" East, 138.55 feet to a concrete monument on the Westerly boundary of Nick's Hole, Phase II, a subdivision as per map or plat thereof recorded in Plat 5, Page 37 of the Public Records of Franklin County, Florida, thence leaving said mean high water line run along said Westerly boundary South 32°54'20" East 143.77 feet, thence North 78°18'19" West 194.31 feet to the POINT OF BEGINNING.

AND

Lots 3 and 4, SANDPIPER VILLAGE, a subdivision as per map or plat thereof recorded in Plat Book 5 at Pages 8 and 9 of the Public Records of Franklin County, Florida.

LESS AND EXCEPT any part of said land lying within the easement as shown on said plat.

## Resource Data

## B.1 / Acronym List

Acronym	Description	Acronym	Description
<b>A&amp;I</b>	additions and inholdings	<b>GIS</b>	geographic information systems
<b>ACF</b>	Apalachicola-Chattahoochee-Flint	<b>GOMA</b>	Gulf of Mexico Alliance
<b>ACSC</b>	Area of Critical State Concern	<b>GPS</b>	global positioning system
<b>ADM</b>	Administration sector	<b>HAB</b>	harmful algal bloom
<b>ANERR</b>	Apalachicola National Estuarine Research Reserve	<b>HVAC</b>	heating, ventilating and air-conditioning
<b>ARSA</b>	Apalachicola Regional Stewardship Alliance	<b>KEEP</b>	K-12 Estuary Education Program
<b>ARWEA</b>	Apalachicola River Wildlife and Environmental Area	<b>LATF</b>	Land Acquisition Trust Fund
<b>ATV</b>	all terrain vehicle	<b>LEED</b>	Leadership in Energy and Environmental Design
<b>BMP</b>	best management practice	<b>MG</b>	Manager
<b>CAMA</b>	Office of Coastal and Aquatic Managed Areas	<b>NEMO</b>	Nonpoint Education for Municipal Officials
<b>CARL</b>	Conservation and Recreation Lands	<b>NERR</b>	National Estuarine Research Reserve
<b>C-CAP</b>	Coastal Change and Analysis Program	<b>NMFS</b>	National Marine Fisheries Service
<b>CDMO</b>	Central Data Management Office	<b>NOAA</b>	National Oceanic and Atmospheric Administration
<b>C.F.R.</b>	Code of Federal Regulations	<b>NOS</b>	National Ocean Services
<b>CPAP</b>	Central Panhandle Aquatic Preserves	<b>NWR</b>	National Wildlife Refuge
<b>CSC</b>	Coastal Services Center	<b>NWFWMD</b>	Northwest Florida Water Management District
<b>CTP</b>	Coastal Training Program	<b>OCRM</b>	Office of Ocean and Coastal Resource Management
<b>DEP</b>	Florida Department of Environmental Protection	<b>OFW</b>	Outstanding Florida Waters
<b>DHR</b>	Division of Historical Resources	<b>OPS</b>	Other Personal Services
<b>DRP</b>	Division of Recreation and Parks	<b>PAGIS</b>	protected areas geographic information systems
<b>EC</b>	Education sector	<b>QA/QC</b>	Quality Assurance/Quality Control
<b>EEL</b>	Environmentally Endangered Lands	<b>RC</b>	Research sector
<b>ERD</b>	Estuarine Reserves Division	<b>SAV</b>	submerged aquatic vegetation
<b>ESCS</b>	Environmental Sciences Institute in the Environmental Cooperative Science Center	<b>SC</b>	Stewardship sector
<b>F.A.C.</b>	Florida Administrative Code	<b>SEAS</b>	Shellfish Environmental Assessment Section
<b>FAMU</b>	Florida Agricultural and Mechanical University	<b>SGLA</b>	St. George Lighthouse Association
<b>F.A.W.</b>	Florida Administrative Weekly	<b>SLE</b>	State-Listed Endangered Species
<b>FDACS</b>	Florida Department of Agriculture and Consumer Services	<b>SLS</b>	State-Listed Species of Special Concern
<b>FLE</b>	Federally-Listed Endangered Species	<b>SLT</b>	State-Listed Threatened Species
<b>FLT</b>	Federally-Listed Threatened Species	<b>SOC</b>	Save Our Coasts
<b>FNAI</b>	Florida Natural Areas Inventory	<b>SWMP</b>	System-Wide Monitoring Program
<b>FOR</b>	Friends of the Reserve	<b>USACOE</b>	United States Army Corps of Engineers
<b>F.S.</b>	Florida Statutes	<b>USDA</b>	United States Department of Agriculture
<b>FFS</b>	Florida Forest Service	<b>USFWS</b>	United States Fish and Wildlife Service
<b>FSU</b>	Florida State University	<b>USGS</b>	United States Geological Survey
<b>FWC</b>	Florida Fish and Wildlife Conservation Commission		

## B.2 / Glossary

References to these definitions can be found at the end of this list and in Appendix B.3.

- aboriginal** - the original biota of a geographical region. (Lincoln, Boxshall & Clark, 2003)
- anaerobic** - growing or occurring in the absence of molecular oxygen. (Lincoln et al., 2003)
- aquaculture** - the cultivation of aquatic organisms. (Lincoln et al., 2003)
- codify** - to arrange laws and rules systematically. (Neufeldt & Sparks, 1990)
- diversity** - a measure of the number of species and their relative abundance in a community. (Lincoln et al., 2003)
- drainage basin (catchment)** - the area from which a surface watercourse or a groundwater system derives its water; watershed. (Allaby, 2005)
- easement** - a right that one may have in another's land. (Neufeldt & Sparks, 1990)
- ecosystem** - a community of organisms and their physical environment interacting as an ecological unit. (Lincoln et al., 2003)
- emergent** - an aquatic plant having most of the vegetative parts above water; a tree which reaches above the level of the surrounding canopy. (Lincoln et al., 2003)
- endangered species** - an animal or plant species in danger of extinction throughout all or a significant portion of its range. (U.S. Fish and Wildlife Service [FWS], 2005)
- endemic** - native to, and restricted to, a particular geographical region. (Lincoln et al., 2003)
- extinction** - the disappearance of a species from a given habitat. (Lincoln et al., 2003)
- fauna** - the animal life of a given region, habitat or geological stratum. (Lincoln et al., 2003)
- flora** - the plant life of a given region, habitat or geological stratum. (Lincoln et al., 2003)
- geographic information system (GIS)** - computer system supporting the collection, storage, manipulation and query of spatially referred data, typically including an interface for displaying geographical maps. (Lincoln et al., 2003)
- hydric** - pertaining to water; wet. (Lincoln et al., 2003)
- infauna** - the animal life within a sediment; epifauna. (Lincoln et al., 2003)
- intertidal zone** - the shore zone between the highest and lowest tides; littoral. (Lincoln et al., 2003)
- listed species** - a species, subspecies, or distinct population segment that has been added to the Federal list of endangered and threatened wildlife and plants. (FWS, 2005)
- mandate** - an order or command; the will of constituents expressed to their representative, legislature, etc. (Neufeldt & Sparks, 1990)
- mesic** - pertaining to conditions of moderate moisture or water supply; used of organisms occupying moist habitats. (Lincoln et al., 2003)
- mosaic** - an organism comprising tissues of two or more genetic types; usually used with reference to plants. (Lincoln et al., 2003)
- population** - all individuals of one or more species within a prescribed area. A group of organisms of one species, occupying a defined area and usually isolated to some degree from other similar groups. (Lincoln et al., 2003)
- psammophyte** - a plant growing or moving in unconsolidated sand. (Lincoln et al., 2003)
- ruderal** - pertaining to or living amongst rubbish or debris, or inhabiting disturbed sites. (Lincoln et al., 2003) (FNAI describes ruderal as areas impacted by development measures such as roadways, drainage ditches, navigational channels or are considered hydrological alterations.)
- runoff** - part of precipitation that is not held in the soil but drains freely away. (Lincoln et al., 2003)
- salinity** - a measure of the total concentration of dissolved salts in seawater. (Lincoln et al., 2003)
- sessile** - non-motile; permanently attached at the base. (Lincoln et al., 2003)
- species** - a group of organisms, minerals or other entities formally recognized as distinct from other groups; the basic unit of biological classification. (Lincoln et al., 2003)
- species of concern** - an informal term referring to a species that might be in need of conservation action. This may range from a need for periodic monitoring of populations and threats to the species and its habitat, to the necessity for listing as threatened or endangered. Such species receive no legal protection and use of the term does not necessarily imply that a species will eventually be proposed for listing. "Imperiled species" is another general term for listed as well as unlisted species that are declining. (FWS, 2005)
- stakeholder** - any person or organization who has an interest in the actions discussed or is affected by the resulting outcomes of a project or action. (FWS, 2005)



**subtidal** - environment which lies below the mean low water level. (Allaby, 2005)

**supratidal** - the zone on the shore above mean high tide level. (Lincoln et al., 2003)

**threatened species** - an animal or plant species likely to become endangered within the foreseeable future throughout all or a significant portion of its range. (FWS, 2005)

**turbid** - cloudy; opaque with suspended matter. (Lincoln et al., 2003)

**upland** - land elevated above other land. (Neufeldt & Sparks, 1990)

**vegetation** - plant life or cover in an area; also used as a general term for plant life. (Lincoln et al., 2003)

**water column** - the vertical column of water in a sea or lake extending from the surface to the bottom. (Lincoln et al., 2003)

**watershed** - an elevated boundary area separating tributaries draining in to different river systems; drainage basin. (Lincoln et al., 2003)

**wetland** - an area of low lying land, submerged or inundated periodically by fresh or saline water. (Lincoln et al., 2003)

**wildlife** - any undomesticated organisms; wild animals. (Allaby, 2005)

**xeric** - having very little moisture; tolerating or adapted to dry conditions. (Lincoln et al., 2003)

### B.3 / References

- Ager, L.A. and R.S., Land. 1984a. Annual Report. Florida Game and Fresh Water Fish Commission. 1983-1984.
- Ager, L.A., C. Mesing, and M. Hill. 1985. Fishery study, Apalachicola River maintenance dredging disposal site evaluation program. Florida Game and Fresh Water Fish Commission. Final Report prepared for U.S. Army Corps of Engineers, Mobile District.
- Ager, L.A., C. Mesing, R. Land, M. Hill, M. Spelman, R. Rousseau and K. Stone. 1987. Five year completion report: Fisheries ecology and dredging impacts on the Apalachicola River system. Florida Game and Fresh Water Fish Commission. 97pp.
- Ager, L.A., C. Mesing, R. Land, M. Hill, M. Spelman, and R. Simmons. 1983. Annual Report: Fisheries ecology and dredging impacts on the Apalachicola River system. Florida Game and Fresh Water Fish Commission. 1982-1983. 109 pages.
- Ager, L.A., C. Mesing, R. Land, M. Hill, M. Spelman, and R. Simmons. 1984. Fisheries ecology and dredging impacts on the Apalachicola River system. Florida Game and Fresh Water Fish Commission. Annual Report July 1982 - September 1983.
- Alabama, Florida, Georgia, and U.S. Army Corps of Engineers, Mobile District. 1984. 1984 Water assessment for the ACF River Basin. U.S. Army Corps of Engineers, Mobile District.
- Alt, D. and H.K. Brooks. 1965. Age of Florida Marine Terraces. *Journal of Geology* 73: 406-411.
- Apalachicola Bay Chamber of Commerce. 2007. <http://www.apalachicolabay.org/apalachicolahome.php>
- Apalachicola National Estuarine Research Reserve. 1986. Draft management plan. 284 pp.
- Apalachicola National Estuarine Research Reserve. 1993. Apalachicola National Estuarine Research Reserve Management Plan. 221 pp.
- Apalachicola National Estuarine Research Reserve. 1998. Apalachicola National Estuarine Research Reserve Management Plan: 1998-2003. Florida Department of Environmental Protection. 206pp.
- Apalachicola National Estuarine Research Reserve. 1999. Unpublished data from the ANERR System Wide Monitoring Program. Florida Department of Environmental Protection. Eastpoint, FL.
- Apalachicola National Estuarine Research Reserve. 2004. Management of protected species in the Apalachicola National Estuarine Research Reserve. ANERR Unpublished Report. 51 pp.
- Atwood, J.L. and B.W. Massey. 1988. Site fidelity of least terns in California. *Condor* 90: 389-394.
- Baker, J.A., K.J. Kilgore and R.L. Kasul. 1991. Aquatic habitats and fish communities in the lower Mississippi River. *Reviews in Aquatic Sciences* Vol. 3, No. 4:313-356.
- Barkuloo, J.M. 1961. Distribution and abundance of striped bass (*Roccus saxatilis Walbaum*) on the Florida Gulf Coast. *Proceed. 15th Ann. Conf. SE Assoc. Game and Fish Comm.* pp 223-235.
- Barkuloo, J. M., L. Patrick, L. Stith, and W. J. Troxel. 1987. Natural Resources Inventory Apalachicola-Chattahoochee-Flint River Basin. U.S. Fish and Wildlife Service Field Office. Panama City, Florida. 154 pp.
- Bartush, W.S. and D.A. Wood. 1983. Red-Cockaded Woodpecker Management in Northwest Florida. Pp. 83-86 in D.A. Wood, ed. Red-cockaded Woodpecker Symposium II Proceedings. State of Florida Game and Fresh Water Fish Commission.

- Bass, D.G., Jr. 1983. North Florida streams research project: Study III. Rivers of Florida and their fishes. Florida Game and Fresh Water Fish Commission. 397 pp.
- Bedosky, S.J. 1987. Recent sediment history of Apalachicola Bay, Florida: Unpubl. M.S. Thesis, Florida State University. Tallahassee, FL. 235 p.
- Belden, R. C. 1982. Florida Panther Recovery Plan Implementation - A 1982 Progress Report. Florida Game and Fresh Water Fish Commission. Gainesville, Florida. 21 pp.
- Berrigan, M.E. 1988. Management of oyster resources in Apalachicola Bay following Hurricane Elena. *J. Shellfish Research* 7:281-288.
- Berrigan, M.E. 1989. Oyster resources in Apalachicola Bay. Florida Department of Natural Resources. Tallahassee, FL. 92 pages.
- Blake, E.S., J.D. Jarrell, E.N. Rappaport and C.W. Landsea. 2005. The deadliest, costliest, and most intense United States hurricanes from 1851 to 2004 (and other frequently requested hurricane facts). NOAA Technical Memorandum, NWS TPC-4. Miami, Florida.
- Blanchet, R.H. 1979. The distribution and abundance of ichthyoplankton in the Apalachicola Bay, Florida, area. M.S. Thesis. Florida State University, Tallahassee.
- Blaney, R. M. 1971. An annotated check list and biogeographic analysis of the insular herpetofauna of the Apalachicola Region, Florida. *Herpetologica* 27: 406-430.
- Blench, T. 1972. Morphometric changes. Pages 287-308 in R.T. Glesby, C.A. Carlson, and J.A. McCann, eds. *River ecology and man*. Academic Press. New York.
- Bobbie, R.J., S.J. Morrison and D.C. White. 1978. Effects of substrate biodegradability on the mass and activity of the associated estuarine microbiota. *Applied and Environmental Microbiology* 35(1):179-184.
- Bobbie, R.J., J.S. Nickels, G.A. Smith, S.D. Fazio, R.H. Findlay, W.M. Davis and D.C. White. 1981. Effect of light on biomass and community structure of estuarine detrital microbiota. *Applied and Environmental Microbiology* 42(1):150-158.
- Bonde, R. K. and T. J. O'Shea. 1989. Sowerby's Beaked Whale (*Mesoplodon bidens*) in the Gulf of Mexico. *Journal of Mammalogy* 70(2): 447-449.
- Boynnton, W.R., P.F. Kemp, and C.W. Keefe. 1982. A comparative analysis of nutrients and other factors influencing estuarine phytoplankton production. In: V.S. Kennedy (ed) *Estuarine Comparisons*. Academic Press, New York, p 69-90.
- Bradley, J.T. 1972. *Climatography of the United States* No. 60- 8: Climate of Florida. U.S. Dept. Commerce, NOAA. 31 pages.
- Brady, J. R. and H. W. Campbell. 1983. Distribution of coyotes in Florida. *Florida Field Naturalist* 11: 40-41.
- Brecken-Folse, J., M.G. Babikow and T.W. Duke. 1989. Impact of toxic substances and pesticides on nearshore Gulf of Mexico: a preliminary comparison (toxicity indices) of twenty-five estuarine drainage systems based on releases from industrial and municipal sites and pesticide run-off from agricultural operations in 1989 (draft). U.S. Environmental Protection Agency, Water Management Division, 49 pages.
- Brim, M.S., Bateman, D.H., Carmody, G.A. 1994. Environmental contaminants in fish and sediments. St. Vincent National Wildlife Refuge. Publication No. PCFO-EC 94-13. U.S. Fish and Wildlife Service, Southeast Region, Atlanta, Georgia.
- BROUTMAN, M.A. and D.L. Leonard. 1988. The quality of shellfish growing waters in the Gulf of Mexico. U.S Department of Commerce, National Oceanic and Atmospheric Administration. 43 pp.
- Brown, J.T. 1964. The Apalachicola River watershed: Completion report of lake and stream survey. Federal Aid Project F-6-R. Florida Game and Fresh Water Fish Commission.
- Bryan, C.F. and D.S. Sabins. 1979. Management implications in water quality and fish standing stock information in the Atchafalaya River Basin, Louisiana. Pages 193-316 in J.W. Day Jr., D.D. Culley, Jr., R.E. Turner and A.J. Humphrey, Jr., eds. *Proceedings Third Coastal marsh and Estuary symposium*. LSU Div. of Cont. Ed. Baton Rouge, LA.
- Buckley, E.N. 1973. The fishes of the Apalachicola Bay system with reference to life history, abundance, distribution, and species diversity. Masters Thesis, Florida St. Univ., Tallahassee, FL. 151 pp.
- Burger, J. 1984. Colony stability in least terns. *Condor* 86: 61-67.
- Bullen, R.P. 1950. An Archaeological Survey of the Chattahoochee River Valley in Florida. *Journal of the Washington Academy of Science* 40:101-125.
- Calbet, A 2001. Mesozooplankton grazing effect on primary production: A global comparative analysis in marine systems. *Limnol Oceanogr* 46:1824-1830.
- Calbet, A. and M.R. Landry. 2004 Phytoplankton growth, microzooplankton grazing, and carbon cycling in marine systems. *Limnol Oceanogr* 49:51-57.

- Caldwell, D. K. and M. C. Caldwell. 1973. Marine mammals of the eastern Gulf of Mexico. Pages III-I-23 in J. I. Jones, R. E. Ring, M. O. Rinkel, R. E. Smith, (eds). A Summary of Knowledge of the Eastern Gulf of Mexico. The State University System of Florida, Institute of Oceanography, Gainesville.
- Caldwell, R.E. and R.W. Johnson. 1982. General soil map of Florida. USDA and University of Florida, Institute of Food and Agricultural Sciences and Agricultural Experiment Stations, Soil Science Dept. Map.
- Calleson, T.J. 1998. West Indian Manatee Abundance and Distribution within the Apalachicola National Estuarine Research Reserve, Franklin County, Florida. Unpublished report. Draft- FMRI Tech Rep.
- Calleson, T.J., Bailey, G.O., and H.L. Edmiston. 1998. Rare Nesting Occurrence of the Leatherback Sea Turtle, *Dermochelys coriacea*, in Northwest Florida, USA. Herpetological Review 29(1): 14-15.
- Cato, J.C. and F.J. Prochaska. 1977. Landings, values and prices in commercial fisheries for the Florida northwest coast. Marine Advisory Program, Florida Sea Grant. SUS-SG-77-004. Gainesville, FL.
- Chanton, J. 1997. Examination of the Coupling Between Primary and Secondary Production in the Apalachicola River and Bay. Draft Final Report. Northwest Florida Water Management District, Havana, Florida. 44 pp.
- Chanton, J. and F.G. Lewis. 2002. Examination of coupling between primary and secondary production in a river-dominated estuary: Apalachicola Bay, Florida, U.S.A. Limnol Oceanogr 47:683-697.
- Chase, C.A. and J.A. Gore. 1989. Snowy Plover Breeding Distribution. Final Performance Report. Florida Game and Fresh Water Fish Commission. 37 pp.
- Christensen, J.D., M.E. Monaco, T.A. Battista, C.J. Klein, R.J. Livingston, G. Woodsum, B. Galperin, and W. Huang. 1998. Potential impacts of reduced freshwater inflow on Apalachicola Bay, FL oyster (*Crassostrea virginica*) populations: Coupling hydrologic and biologic models. NOAA/NOS Strategic Environmental Assessments Division, Silver Spring, MD. 58 pp.
- Clark, J. 1974. Coastal ecosystems: Ecological considerations for management of the coastal zone. The Conservation Foundation. Wash. D.C. 178 pp.
- Clarke, J.T. 1976. An investigation of the estuarine structure and mass transport processes in the vicinity of West Pass, Apalachicola Bay, Florida. M.S. Thesis, Florida State University, Tallahassee, FL.
- Clewell, A.F. 1971. The vegetation of the Apalachicola National Forest: an ecological perspective. USDA Forest Serv. Tallahassee, Florida. 152 pp.
- Clewell, A.F. 1977. Geobotany of the Apalachicola River Region. Pages 6 - 15 in R.J. Livingston and E.A. Joyce, Jr., eds. Proceedings of the Conference on the Apalachicola Drainage System. Florida Marine Research Publications No. 26. 177 pp.
- Clewell, A.F. 1986. Natural setting and vegetation of the Florida panhandle: An account of the environments and plant communities of northern Florida west of the Suwannee River. Prepared for the U.S. Army Corps of Engineers, Mobile District, Contract No. DACWO1-77-C-0104. 773 pages.
- Clewell, A.F. 1997. Vegetation. Pages 77-109 in C.L. Coultas and Y.P. Hsieh, editors. Ecology and Management of Tidal Marshes, A Model from the Gulf of Mexico. St. Lucie Press.
- Cloern, J.E. 1999. The relative importance of light and nutrient limitation of phytoplankton growth: a simple index of coastal ecosystem sensitivity to nutrient enrichment. Aquat Ecol 33:3-16.
- Coastal Zone Management Act. 1972. CZMA as amended. Public Law 96-583.
- Code of Federal Regulations. 2003. National Estuarine Research Reserve Program Regulations. Title 15, Vol. 3, Part 921. National Estuarine Research Reserve System Regulations. Commerce and Foreign Trade Chapter IX, National Oceanic and Atmospheric Administration, Department Of Commerce. U.S. Government Printing Office. Washington, DC. 21 pp.
- Colberg, M.R., T.S. Dietrich and D.M. Windham. 1968. The social and economic values of Apalachicola Bay, Florida. Federal Water Pollution Control Administration. Final report. 54 pp.
- Commission on Marine Science, Engineering, and Resources. 1969. Our Nation and the Sea: A Plan for Action. United States Government Printing Office. Washington, D.C. 305pp.
- Conner, C. A. Conway, B.A. Benedict and B.A. Christiansen. 1982. Modeling the Apalachicola System: A hydrodynamic and water quality model with a hydrodynamic and water quality atlas of Apalachicola Bay. Technical Paper No. 23. Florida Sea Grant Publication. 87 pages.
- Continental Shelf Associates, Inc. 1985. Apalachicola Bay study: Submersed vegetation assessment of the Apalachicola Bay system. Prepared for the U.S. Army Corps of Engineers, Mobile District, Sea Grant Publication No. MASGP 84. 020.
- Cook, D.W. 1994. Effects of time and temperature on multiplication of *Vibrio vulnificus* in postharvest Gulf Coast shellstock oysters. Applied and Environ. Micro. 60(9):3483-3484.
- Corbett, R. 1999. Groundwater and nutrient dynamics on a strip barrier island served by on-site sewage treatment and disposal systems in the Northeastern Gulf of Mexico. PhD Dissertation. Florida State University, Tallahassee, FL.
- Cordray, R., Chumney, C., and T. Lewis. 1994. Annual Narrative Report Calendar Year 1994. St. Vincent National Wildlife Refuge, Apalachicola, Florida. U.S. Department of the Interior, Fish and Wildlife Service. 54 pp.



- Couch, C.A., E.H. Hopkins and P.S. Hardy. 1996. Influences of environmental settings on aquatic ecosystems in the Apalachicola-Chattahoochee-Flint River basin. U.S. Geological Survey Water-Resources Investigations Report 95-4278. 58 pages.
- Coultas, C.L. 1997. Soils. Pages 53-75 in C.L. Coultas and Y.P. Hsieh, editors. Ecology and Management of Tidal Marshes: A Model from the Gulf of Mexico. St. Lucie Press, Delray Beach.
- Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deepwater habitats of the United States. U.S. Fish and Wildlife Service. FWS/OBS 79/31. Wash., D.C. 103 pp.
- Cox, D.T., E. Vosatka, and D. Mannes. 1975. Stream Investigations: Upper Apalachicola River study, final job completion report for investigations. Florida Game and Fresh Water Fish Commission. Dingell-Johnson Report F-25 Study I.
- Crateau, E.J., Moon, P.A., Wooley, C.M. 1981. Apalachicola River Striped Bass Project: Biology, population dynamics and management of *Morone*, sp., with emphasis on native Gulf of Mexico race and introduced Atlantic race striped bass, Apalachicola River, Florida. Annual Progress Report FY 1981. U.S. Fish and Wildlife Service. Panama City Florida.
- Crist, C. 2007. Letter to President Bush on Georgia's request to suspend reservoir operating rules, October 24, 2007. Tallahassee, Fl. 2 pp.
- Crosby, M., R. Newell, and C. Langdon. 1990. Bacterial mediation in the utilization of carbon and nitrogen from detrital complexes by *Crassostrea virginica*. Limnology and Oceanography Vol 35(3):625-639.
- Darst, M.R. and Light, H.M. 2008. Drier Forest Composition Associated with Hydrologic Change in the Apalachicola River Floodplain, Florida: U.S. Geological Survey Scientific Investigation Report 2008-5062, 81 p., plus 12 appendices.
- Davis, J.H., Jr. 1967. General map of natural vegetation of Florida. Agricultural Experiment Station. Univ. of Florida. Circ. S 178.
- Dawes, C. J. 1987. The Dynamic Seagrasses of the Gulf of Mexico and Florida Coasts. Pp. 25-38 in Proceedings of the Symposium on Subtropical-Tropical Seagrasses of the Southeastern United States. M. J. Durako, R. C. Phillips, and R. R. Lewis, III (eds.). Fla. Mar. Res. Publ. No. 42. 209 pp.
- Dawson, C.E. 1955. A contribution to the hydrography of Apalachicola Bay. Publ. Tex. Inst. Mar. Sci. 4:15-35.
- Day, R.H., T.M. Williams, and C.M. Swarzenski. 2007. Hydrology of tidal freshwater forested wetlands of the southeastern United States. 29-63 in Conner, W.H., T.W. Doyle, and K.W. Krauss. Ecology of Tidal Freshwater Forested Wetlands of the Southeastern United States. Springer Netherlands.
- Deegan, L.A., and R.H. Garritt. 1997. Evidence for spatial variability in estuarine food webs. Mar. Ecol. Prog. Ser. 147:31-47.
- Depaola, A., Presnell, M.W., Becker, R.E., Motes, M.L., Zywno, S.R., Musselman, J.F., Taylor, J., and Williams, L., 1984. Distribution of *Vibrio cholera* in the Apalachicola (Florida) Bay estuary. Journal of Food Protection, Vol. 47, No. 7, pp 549-553.
- De Souza, A.C.R. 2001. Effects of environmental factors on benthic microbial activities in surficial marine sediments of Apalachicola Bay, Florida. MS Thesis, Department of Oceanography, Florida State University. Tallahassee, Fl. 61pp.
- Donoghue, J.F. 1993. Late Wisconsinan and Holocene depositional history, northeastern Gulf of Mexico. Marine Geology, Vol. 112: 185-205.
- Donoghue, J.F. and W.T. Cooper. 1993. Contaminant history of the sediments of Apalachicola Bay. Florida Department of Natural Resources, Apalachicola National Estuarine Research Reserve, Final report on contract #c-8007, 45 pp., plus figures 1-30.
- Donoghue, J.F. and W.F. Tanner. 1992. Quaternary terraces and shorelines of the panhandle Florida region. Pages 233-241 in Wehmler, J.F., and Fletcher, C. H., eds., Quaternary Coasts of the United States: Marine and Lacustrine Systems. SEPM Special Publication 48. Society for Sedimentary Geology, Tulsa, OK.
- Donoghue, J.F. and N.M. White. 1995. Late Holocene sea-level change and delta migration, Apalachicola River region, northwest Florida, USA. Journal of Coastal Research, Vol. 11, No. 3: 651-663.
- Duncan, J.L. 1977. Short-term effects of storm water runoff on the epibenthic community of a North Florida Estuary (Apalachicola, Florida). M.S. Thesis. Florida State University. Tallahassee, FL. 117 pp.
- Dunbar, J. and B.I. Waller. 1983. A Distribution Analysis of the Clovis/Suwannee Paleo-indian Sites of Florida - A Geographic Approach.
- Duke, T. and W. L. Kruczynski (eds.). 1992. Status and Trends of Emergent and Submerged Vegetated Habitats, Gulf of Mexico, U.S.A. EPA 800-R-92-003. United States Environmental Protection Agency, Office of Water. Stennis Space Center, MS.
- Edmiston, H.L. 1979. The zooplankton of the Apalachicola Bay system. M.S. Thesis. Florida State University, Tallahassee, Florida.
- Edmiston, H.L., Bailey, G.O., and T.J. Calleson. 1998. Management of Protected Species in the Apalachicola National Estuarine Research Reserve. Unpublished report. Florida Department of Environmental Protection, Eastpoint, Florida.

- Edmiston, H.L., and H. Tuck. 1987. Resource Inventory of the Apalachicola River and Bay Drainage Basin. Florida Game and Fresh Water Fish Commission. 303 pages.
- Edmiston, H.L., S.A. Fahrny, M.S. Lamb, L.K. Levi, J.M. Wanat, J.S. Avant, K. Wren, and N.C. Selly. 2008. Tropical storm and hurricane impacts on a Gulf Coast estuary: Apalachicola Bay, Florida USA. *Journal of Coastal Research* 55:38-49.
- Ednoff, M. 1984. A mariculture assessment of Apalachicola Bay, Florida. A report to Florida Department of Environmental Regulation.
- Eichholz, N.F. 1980. Osprey nest concentrations in northwest Florida. *Fla. Field Naturalist* 8:18-19.
- Eisma, D. 1998. Intertidal deposits: River mouths, tidal flats, and coastal lagoons. CRC Marine Science Series. CRC Press, Boca Raton, Florida, 525 pp.
- Elder, J.F. and D.J. Cairns. 1982. Production and decomposition of forest litter fall on the Apalachicola River Flood Plain, Florida. USGS Open File Report 82-252.
- Elder, J.F., S.D. Flagg and H.C. Matraw, Jr. 1988. Hydrology and ecology of the Apalachicola River, Florida - a summary of the river quality assessment. U.S. Geological Survey Water-Supply Paper 2196-D. 46 pages.
- Elder, J.F. and H.C. Matraw, Jr. 1982. Riverine transport of nutrients and detritus to the Apalachicola Bay Estuary, Florida. *Water Resources Bulletin* Vol. 18, No. 5:849-856.
- Elder, J.F. and H.C. Matraw. 1984. Accumulation of trace elements, pesticides, and polychlorinated biphenyls in sediments and the clam *Corbicula manilensis* of the Apalachicola River. Florida. *Arch. Environ. Contam. Toxicol.* Vol. 13. pp 453-469.
- Eleuterius, L.N., and C.K. Eleuterius. 1979. Tide levels and salt-marsh zonation. *Bulletin of Marine Science* 29:394-400.
- Eppley, R.W. 1972. Temperature and phytoplankton growth in the sea. *Fish Bull.* (Seattle) 70:1063-1085.
- Estabrook, R.H. 1973. Phytoplankton ecology and hydrography of Apalachicola Bay. M.S. Thesis, Florida State University, Tallahassee, FL. Florida Administrative Code. 2006. Surface water quality standards, Rule 62-302. Florida Department of Environment Protection. Tallahassee, FL. 166 pp.
- Estabrook, R. H. and R. L. Iverson. 1975. Phytoplankton Ecology of Apalachicola Bay, Florida. pp. 296-313 in R.J. Livingston. *Field and Laboratory Studies Concerning the Effects of Various Pollutants on Estuarine and Coastal Organisms with Application to the Management of the Apalachicola Bay System (North Florida, U.S.A.)*. Florida State University. Florida Sea Grant Project #R/EA-1.
- Etheridge, K., G. B. Rathbun, J. A. Powell, and I. J. Kochman. 1985. Consumption of aquatic plants by the West Indian manatee. *Journal of Aquatic Plant Management* 23: 21-25.
- Ewert, M.A., D.R. Jackson, and C.E. Nelson. 1994. Patterns of Temperature-Dependent Sex Determination in Turtles. *Journal of Experimental Zoology* 270:3-15.
- Ewert, M. A. and D. R. Jackson. 1994. Nesting Ecology of the Alligator Snapping Turtle (*Macroclmys temminckii*) along the Lower Apalachicola River, Florida. *Fla. Game and Fresh Water Fish Comm. Nongame Wildl. Program Final Rep.* 45pp. + vi. Tallahassee, Fla.
- Fahrny, S., L. Edmiston, K. Wren, L. Bolen, L. Levi, J. Wanat, J. Stewart, and M. Lamb. 2006. Submerged Aquatic Vegetation Monitoring in Apalachicola Bay, Florida. Unpublished report to NOAA. Apalachicola National Estuarine Research Reserve. 24 pp.
- Federal Register. 1985. Endangered and threatened wildlife and plants; determination of endangered status for the Piping Plover; final rule 50: 50726-50734.
- Federle, T.W., R.J. Livingston, D.A. Meeter and D.C. White. 1983. Modifications of estuarine sedimentary microbiota by exclusion of epibenthic predators. *J. Exp. Mar. Biol. Ecol.* 73:81-94.
- Fernald, E.A., ed. 1981. *Atlas of Florida*. Florida State University Foundation, Tallahassee, FL. 276 pages. Franklin County. 1991. *Comprehensive Plan for Franklin County, Florida*. Board of Franklin County Commissioners.
- Field, D.W., A.J. Reyer, P.V. Genovese, and B.D. Shearer. 1991. Coastal wetlands of the United States: An accounting of a valuable national resource. National Ocean Service, NOAA. Special 20th Anniversary Report. 59 pp.
- Florida Department of Agriculture and Consumer Services. 2004. Impacts of drought on oyster resources in Apalachicola Bay. Florida Dept. of Agricultural and Consumer Services, Unpublished report. Tallahassee, FL.
- Florida Department of Environmental Protection. 2009. Outdoor recreation in Florida- 2008. Florida Department of Environmental Protection, Division of Recreation and Parks. Tallahassee, FL.
- Florida Department of Environmental Regulation. 1984. Apalachicola River Dredged Material Disposal Plan. Florida Department of Environmental Regulation. Tallahassee, FL. 255 pp.
- Florida Department of Environmental Regulation. 1995. Unpublished report on the effects of two tropical storms on the oyster resources of Apalachicola Bay.

- Florida Department of Natural Resources. 1983. Cape St. George State Reserve Management Plan. 109 pp. Florida Department of Natural Resources. 1986. Oyster resource recovery in Apalachicola Bay following hurricane Elena. 27 pp.
- Florida Division of Forestry. 2007. [http://www.fl-dof.com/state\\_forests/tates\\_hell.html](http://www.fl-dof.com/state_forests/tates_hell.html)
- Florida Fish and Wildlife Conservation Commission. 2007. Eagle Nest Locator. Florida Fish and Wildlife Conservation Commission. <http://www.myfwc.com/eagle/eaglenests/Default.asp>.
- Florida Fish and Wildlife Conservation Commission. 2006. Florida's endangered species, threatened species, and species of special concern. Florida Fish and Wildlife Conservation Commission. Tallahassee, FL 10 pp.
- Florida Fish and Wildlife Conservation Commission. 2007. Commercial fisheries landings in Florida. [http://www.floridamarine.org/features/view\\_article.asp?id=19224](http://www.floridamarine.org/features/view_article.asp?id=19224).
- Florida Game and Fresh Water Fish Commission. 1978. Conceptual Fish and Wildlife Management Plan for Lower Apalachicola EEL Tract - Draft. Florida Game and Fresh Water Fish Commission, Office of Environmental Services. 50 pp.
- Florida Game and Fresh Water Fish Commission. 1982. Lower Apalachicola River: EEL Management Plan. 82 pp.
- Florida Game and Fresh Water Fish Commission. 1983. Lower Apalachicola River: EEL Management Plan. Florida Game and Fresh Water Fish Commission, Tallahassee, FL. 82 pp.
- Florida Game and Fresh Water Fish Commission. 1985. Fishery study, Apalachicola River maintenance dredging disposal site evaluation program. U.S. Army Corps of Engineers. Final Report.
- Florida Game and Fresh Water Fish Commission. 1990. Florida Endangered and Threatened Species Management and Conservation Plan—1990 Update and Progress Report. State of Florida and Florida Game and Fresh Water Fish Commission. 24 pp.
- Florida Game and Fresh Water Fish Commission. 1991. Florida Atlas of Breeding Sites for Herons and Their Allies – Update 1986-89. Technical Report No. 10. Florida Game and Fresh Water Fish Commission, Nongame Wildlife Program. Tallahassee, Florida. 147 pp.
- Florida Game and Fresh Water Fish Commission. 1993. Management of the Black Bear in Florida. Staff Report to the Commissioners. Florida Game and Fresh Water Fish Commission. Tallahassee, Florida. 23 pp.
- Florida Natural Areas Inventory and Division of State Lands. 1986. Appendix IV: Guide to the natural communities of Florida. 155 pp.
- Florida Oceans and Coastal Council. Revised June 2009. The effects of climate change on Florida's ocean and coastal resources. A special report to the Florida Energy and Climate Commission and the people of Florida. Tallahassee, FL. 34 pp.
- Flynn, L. B., S. M. Shea, J.C. Lewis, and R. L. Marchinton. 1990. Part III: Population statistics, health, and habitat use. Pages 63-96 in Ecology of sambar deer on St. Vincent National Wildlife Refuge, Florida. Bulletin Number 25, Tall Timbers Research Station, Tallahassee, Florida.
- Folkerts, G.W. 1982. The Gulf Coast pitcher plant bogs. *American Scientist* 70:260-267.
- Fonseca, M.S. 1994. A Guide to Transplanting Seagrasses in the Gulf of Mexico. Texas A&M University Sea Grant College Publication No. TAMU-SG-94-601. 25 pp.
- Fonseca, M.S. and J.S. Fisher. 1986. A comparison of canopy friction and sediment movement between four species of seagrass with reference to their ecology and distribution. *Marine Ecology Progress Series* 29: 15-22.
- Fonseca, M.S., W.J. Kenworthy, and G.W. Thayer. 1981. Transplanting of the seagrasses *Zostera marina* and *Halodule wrightii* for the stabilization of subtidal dredged material. Annual Report N.M.F.S., Beaufort Lab to U.S. COE. 34 pp.
- Fonseca, M.S., J.C. Zieman, G.W. Thayer, and J.S. Fisher. 1983. The Role of Current Velocity in Structuring Eelgrass (*Zostera marina*) Meadows. *Estuarine and Coastal Shelf Science* 17: 367-380.
- Franklin County. 2004. Franklin County Comprehensive Plan Update Transmittal. Amendments and technical data and analysis, May 2004.
- Frick E.A., G.R. Buell and E.H. Hopkins. 1996. Nutrient sources and analysis of nutrient water-quality data, Apalachicola-Chattahoochee-Flint River basin, Georgia, Alabama and Florida, 1972-1990. U.S. Geological Survey Water-Resource Investigations Report 96-4101. 120 pages.
- Frick, E.A., D.J. Hippe, G.R. Buell, C.A. Couch, E.H. Hopkins, D.J. Wangsness and J.W. Garrett. 1998. Water quality in the Apalachicola-Chattahoochee-Flint River basin, Georgia, Alabama, and Florida, 1992-95. U.S. Geological Survey Circular 1164. 38 pages.
- Fry, B. and S. C. Wainwright. 1991. Diatom Sources of C-rich carbon in marine food webs. *Mar. Ecol. Prog. Ser.* 76: 149-157.
- Fulmer, J.M. 1997. Nutrient enrichment and nutrient input to Apalachicola Bay, Florida. MS Thesis, Florida State University. Tallahassee, FL. 58 pages.
- Futch, C.R. 1983. Oyster reef construction and relaying program. Pages 34-38 in S. Andree, ed. Apalachicola Oyster Industry: Conference Proceedings. Fla. Sea Grant Rep. 57.



- Galtsoff, P.S. 1964. The American oyster: *Crassostrea virginica* Gmelin. U.S. Fish and Wildlife Service. Fisheries Bulletin 64:1-480.
- Gatewood, S.E. and B.J. Hartman. 1977. The natural systems and hunting and fishing resources of northwest Florida. Florida Game and Fresh Water Fish Commission. 144 pp.
- Gebert, W.A., D.J. Graczyk and W.R. Krug. 1987. Average annual runoff in the United States, 1951-80. U.S. Geological Survey Hydrologic Investigations Atlas HA-710, scale 1:750,000. 1 sheet.
- Gholson, A., Jr. 1985. Vegetation analysis for the Apalachicola River maintenance dredging disposal site evaluation study. Report to COE, Mobile District. 188 pp.
- Gilbert, C.R. (ed.). 1992. Rare and endangered biota of Florida, Vol. 2, Fishes. University Press of Florida. Gainesville, FL. 247 pp.
- Gilbert, K.M., J.D. Tobe, R.W. Cantrell, M.E. Sweeley, and J.R. Cooper. 1995. The Florida Wetlands Delineation Manual. Florida Department of Environmental Protection, Florida Department of Environmental Regulation (in cooperation with the Florida Water Management Districts), Tallahassee, FL.
- Gilbes, C.B., C. Thomas, J.J. Walsh and F.E. Muller-Karger. 1996. An episodic chlorophyll plume on the West Florida Shelf. *Continental Shelf Research* 16 (9):1201-1224.
- Glasgow, L.L. and R.E. Noble. 1971. The importance of bottomland hardwoods to wildlife. Pages 30-34 in Proc. Symp. On Southeastern Hardwoods. USDA, Forest Service. 102 pp.
- Godfrey, P.J. and M.M. Godfrey. 1976. Barrier island ecology of Cape Lookout National Seashore and vicinity, North Carolina. National Park Service. Scientific Monograph Series No. 9.
- Gore, J.A. 1987. Black skimmer nesting on roofs in northwestern Florida. *Florida Field Naturalist* 15: 77-79.
- Gore, J.A. 1991. Distribution and abundance of nesting least terns and black skimmers in northwest Florida. *Florida Field Naturalist* 19(3): 65-72.
- Gore, J.A. 1998. Personal communication. Florida Game and Fresh Water Fish Commission. Panama City, Florida.
- Gore, J.A. and M.J. Kinnison. 1991. Hatching success in roof and ground colonies of least terns. *Condor* 93: 759-762.
- Gorsline, D.S. 1963. Oceanography of Apalachicola Bay, Florida. Pages 145-176 in *Essays in Marine Geology in honor of K.O. Emory, T. Clements*, ed. Univ Southern California Press. Los Angeles, CA
- Gottholm, B.W. and A. Robertson. 1996. Contaminant levels measured at NOAA's National Estuarine Research Reserves. National Status and Trends Program, NOAA. 27 pages.
- Grobbelaar, J.U. 1985. Phytoplankton productivity in turbid water. *J. Plankton Res.* 7:653-663.
- Gulf States Marine Fisheries Commission. 1989. Location and identification of thermal refuges for striped bass on the Apalachicola river, Florida. GSMFC Special Report No. 7-WB. 20p
- Hackney, C.R., and A. Dicharry. 1988. Seafood-borne bacterial pathogens of marine origin. *Food Technology*, March 1988, pp 104-109.
- Haig, S.M. and J.H. Plissner. 1993. Distribution and abundance of piping plovers: results and implications of the 1991 international census. *Condor* 95: 145-156.
- Hall, E.R. and K.R. Kelson. 1959. The mammals of North America. Zool. Ronald Press Co., N.Y. 1083 pp.
- Harlin, M.M. 1980. Seagrass epiphytes. pp. 117-152 in R. Phillips and C. P. McRoy, (eds). *Handbook of seagrass biology. An ecosystem perspective*. Garland STPM Press. New York.
- Harper, R.M. 1911. The riverbank vegetation of the lower Apalachicola and a new principle illustrated thereby. *Torreyia* 11:225-234.
- Harper, R.M. 1914. Geography and vegetation of northern Florida. *Fla. Geol. Surv. Ann. Rep.* 6:163-437.
- Harris, L.D. and J. Gosselink. 1986. Cumulative impacts of bottomland hardwood conversion on wildlife, hydrology, and water quality. Unpubl. Rpt.
- Harris, L.D. and P.J. Skoog. 1980. Some wildlife habitat-forestry relations in the Southeastern Coastal Plain. 29th Annual Forest Symposium Proceedings. Pp. 103-119.
- Harvey, D.M. 2001. Relative diversity of benthic nitrogen fixing bacteria in Apalachicola Bay, Florida. MS Thesis, Department of Oceanography, Florida State University. Tallahassee, FL. 100pp.
- Hayman, P., Marchant, J., and T. Prater. 1986. *Shorebirds: An Identification Guide*. Houghton Mifflin Co. 412 pp.
- Heard, R. 1982. Guide to common tidal marsh invertebrates of the Northeastern Gulf of Mexico. Mississippi Alabama Sea Grant Consort. MASGP 79-004. 82 pp.
- Heard, W.H. 1977. Freshwater mollusca of the Apalachicola Drainage. Pages 20-21 in R.J. Livingston and E.A. Joyce, Jr., eds. *Proceedings of the Conference on the Apalachicola Drainage System*. Florida Marine Research Publications No. 26. 177 pp.

- Hemming, J. M., M.S. Brim and R.B. Jarvis. 2002. Survey of dioxin and furan compounds in sediments of Florida Panhandle bay systems. Panama City, FL: U.S. Fish and Wildlife Service.
- Hendrickson, J.C. 1997. Coastal wetland response to rising sea-level: quantification of short- and long-term accretion and subsidence, northeastern gulf of Mexico. MS thesis, Florida State University, Tallahassee, FL. USA.
- Henefield, S.M. and N.M. White. 1986. Cultural Resources Assessment of the Lower Apalachicola River Environmentally Endangered Lands Tract, Franklin and Gulf Counties, Florida, Report to the Florida Department of State.
- Henry, V. G., Phillips, M. K., Waddell, W., and T. E. Lewis. 1995. Protocol for Island Propagation Projects. U.S. Fish and Wildlife Service. Atlanta, Georgia. 50 pp.
- Hill, M.J., E.A. Long and R.W. Rousseau. 1990. Apalachicola River watershed investigations, Study I: General fisheries and aquatic habitat survey. Study II: Fisheries Survey. 1985-1990 Completion Report. Fl. Game Freshwater Fish Comm. Tallahassee, Fl. 74 pp.
- Hoehn, T.S. 1998. Rare and imperiled fish species of Florida: A watershed perspective. Office of Environmental Services, Florida Game and Fresh Water Fish Commission, Tallahassee.
- Holder, D.R. 1971. Benthos studies in warm water streams. Statewide Fisheries Investigation Prog. Rep. Project F-21-2, Georgia Game and Fresh Water Fish Commission. Dept. of Natural Resources, Atlanta.
- Holder, D.R., L. McSwain, W.D. Hill, W. King, and C.S. Sweet. 1970. Population studies of streams. Statewide Fisheries Investigation Annual Prog. Rep. Georgia Game and Fresh Water Fish Commission, Georgia Department of Natural Resources, Atlanta. Rep. F-21-2 Study XVI.
- Holt, S.A., C.L. Kitting, and C.R. Arnold. 1983. Distribution of young red drums among different sea-grass meadows. Trans. Am. Fish. Soc. 112: 267-271.
- Hood, M.A., Ness, G.E., Rodrick, G.E., and Blake, N.J., 1983, Distribution of *Vibrio cholerae* in two Florida estuaries. Microbial Ecology, Vol. 9:65-75.
- Hood, M.A., Ness, G.E., and Rodrick, G.E., 1981, Isolation of *Vibrio cholerae* serotype 01 from the eastern oyster, *Crassostrea virginica*. Applied and Environmental Microbiology, Vol. 41, no.2, pp 559-560.
- Huang, W., and W.K. Jones. 1997. Three-dimensional modeling of circulation and salinity for the low river flow season in Apalachicola Bay, FL. Northwest Florida Water Management District, Water Resources Special Report 97-1. 120 pages.
- Huang, W., W.K. Jones and T.S. Wu. 2002a. Modeling wind effects on sub-tidal salinity in Apalachicola Bay, Florida. Estuarine, Coastal and Shelf Science 55:33-46.
- Huang, W. and M. Spaulding. 2002. Modeling residence-time response to freshwater input in Apalachicola Bay, Florida, USA. Hydrological Processes 16:3051-3064.
- Huang, W., H. Sun, S. Nnaji and W.K. Jones. 2002b. Tidal hydrodynamics in a multiple-inlet estuary: Apalachicola Bay, Florida. Journal of Coastal Research 18:674-684.
- Hubbell, T.H., A.M. Laessle, J.C. Dickinson. 1956. The Flint-Chattahoochee Apalachicola region and its environments. Bulletin of the Florida State Museum, Vol. 1, No. 1:1-72.
- Huffman, J.M., W.J. Platt, H. Grissino-Mayer and C.J. Boyce. 2004. Fire history of a barrier island slash pine (*Pinus elliotii*) savanna. Natural Areas Journal 24:258-268.
- Huscher, H.A. 1964. The Archaic of the Walter F. George Reservoir Area. Southeastern Archaeological Conference Bulletin. 1:36-41.
- Huscher, H.A. 1971. Two Mississippi Mound Sites in Quitman County, Georgia. Southeastern Archaeological Conference, Newsletter 10(2):35-38.
- Ingle, R.M. and C.E. Dawson, Jr. 1952. Growth of the American oyster *Crassostrea virginica* in Florida waters. Bull. Mar. Sci. Gulf and Caribb. 2:393-404.
- Ingle, R.M. and C.E Dawson, Jr. 1953. A survey of Apalachicola Bay, Florida. Fl. St. Bd. Conserv., Technical Series 10:1-38.
- Intergovernmental Panel on Climate Change. 2007. Climate change 2007. Synthesis report (L. Erntein, P. Bosch, O. Canziani, C. Zhenlin, R. Christ, O. Davidson, and W. Hare et al., Core Writing Team). Geneva, Switzerland.
- Iocco, L.E., W. Stevenson and R.J. Diaz. 2002. Apalachicola Bay benthic mapping project: Preliminary Data Report. NOAA Coastal Services Center. 60 pp.
- Irwin, K. J. 1999. *Eleutherodactylus planirostris* (greenhouse frog). Herpetological Review 30:106.
- Isphording, W.C. 1985. Sedimentological Investigation of the Apalachicola Florida Estuarine System. U.S. Army Corps of Engineers, Mobile District. 99 pp.
- Iverson, R. L., B. Mortazavi, Huang W. and F. Graham Lewis, III. 1997. Estuarine phytoplankton production related to riverine nitrogen input and fill time. Chapter 4 in the Draft Final Report to the ACF/ACT Comprehensive Study. Northwest Florida Water Management District, Havana, Florida.
- Jenkins, L.G. 1991. Biology of Alabama shad and skipjack herring in Gulf of Mexico riverine systems. Progress Report in Annual Report 1991 U.S. Fish and Wildlife Service Panama City, Fla.

- Jin, K.R., and D.C. Raney. 1991. Horizontal salinity gradient effects in Apalachicola Bay. *Journal of Waterway, Port, Coastal and Ocean Engineering*. American Society of Civil Engineers 117: 451-470.
- Jones, B.C. 1973. A semi-subterranean structure at Mission San Joseph De Ocuja, Jefferson County, Florida. *Bureau of Historic Sites and Properties Bulletin No. 3*.
- Jones, W.K., B. Galperin, T.S. Wu and R.H. Weisberg. 1994. Preliminary circulation simulations in Apalachicola Bay, Florida. Northwest Florida Water Management District, Water Resources Special Report 94-2.
- Jordan, C.L. 1973. The physical environment: Climate. Pages IIA-1- IIA-22 in *A Summary of Knowledge of the Eastern Gulf of Mexico*. State University System of Florida, Institute of Oceanography, St. Petersburg, FL.
- Jordan, C.L. 1984. Florida's weather and climate: Implications for water. Pages 18-35 in E.A. Fernald and D.J. Patton, eds. *Water Resources Atlas of Florida*. Florida State University Foundation, Tallahassee, FL 291 pp.
- Joseph, E.G. 1973. Analysis of a nursery ground. Pages 118-121 in A.L. Pacheco, ed. *Proceedings of a Workshop on Egg, Larval, and Juvenile States of Fish in Atlantic Coast Estuaries*. Mid Atlantic Coastal Fish Center. Tech. Publ. No. 1.
- Kelly, A.R. 1950. Survey density of North American amphibians and reptiles. *Syst. Zool.* 20:127-137.
- Kenworthy, W.J. and D.E. Haunert (eds.). 1990. Results and recommendations of a workshop convened to examine the capability of water quality criteria, standards and monitoring programs to protect seagrasses from deteriorating water transparency. *Proceedings from the South Florida Water Management District Indian River SWIM Program*. 107 pp.
- Kiester, A.R. 1971. Species density of North American amphibians and reptiles. *Systematic Zoology* 20(2):127-137.
- Kilgore, K.J. and J.A. Baker. 1996. Patterns of larval fish abundance in a bottomland hardwood wetland. *Wetlands* Vol.16, No.3:288-295.
- Kofoed, J.W. 1961. Sedimentary environments in Apalachicola Bay and vicinity, Florida. M.S. Thesis, Florida State University, Tallahassee, FL 78 pages.
- Kotliar, N.B. and J. Burger. 1986. Colony site selection and abandonment by least terns *Sterna antillarum* in New Jersey, USA. *Biological Conservation* 37:1-21.
- Kunneke, T. and T.F. Palik. 1984. Northwestern Florida ecological characterization: an ecological atlas. Map narratives. U. S. Fish. Wildl. Serv., FWS/OBS-82/47.1. 323 pp.
- Kurjack, E.B. 1975. In *Archaeological Salvage in the Walter F. George Basin of the Chattahoochee River in Alabama*. DeJarnette, D.L. editor. University of Alabama Press.
- Kurz, H. 1938. A physiographic study of the tree associations of the Apalachicola River. *Fla. Acad. Sci.* 3:78-90.
- Kurz, H. 1942. Florida dunes and scrub, vegetation and geology. *Florida Geol. Survey Geol. Bull.* 23:1-154.
- Kutzbach, J.E., R. Gallimore, S. Harrison, P. Behling, R. Selin and F. Laarif. 1998. Climate and biome simulations for the past 21,000 years. *Quaternary Science Reviews*, Vol. 17: 473-506.
- Kwader, T. and W. Schmidt. 1978. Top of the Florida Aquifer of northwest Florida. *Publications of the Florida Geological Survey, Map Series 86*. Tallahassee, FL.
- Ladner, J., R. Hoenstine, D. Harrington, C. Trimble, Z. Chen and A. Dabous. 1999. Coastal wetlands study: Seventh annual report: Big Bend-Atlantic Coast-Apalachicola River Basin, FL. Unpublished report, Florida Geological Survey. 9 pp.
- Laessle, A.M. 1958. The origin and successional relationship of sandhill vegetation and sand pine scrub. *Ecol. Monogr.* 28:361-387.
- Lambou, V.W. 1962. Comments on proposed dam on Old River, Batchelor, Louisiana. Louisiana Wildlife and Fisheries Commission. 37 pp.
- Lamonte, K. M., N. J. Douglass, J. G. Himes, and G. E. Wallace. 2006. Status and Distribution of the Snowy Plover in Florida. 2002 study final report. Florida Fish and Wildlife Conservation Commission, Tallahassee, Florida, 20 pp. + 15 figs. + 14 tables + 7 appendices.
- Landers, J. L. and R. L. Crawford. 1995. NB66: A study of habitat relations of nongame birds and mammals in series of oldfield pinewoods following fire exclusion. *Fla. Game and Fresh Water Fish Comm. Nongame Wildl. Program Project Rep.* 39pp + iv. Tallahassee, FL.
- Larson, J.S., M.S. Bedinger, C.F. Bryan, S. Brown, R.T. Huffman, E.L. Miller, D.G. Rhodes and B.A. Touchet. 1981. Transition from wetlands to uplands in southeastern bottomland hardwood forests. Pages 225-273 in J.R. Clark and J. Benforado, eds. *Wetlands of bottomland hardwood forests. Proceedings of a workshop*. Lake Lanier, Georgia, June 1-5, 1980. *Developments in Agricultural and Managed-forest Ecology, Vol II*. Elsevier Scientific Publ. Co. New York.
- Lauenstein, G.G. and A.Y. Cantillo. 2002. Contaminant trends in U.S. National Estuarine Research Reserves. NOAA NOS Technical Memorandum NCCOS 156. Silver Spring, MD. 186 pages.
- Laughlin, R.A. 1976. Field and laboratory avoidance reactions of blue crabs (*Callinectes sapidus*) to stormwater runoff. MS. Thesis. Florida State University. Tallahassee, FL. 102 pp.
- Laughlin, R.A. 1979. Trophic ecology and population distribution of the blue crab *Callinectes sapidus* Rathbun in the Apalachicola estuary (North Florida, USA). PhD. Dissertation, Florida State University. Tallahassee, FL. 143 pp.



- Laurence, G.C., Yerger, R.W. 1966. Life history studies of the Alabama shad , *Alosa alabamae*, in the Apalachicola River, Florida. Proceedings of the twentieth annual conference. Southeastern Association of Game and Fish Commissioners.
- Leitman, H.M. 1978. Correlation of Apalachicola River floodplain tree communities with water levels, elevation, and soils. M.S. Thesis, Florida State University, Tallahassee, Florida. 56 pp.
- Leitman, H.M. 1983. Forest map and hydrologic conditions, Apalachicola River flood plain, Florida. USGS Hydrologic Investigations Atlas HA672, Tallahassee, Florida.
- Leitman, H.M., J.E. Sohm, and M.A. Franklin. 1983. Wetland hydrology and tree distribution of the Apalachicola River flood plain, Florida. USGS Water Supply Paper 2196 A.
- Leitman, S. 1984. Apalachicola River dredged material disposal plan. Florida Dept. of Environ Regulation. Tallahassee, Fl. 256 pp.
- Leitman, S. 1985. Wetland resources of the Apalachicola basin. Unpubl. Rept. 33 pp.
- Leitman, S., K. Brady, L. Edmiston, T. McAlpin, and V. Tauxe. 1986. Apalachicola Bay dredge material disposal plan. Florida Department of Environmental Regulation. 280 pp.
- Lennartz, M.R., Geissler, P.H., Harlow, R.F., Long, R.C., Chitwood, K.M. and J.A. Jackson. 1983. Status of the red-cockaded woodpecker on federal lands in the South. pp. 7-12 in Redcockaded Woodpecker Symp. II Proc. (D. A. Wood, ed.), Florida Game and Fresh Water Fish Commission, U.S. Fish and Wildlife Service, and U.S. Forest Service.
- Lewis, F.G.,III, G.C. Woodsum, R.J. Livingston, X. Niu. 1997. The effects of river flow and other environmental factors on the abundance of organisms in Apalachicola Bay, Florida. In F.G. Lewis, III. (ed) Relationships of river flow and other environmental characteristics with the structure and function of biological communities in Apalachicola Bay, Florida. Draft final report to the ACF/ACT comprehensive study.
- Lewis, J.C., L.B. Flynn, R.L. Marchinton, S.M. Shea, and E.M. Marchinton. 1990. Part I: Introduction, study area description, and literature review. Pages 1-12 in Ecology of sambar deer on St. Vincent National Wildlife Refuge, Florida. Bulletin Number 25, Tall Timbers Research Station, Tallahassee, Florida.
- Lewis, T. 1986. St. George Island Sewerage Study: Apalachicola Bay Area: Area of Critical State Concern. Florida Dept. of Community Affairs. Tallahassee, FL. 76 pages.
- Lewis, T. E., G. O. Bailey, and H. L. Edmiston. 1994. Effects of predator control on sea turtle nest success on the barrier islands of Apalachicola Bay. pp. 242-243 in K. A. Bjorndal, A. B. Bolten, D. A. Johnson, and P. J. Eliaz, (eds). Proceedings of the 14th annual symposium on sea turtle biology and conservation. National Oceanic and Atmospheric Administration Technical Memorandum NMFS-SEFSC-351.
- Light, H.M. 1995. Hydrologic conditions, habitat characteristics, and occurrences of fishes in the Apalachicola River floodplain, Florida. Second annual report of progress, October 1993-September 1994. U.S. Geological Survey Open-File Report 95-167. 33 pp.
- Light, H.M. and M.R. Darst. 1997. Appendix B- Habitat characterization data for floodplain sites on the upper, middle, and non-tidal lower Apalachicola River, Florida. In Davis, M.M., Tri-state comprehensive study riparian wetland element: Report I: Relationships between flow and habitat value in the Alabama-Coosa-Tallapoosa/Apalachicola-Chattahoochee-Flint (ACT/ACF) River basins. U.S. Army Engineer Waterways Experiment Station, Vicksburg, Ms. Miscellaneous paper EL-97-2:B1-B24.
- Light, H.M., M.R. Darst and J.W. Grubbs. 1993. Hydrologic conditions in floodplain habitats of the Apalachicola River, Florida. Annual report of progress, October 1992-September 1993. U.S. Geological Survey Open-File Report 93-363. 48 pp.
- Light, H.M., M.R. Darst, and J.W. Grubbs. 1998. Aquatic habitats in relation to river flow in the Apalachicola River floodplain, Florida. U.S. Geological Survey Professional Paper 1594. 77 pp.
- Light, H.M., K.R. Vincent, M.R. Darst and F.D. Price. 2006. Water level decline in the Apalachicola River, Florida, from 1954 to 2004, and effects on floodplain habitats. USGS Scientific Investigations Report 2006-5173, 83 pp. plus CD.
- Livingston, R.J. 1975. Resource management and estuarine function with application to the Apalachicola drainage system. In: Estuarine Pollution Control and Assessment - Proceedings of a Conference. Vol. 1. 17 pp.
- Livingston, R.J. 1976. Diurnal and seasonal fluctuations of organisms in a north Florida estuary. Estuarine Coastal Mar. Sci. 4: 373-400.
- Livingston, R.J. 1976. Environmental considerations and the management of barrier islands: St. George Island and the Apalachicola Bay system. Pages 86-102 in Barrier Islands and Beaches, Tech. Proc. The Conservation Foundation, Wash. D.C.
- Livingston, R.J. 1977. Effects of clearcutting and upland deforestation activities on water quality and the biota of the Apalachicola estuary. Prelim. Report Florida Sea Grant.
- Livingston, R.J. 1977. Time as a factor in biomonitoring estuarine systems with reference to benthic macrophytes and epibenthic fishes and invertebrates. pp. 212-234 in Biological Monitoring of Water and Effluent Quality, ASTM STP 607, John Cairns, Jr., K.L. Dickson, and G.F. Westlake, eds., American Society for Testing and Materials.

- Livingston, R.J. 1978. Short- and long-term effects of forestry operations on water quality and the biota of the Apalachicola estuary (North Florida, USA). Florida Sea Grant Technical Paper No. 5, May 1978. Gainesville, Fl. 409 pp.
- Livingston, R.J. 1980. Critical habitat assessment of the Apalachicola estuary and associated coastal areas. Coastal Plains Regional Comm. Unpubl. Report.
- Livingston, R.J. 1981. River derived input of detritus into the Apalachicola estuary. Pages 320-329 in Proc. of National Symposium on Freshwater Inflow to Estuaries. FWS/DBS 81/04. Vol. 1.
- Livingston, R.J. 1983. Identification and analysis of sources of pollution in the Apalachicola River and Bay system. Florida Department of Natural Resources, Franklin County Commission, and Florida State University. Unpublished Report.
- Livingston, R.J. 1983. Resource atlas of the Apalachicola estuary. Florida Sea Grant Publ. 64 pp.
- Livingston, R.J. 1984a. The ecology of the Apalachicola Bay system: an estuarine profile. National Coastal Ecosystems Team, USFWS. FWS/OBS-8205. 148 pp.
- Livingston, R.J. 1984b. The relationship of physical factors and biological response in coastal seagrass meadows. *Estuaries* 7(4A): 377-390.
- Livingston, R.J. 1984c. Trophic response of fishes to habitat variability in coastal seagrass systems. *Ecology* 65(4): 1258-1275.
- Livingston, R. J. 1987. Historic trends of human impacts on seagrass meadows in Florida. pp. 139-151 in Proceedings of the Symposium on Subtropical-Tropical Seagrasses of the Southeastern United States.
- Michael J. Durako, Ronald C. Phillips, and Roy R. Lewis, III (eds.). Fla. Mar. Res. Publ. No. 42. 209 pp.
- Livingston, R.J. 1997. Trophic response of estuarine fishes to longterm changes of river runoff. *Bulletin of Marine Science* 60: 984-1004.
- Livingston, R.J., A.F. Clewell, R.L. Iverson, D.B. Means, and H.M. Stevenson. 1975. St. George Island: biota, ecology, and management program for controlled development. In R.J. Livingston and N.P. Thompson, eds. Field and laboratory studies concerning the effects of various pollutants on estuarine and coastal organisms with application to the management of the Apalachicola Bay system. Unpubl. Report Florida Sea Grant College.
- Livingston, R. J., C.R. Cripe, R.A. Laughlin and F.G. Lewis III. 1976. Avoidance responses of estuarine organisms to storm water runoff and pulp mill effluents. *Estuarine Processes*. Vol. 1 pp 313-331.
- Livingston, R.J. and J.L. Duncan. 1979. Climatological control of a North Florida coastal system and impacts due to upland forestry management. Pages 339-381 in R.J. Livingston, ed. *Ecological Processes in Coastal and Marine Systems*. Plenum Press. New York.
- Livingston, R.J., R.L. Iverson, R.H. Estabrook, V.E. Keys, and J. Taylor, Jr. 1974. Major features of the Apalachicola Bay system: physiography, biota, and resource management. *Fla. Scient.* 37(4):245-271.
- Livingston, R.J., R.L. Iverson, and D.C. White. 1976. Energy relationships and the productivity of Apalachicola Bay. Final Res. Rpt. to Florida Sea Grant College. 437 pp.
- Livingston, R.J. and E.J. Joyce, Jr. 1977. Proceedings of the Conference on the Apalachicola Drainage System. Florida Marine Research Publications No. 26. 177 pp.
- Livingston R. J., Kobylinsky, F.G. Lewis, III and P. F. Sheridan. 1976. Long term fluctuations of epibenthic fish and invertebrate populations in Apalachicola Bay, Florida. *Fish. Bull.*, U. S. 74: 311-321.
- Livingston, R.J., S.E. McGlynn, and X. Niu. 1998. Factors controlling seagrass growth in a gulf coastal system: Water and sediment quality and light. *Aquatic Botany* 60: 135-159.
- Livingston, R.J., P.F. Sheridan, B.G. McLane, F.G. Lewis, III and G.G. Kobylinski. 1977. The biota of the Apalachicola Bay system: functional relationships. In R. J. Livingston and E. A. Joyce, Jr., (eds), Proceedings of the Conference on the Apalachicola Drainage System, 23-24 April 1976, Gainesville, Florida, p. 75-100. Fla. Dept. Nat. Res. Mar. Res. Lab. Mar. Res. Publ. 26.
- Livingston R.J. and N.P. Thompson. 1975. Field and laboratory studies concerning the effects of various pollutants on estuarine and coastal organisms with application to the management of the Apalachicola Bay system. Florida Sea Grant Program. Unpubl. Rpt.
- Livingston, R.J., X Niu., F.G. Lewis III and G.C. Woodsum. 1997. Freshwater input to a Gulf estuary: Long-term control of trophic organization. *Ecological Applications* 7(1):277-299.
- Livingston, R.J., R.L. Howell, X. Niu, F.G. Lewis and G.C. Woodsum. 1999. Recovery of oyster reefs in a Gulf estuary following disturbance by two hurricanes. *Bull. Mar. Sci.* 64:465-483.
- Loftin, R. W. 2007. Florida's Bird Breeding Atlas: Sooty Tern *Sterna Fuscata*. Florida Fish and Wildlife Conservation Commission. [www.myfwc.com/bba/SOTE.htm](http://www.myfwc.com/bba/SOTE.htm).
- Long, E.R., G.M. Sloane, R.S. Carr, K.J. Scott, G.B. Thursby, E. Crecelius, C. Peven, H.L. Windom, R.D. Smith and B. Loganathon. 1997. Magnitude and extent of sediment toxicity in four bays of the Florida Panhandle: Pensacola, Choctawhatchee, St. Andrew, and Apalachicola. U.S. Department of Commerce, NOAA Technical Memorandum NOS ORCA 117. 219 pages.



- Maehr, D.S. and J.R. Brady. 1982. Florida black bear-beekeeper conflict: 1981 beekeeper survey. *Amer. Bee J.* 122: 372-375.
- Maehr, D. S. 1984a. Black Bear Depredation on Bee Yards in Florida. Pp. 133-135 in: D.J. Decker, ed. *Proc. First East. Wildl. Damage Control Conf.* Ithaca, New York.
- Maehr, D. S. 1984b. Distribution of Black Bears in Eastern North America. *Proc. East. Workshop Black Bear Manage. Res.* 7: 74.
- Maehr, D. S. and J. R. Brady. 1984. Food Habits of Florida Black Bears. *J. Wildl. Manage.* 48(1): 230-235.
- Maehr, D. S. and J. R. Brady. 1986. Food Habits of Bobcats in Florida. *J. Mamm.* 67(1): 133-138.
- Maehr, D. S. and J. B. Wooding. 1992. Florida Black Bear. Pp. 265-275 in *Rare and Endangered Biota of Florida, Vol. 1 Mammals.*
- Mahoney, B.M.S. and R.J. Livingston. 1982. Seasonal fluctuations of benthic macrofauna in the Apalachicola estuary, Florida, USA: the role of predation. *Mar.Biol.* 69:207-213.
- Marchman, G L. and N. Wooten. 2000. An analysis of stormwater inputs to the Apalachicola Bay. Northwest Florida Water Management District, Water Resources Special Report 00-1. 112 pages.
- Marcus, N. H. 1991. Planktonic copepods in a sub-tropical estuary: seasonal patterns in the abundance of adults, copepodites, nauplii, and eggs in the sea bed. *Biol. Bull.* 181:269-274.
- Maristany, A. 1981. Preliminary assessment of the effects of the Jim Woodruff Dam on the stream flow distribution of the Apalachicola River. Northwest Florida Water Management District Technical File Report 81-7.
- Marshall, Nelson. 1956. Chlorophyll A in the phytoplankton in coastal waters of the eastern Gulf of Mexico. *Journal of Marine Research* 15(1):14-32.
- Mattraw, H.C., Jr. and J.F. Elder. 1980. Nutrient yield of the Apalachicola River flood plain, Florida: river quality assessment plan. *USGS Water Resources Invest.* 80-51.
- Mattraw, H.C., Jr. and J.F. Elder. 1983. Nutrient and detritus transport in the Apalachicola River, Florida. *USGS Water Supply Paper* 2196 C.
- Mattraw, H.C., Jr. and J.F. Elder. 1984. Nutrient and detritus transport in the Apalachicola River, Florida. *USGS Water Supply Paper* 2196 C. 107 pp.
- McAtee, W.L. 1913. A list of plants collected on St. Vincent Island. *Florida Proc. Biol. Soc. Wash.* 26:39-52.
- McDaniel, J. C. 1963. Otter population study. pp. 163-168 in *Proceedings of the 17th Annual Conference of the Southeastern Association of Game and Fish Commissioners, 1963.* Hot Springs, Arkansas.
- McDiarmid, R. 1978. Amphibians and reptiles. Vol. 3 of the *Rare and Endangered Biota of Florida.* University Presses of Florida, Gainesville, F1.
- McLane, B.G. 1980. An investigation of the infauna of East Bay - Apalachicola Bay. MS Thesis, Florida State University. Tallahassee, FL. 84 pages.
- McNulty, J.K., W.N. Lindall and J.E. Sykes. 1972. Cooperative Gulf of Mexico Estuarine Inventory and study, Florida: Phase I, Area description. *NOAA Technical Report NMFS Circ.*-368.
- McRoy, C.P. and C. McMillan. 1977. Production ecology and physiology of seagrasses. pp. 53-88 in C.P. McRoy, and C. Helfferich, eds. *Seagrass ecosystems. A scientific perspective.* Marcel Dekker Inc. New York.
- Means, D.B. 1976. Survey of the status of amphibians and reptiles of the Apalachicola National Forest, Florida. *USDA Forest Service.* 58 pp. Unpub. Rpt.
- Means, D.B. 1977. Aspects of the significance to terrestrial vertebrates of the Apalachicola River Drainage Basin, Florida. Pages 37-67 in R.J. Livingston and E.A. Joyce, Jr., eds. *Proceedings of the Conference on the Apalachicola Drainage System.* Florida Marine Research Publications No. 26. 177pp.
- Means, D.B. and P.E. Moler. 1979. The pine barrens treefrog: Fire, seepage bogs, and management implications. Pages 77-83 in R.R. Odum and L. Landers, eds. *Proceedings of the Rare and Endangered Wildlife Symposium.* Georgia Dept. Nat. Res., Game and Fish Div., Tech. Bull. WL 4. 184 pp.
- Meeter, D.A. and R.J. Livingston. 1978. Statistical methods applied to a four-year multivariate study of a Florida estuarine system. In J. Cairns, Jr., K. Dickson, and R.J. Livingston, eds., *Biological data in water pollution assessment: quantitative and statistical analyses.* *Am. Soc. Test. Mater. Spec. Tech. Publ.* 652.
- Meeter, D.A., R.J. Livingston, and G.C. Woodsum. 1979. Longterm climatological cycles and population changes in a river dominated estuarine system. Pages 315-380 in R.J. Livingston, ed. *Ecological Processes in Coastal and Marine Systems.* Plenum Press. New York.
- Mehta, A.J. and T.A. Zeh. 1980. Influence of a small inlet on a large bay. *Coastal Engineering* 4:157-176.
- Menzel, R.W. 1983. Genetics and the potentials for oyster production in Apalachicola Bay. Pages 22-26 in S. Andree, ed. *Apalachicola Oyster Industry: Conf. Proc. Fla. Sea Grant Rpt. No. SGR 57*
- Menzel, R.W. and E.W. Cake, Jr. 1969. Identification and analysis of the biological value of Apalachicola Bay, Florida. Rpt. to FWPCA, Contract No. 14-12-191.



- Menzel, R.W., N.C. Hulings, and R.R. Hathaway. 1966. Oyster abundance in Apalachicola Bay, Florida in relation to biotic associations influenced by salinity and other factors. *Gulf Resource Report* 2(2):73-96.
- Mesing, C., Land, R., Spelman, M., Ager, L., Long, E., Hill, M., Rousseau, B. 1991. Apalachicola River studies investigations completion report 1985-1990. Florida Game and Fresh Water Fish Commission. 73 pp.
- Meyer, D., M. Landrum, and R. Ingle. 1981. Notes on the blue crab fishery in the Apalachicola, Florida, estuary. Fl. Dept. of Natural Resources, Unpublished Draft Report.
- Meylan, A., B. Schroeder, and A. Mosier. 1995. Sea turtle nesting activity in the State of Florida 1979-1992. *Fla. Mar. Res. Publ. No. 52*. 51pp.
- Milanich, J.T. and C.H. Fairbanks. 1980. *Florida Archaeology*. Academic Press, Inc.
- Miles, R.M. 1951. An analysis of the "trash fish" of shrimp trawling operating in Apalachicola bay and the adjacent Gulf of Mexico. Masters Thesis, Florida St. Univ., Tallahassee, FL. 46 pp.
- Miller, J.J., J.W. Griffin, M.K. Fryman, and F.W. Stapor. 1980. Archeological and historical survey of St. Vincent National Wildlife Refuge, Florida. Prepared under contract with Interagency Archeological Services Atlanta for USFWS by Cultural Resource Management, Inc. Tallahassee, Florida. 225 pp.
- Mills, J.G. Jr. 1972. Biology of the Alabama shad in northwest Florida. Technical Series No. 68. State of Florida Department of Natural Resources. 24pp.
- Moffett, A.W. 1961. Movements and growth of spotted seatrout, *Cynoscion nebulosus* (Cuvier), in west Florida. State of Florida Board of Conservation Technical Series No. 36:35 pp.
- Monbet, Y. 1992. Control of phytoplankton biomass in estuaries: a comparative analysis of microtidal and macrotidal estuaries. *Estuaries* 15:563-571.
- Moncreiff, C.A. and B.K. Sullivan. 2001. Trophic importance of epiphytic algae in subtropical seagrass beds: evidence from multiple stable isotope analyses. *Mar. Ecol. Prog. Ser.* 215:93-106.
- Monk, C.D. 1968. Successional and environmental relationships of the forest vegetation of North Central Florida. *Amer. Midland Natur.* 79:441-457.
- Mooney, C.N. and A.L. Patrick. 1915. Soil survey of Franklin County. Field Operations of the Bureau of Soils.
- Moore, D.R. 1963. Distribution of the Sea Grass, *Thalassia*, in the United States. *Bulletin of Marine Science of the Gulf and Caribbean* 13(2): 329-342.
- Morrison, S.J., King, J.D., Bobbie, R.J., Bechtold, R.E., and D.C. White, D.C., 1977, Evidence for microfloral succession on allochthonous plant litter in Apalachicola Bay, Florida, USA. *Marine Biology*, Vol. 41, pp 229-240.
- Mortazavi, B. 1998. Primary productivity and nitrogen cycling in Apalachicola Bay, FL., USA. PhD Dissertation thesis, Florida State University. Tallahassee, FL.
- Mortazavi, B., R.L. Iverson, and W. Huang. 2001. Dissolved organic nitrogen and nitrate in Apalachicola Bay, Florida, USA: spatial distributions and monthly budgets. *Marine Ecology Progress Series* 214: 79-91.
- Mortazavi, B., R.L. Iverson, W. Huang, F.G. Lewis, and J.M. Caffrey. 2000a. Nitrogen budget of Apalachicola Bay, a bar-built estuary in the northeastern Gulf of Mexico. *Marine Ecology Progress Series* 195: 1-14.
- Mortazavi, B., R.L. Iverson, W.M. Landing, and W. Huang. 2000b. Phosphorus budget of Apalachicola Bay: a river-dominated estuary in the northeastern Gulf of Mexico. *Marine Ecology Progress Series* 198: 33-42.
- Mortazavi, B, R.L. Iverson, W.M. Landing, F.G. Lewis, and W.R. Huang. 2000. Control of phytoplankton production and biomass in a river-dominated estuary: Apalachicola Bay, Florida, USA. *Mar. Ecol. Prog. Ser.* 198:19-31.
- Motes, M.L., Zywno, S.R., Depaola, A., Becker, R.E., and M.W. Presnell. M.W. 1983, Isolation of *Vibrio cholerae* serotype ogawa from a Florida estuary. *Applied and Environmental Microbiology*, Vol. 45, No. 1, pp. 321-322.
- Mullin, K., W. Hoggard, C. Roden, R. Lohofener, C. Rogers and B. Taggart 1991. Cetaceans on the upper continental slope in the north-central Gulf of Mexico. OCS Study/MMS 91-0027. U. S. Dept. of the Interior, Minerals Mgmt. Service, Gulf of Mexico OCS Regional Office, New Orleans, La. 108 pp.
- Murphy, M. D., Taylor, R.G. 1994. Age, growth, and mortality of spotted seatrout in Florida waters. *Transactions of the American Fisheries Society* 123:482-497.
- Murphy, M. D., 1988. Tag/recapture and age validation of red drum in Florida. Final Report to NOAA Florida Marine Fisheries Institute, St. Petersburg, Fl.
- Myers, R.L. 1985. Fire and the dynamic relationship between Florida sandhill and sand pine scrub vegetation. *Bull. Torrey Bot. Club* 112:241-252.
- Myers, V.B. 1977. Nutrient limitation of phytoplankton productivity in North Florida coastal systems: technical considerations, spatial patterns, and wind mixing effects. PhD thesis, Florida State University. Tallahassee, FL.
- Myers, V.B. and R.L. Iverson. 1977. Aspects of nutrient limitation of phytoplankton productivity in the Apalachicola Bay system. Pages 68-74 in R.J. Livingston and E.A. Joyce, Jr., eds. *Proceedings of the Conference on the Apalachicola Drainage System*. Florida Marine Research Publication No. 26. 177 pp.

- National Audubon Society Field Notes. 1995. Ninety-fifth Christmas Bird Count. Vol. 49(4): 537.
- National Audubon Society. 2007. 107th Annual Christmas Bird Count Survey Results - 13 August 2007. [http://cbc.audubon.org/cbccurrent/current\\_table.html](http://cbc.audubon.org/cbccurrent/current_table.html)>
- National Estuarine Research Reserve System. 2007. NERRS Strategic Plan 2005-2010. Estuarine Reserves Division, National Oceanic and Atmospheric Administration. Washington, DC. 16 pp.
- National Marine Fisheries Service. 2007. Fisheries of the United States 2006. U.S. Dept. of Commerce. 105 pages. [http://www.st.nmfs.gov/st1/fus/fus06/03\\_recreational2006.pdf](http://www.st.nmfs.gov/st1/fus/fus06/03_recreational2006.pdf)
- National Oceanic and Atmospheric Administration. 2007. National Estuarine Research Reserve System Strategic Plan 2005-2010. Estuarine Reserves Division, 14pp.
- Neill, W.T. 1951. Notes on the role of crawfishes in the ecology of reptiles, amphibians, and fishes. *Ecology* 32:764-766.
- Odum, E.P. 1969. The strategy of ecosystem development. *Science* 164:262-270.
- Newman, C. 1948. Florida's big game. *Florida Wildlife* 1: 4-5, 18.
- Nicholls, J.L. 1989. Distribution and other Ecological Aspects of Piping Plovers (*Charadrius melodus*) Wintering Along the Atlantic and Gulf Coasts. M. S. Thesis. Auburn University. Auburn, Alabama. 150 pp.
- Niu, X., H.L. Edmiston, and G.O. Bailey. 1998. Time series models for salinity and other environmental factors in the Apalachicola estuarine system. *Estuarine, Coastal and Shelf Science* 46:549-563.
- O'Connor, T. P. 2002. National distribution of chemical concentrations in mussels and oysters in the USA. *Marine Environmental Research* 53:117-143.
- Onuf, C.P. 1994. Seagrasses, dredging and light in Laguna Madre, Texas, USA. *Est. Coast. Shelf Sci.* 39: 75-091.
- Orth, R.J. and J. van Montfrans. 1990. Utilization of Marsh and Seagrass Habitats by Early Stages of *Callinectes sapidus*: A latitudinal perspective. *Bulletin of Marine Science* 46(1): 126-144.
- Oesterling, M.E., and G.L. Evink. 1977. Relationship between Florida's blue crab population and Apalachicola Bay. Pages 101-121 in R.J. Livingston and E.A. Joyce, Jr., eds. *Proceedings of the Conference on the Apalachicola Drainage System*. Fl. Mar. Res. Inst. Publ. No. 26.
- Packard, J. M., and O. F. Wetterqvist. 1986. Evaluation of manatee habitat systems on the northwestern Florida coast. *Coastal Zone Management Journal* 14: 279-310.
- Patriquin, D.G. 1972. The origin of nitrogen and phosphorus for growth of the marine angiosperm *Thalassia testudinum*. *Marine Biology* 15: 35-46.
- Pearce, A.S. and G.W. Wharton. 1938. The oyster "leech", *Stylochus inimicus* Palombi, associated with oysters on the coasts of Florida. *Ecol. Monographs* 8:605-655.
- Pennak, R.W. 1978. *Freshwater invertebrates of the United States*. John Wiley & Sons. N.Y. 803 pp.
- Pennock, J.R., J.N. Boyer, J.A. Herrera-Silveira, R.L. Iverson, T.E. Whittedge, B. Mortazavi, and F.A. Comin. 1999. Nutrient behavior and phytoplankton production in Gulf of Mexico estuaries. In T.S. Bianchi, J.R. Pennock and R.R. Twilley, eds., *Biogeochemistry of Gulf of Mexico Estuaries*. John Wiley and Sons, Inc. New York, NY. Pages 109-162.
- Phillips, R.C. 1980. Role of seagrasses in estuarine systems. Pages 67-96 in *Proc. Gulf of Mexico Coastal Ecosystems Workshop*. Port Aransas. FWS/OBS 80/30.
- Porter, W.B. 1985. The relationship between Apalachicola Bay water quality and septic system installations in the coastal zone, with applications to other estuaries. Department of Natural Resources, Shellfish Environmental Assessment Section. Tallahassee, FL. 61 pages.
- Porter, W.B. and R.L. Thompson. 1986. Preliminary study describing the movement of a conservative tracer in groundwater on St. George Island adjacent to Apalachicola Bay. Florida Department of Natural Resources. Tallahassee, FL. 65 pages.
- Prochaska, F.J. and D. Mulkey. 1983. Apalachicola Bay oyster industry: Some economic considerations. Pages 47-52 in S. Andree, ed. *Apalachicola Oyster Industry: Conference Proceedings*. Fl. Sea Grant Rep. 57.
- Purcell, B.H. 1977. The ecology of epibenthic fauna associated with *Vallisneria americana* beds in a north Florida estuary. MS. Thesis, Department of Oceanography, Florida State University. Tallahassee, FL.
- Putland, J.N. 2005. Ecology of phytoplankton, *Acartia tonsa*, and microzooplankton in Apalachicola Bay, Florida. PhD Dissertation, Florida State University, Department of Oceanography. Tallahassee, FL. 140 pages.
- Putland, J. N., and R. L. Iverson. 2007a. Ecology of *Acartia tonsa* in Apalachicola Bay, Florida, and implications of river water diversion. *Marine Ecology Progress Series* 340:173-187.
- Putland, J. N., and R. L. Iverson. 2007b. Microzooplankton: major herbivores in an estuarine planktonic food web. *Marine Ecology Progress Series* 345:67-73.
- Putland, J. N., and R. L. Iverson. 2007c. Phytoplankton biomass in a subtropical estuary: distribution, size composition, and carbon: chlorophyll ratios. *Estuaries and Coasts* 30 (5):878-885.

- Rains, L. 1993. Apalachicola River and Bay land use and land cover assessment. Northwest Florida Water Management District. Quincy, Fl. 47 Pages.
- Raney, D.C., I. Huang and H. Urgan. 1985. A hydrodynamic and salinity model for Apalachicola Bay, Florida. Bureau of Engineering Research Report No. 339-183, University of Alabama, for the U.S. Army Corps of Engineers, Mobile District.
- Raney, D.C., K. Jin and C. Kuan. 1988. The effects of Sikes Cut on hydrodynamics and salinity of Apalachicola Bay. Bureau of Engineering Research Report No. 372-183, University of Alabama, for the U.S. Army Corps of Engineers, Mobile District.
- Ray, G.L. and R.J. Livingston. 1987. Distribution of oyster larvae in Apalachicola Bay, Florida. NOAA Technical Report Series OCRM/SRD. 64 pp.
- Reed, P.B., Jr. 1988. National list of plant species that occur in wetlands: 1988-Florida: St. Petersburg, Florida National Wetlands Inventory. U.S. Fish and Wildlife Service, 140 pages.
- Reynolds, C. 1991. Evaluation of phase II striped bass stockings. Progress Report in Annual Report 1991 U.S. Fish and Wildlife Service Panama City, Florida.
- Roaza, H.P. 1991. Assessment of the ambient surface water quality in the Apalachicola River basin: Phase I. Northwest Florida Water Management District Water Resources Special Report 91-5.
- Rockwood, C.E. and S. Leitman. 1977. Economic planning for the Apalachicola drainage system. Pages 151-157 in R.J. Livingston and E.A. Joyce, Jr., eds. Proc. of the Conf. on the Apalachicola Drainage System. Fl. Mar. Res. Inst. Publ. No. 26.
- Rodgers, J.A., Jr., and J. Burger. 1981. Concluding remarks: symposium on human disturbance and colonial waterbirds. Colonial Waterbirds 4: 69-70.
- Rooker, J.R. and S.A. Holt. 1997. Utilization of subtropical seagrass meadows by newly settled red drum (*Sciaenops ocellatus*): patterns of distribution and growth. Mar. Ecol. Prog. Ser. 158: 139-149.
- Rooker, J.R., G.J. Holt, and S.A. Holt. 1998. Vulnerability of newly settled red drum (*Sciaenops ocellatus*) to predatory fish: is earlylife survival enhanced by seagrass meadows? Marine Biology 131: 145-151.
- Ryer, C.H., J. van Montfrans, and R.J. Orth. 1990. Utilization of a Seagrass Meadow and Tidal Marsh Creek by Blue Crabs *Callinectes sapidus*. II. Spatial and Temporal Patterns of Molting. Bulletin of Marine Science 46(1): 95-104.
- Safina, C. and J. Burger. 1983. Effects of human disturbance on reproductive success in the black skimmer. Condor 85:164-171.
- Sanger, D.M., M.D. Arendt, Y. Chen, E.L. Wenner and A.F. Holland. 2002. A Synthesis of Water Quality Data: National Estuarine Research Reserve System-wide Monitoring Program (1995-2000). National Estuarine Research Reserve Technical Report Series 2002:3. South Carolina Department of Natural Resources, Marine Resources Division Contribution No. 500. 135pp.
- Sargent, F.J., T.J. Leary, D.W. Crewz, and C.R. Kruer. 1995. Scarring of Florida's seagrasses: assessment and management options. FMRI Tech. Rep. TR-1. Florida Marine Research Institute, St. Petersburg, Florida. 37 p. plus appendices.
- Sasser, L.D., K.L. Monroe, and J.N. Schuster. 1994. Soil survey of Franklin County, Florida. Soil Conservation Service, U.S. Department of Agriculture. 192 pages.
- Schmidly, D. J. 1981. Marine mammals of the Southeastern United States coast and the Gulf of Mexico. U. S. Fish and Wildlife Service, Office of Biological Services, Washington, D.C. FWS/OBS-80/41 163 pp.
- Schmidt, W. 1984. Neogene stratigraphy and geologic history of the Apalachicola Embayment, Florida. Fla. Geol. Surv. Bull. No. 58:1-146.
- Schnable, J. 1966. The evolution and development of part of the northwest Florida coast. Unpubl. PhD Dissertation, Florida State Univ. Tallahassee, Fl. 231 pages.
- Schwartz, A. 1953. A systematic study of the water rat (*Neofiber alleni*). Univ. Mich. Mus. Zool. Occ. Pap. 547: 1-27.
- Seaman, W., Jr., ed. 1985. Florida aquatic habitat and fishery resources. Florida Chapter of American Fisheries Society. 543 pp.
- Shea, S.M., L.B. Flynn, R.L. Marchinton, and J.C. Lewis. 1990. Part II: Social behavior, movement ecology, and food habits. Pages 13-62 in Ecology of sambar deer on St. Vincent National Wildlife Refuge, Florida. Bulletin Number 25, Tall Timbers Research Station, Tallahassee, Florida.
- Sheridan, P.F. 1978. Trophic relationships of dominant fishes in the Apalachicola bay system (Florida). Ph.D. Dissertation, Florida St. Univ., Tallahassee, FL. 215 pp.
- Sheridan, P.F. 1979. Trophic resource utilization by three species of Sciaenid fishes in a northwest Florida estuary. Northeast Gulf Sci. 3: 1-14.
- Sheridan, P.F. and R.J. Livingston. 1983. Abundance and seasonality of infauna and epifauna inhabiting a Halodule wrightii meadow in Apalachicola Bay, Florida. Estuaries 6:407-419.



- Shields, J. and B.D. Pierce. 1997. Comprehensive shellfish harvesting area survey of Apalachicola Bay Franklin County, Florida. Shellfish Environmental Assessment Section, Florida Department of Environmental Protection. Tallahassee, FL. 107 pages plus Appendices.
- Shoemyen, A.H. 1992. Florida Statistical Abstract. University Press of Florida. Gainesville, FL.
- Siebert, S. G. 1997. Apalachicola Black Bears. Florida Wildlife. July-August 1997: 16-19.
- Smith, H.T., J.A. Gore, W.M. Miley, H.L. Edmiston, and J.A. Rodgers, Jr. 1993. Recent nesting of gull-billed terns in northwest Florida. Florida Field Naturalist 21(3): 80-82.
- Smith, G.A., Nickels, J.S., Davis, W.M., Martz, R.F., Findlay, R.H., and White, D.C., 1982. Perturbations in the biomass, metabolic activity and community structure of the estuarine detrital microbiota: resource partitioning in amphipod grazing. Journal of Experimental Marine Biology and Ecology vol. 64, pp 125-143.
- Smith, K. 1998. A summary of limited vessel entry zones for managed seagrass protection in Florida. Florida Department of Environmental Protection, Bureau of Protected Species Management. Tallahassee, Florida. 30 pp.
- Snedaker, S.C. and A.E. Lugo. 1972. Ecology of the Ocala National Forest. Contract Report, USDA, Forest Service, Atlanta and Tallahassee. 211 pp.
- Spicola, J. 1983. A Granulometric study of beach ridges on Dog Island and St. Vincent Island, Florida. Unpubl. Rept.
- Stapor, F.W., Jr. 1973. Coastal sand budgets and Holocene beach ridge plain development, Northwest Florida: Unpubl. PhD Dissertation, Florida State Univ. Tallahassee, FL. 219 pages.
- Starnes-Smith, J. D. Tonsmeire and P. Wagner. 1991. The Apalachicola River and Bay Management Plan. Northwest Florida Water Management District. 167 pp.
- Stein, B.A., L.S. Kutner and J.S. Adams. 2000. Precious heritage: The status of biodiversity in the United States. New York, Oxford University Press, 399 pages.
- Stell, S.M., E.H. Hopkins, G.R. Buell and D.J. Hippe. 1995. Use and occurrence of pesticides in the Apalachicola-Chattahoochee-Flint River Basin, Georgia, Alabama, and Florida, 1960-91. U.S. geological Survey Open-File Report 95-739. 65 pages.
- Stevenson, H.M. 1977. A comparison of the Apalachicola River avifauna above and below Jim Woodruff Dam. Pages 34-36 in R.J. Livingston and E.A. Joyce, Jr., eds. Proceedings of the Conference on the Apalachicola Drainage System. Florida Marine Research Publications No. 26. 177 pp.
- Stevenson, J.C., N. Confer, and C.B. Pieper. 1979. The Decline of Submerged Aquatic Plants in Chesapeake Bay. FWS/OBS-79/24. 12 pp.
- Stout, J.P. 1984. The ecology of irregularly flooded salt marshes of the Northeastern Gulf of Mexico: a community profile. USFWS Biol. Report 85(7.1).
- Strawn, K. 1961. Factors influencing the zonation of submerged Monocotyledons at Cedar Key, Florida. Journal of Wildlife Management 25(2): 178-189.
- Sullivan, M.J. and C.A. Moncreiff. 1990. Edaphic algae are an important component of salt marsh food-webs: evidence from multiple stable isotope analyses. Mar. Ecol. Prog. Ser. 62:149-159.
- Swift, F. 1897. The oyster grounds of the West Florida Coast: their extent, condition, and peculiarities. Rpt. U.S. Comm. Fish. 22:187-221.
- Tanner, W.F. 1975. Historical beach changes, Florida "Big Bend" coast. Trans. Gulf Coast Assoc. Geol. Soc. 25:379-381.
- Tanner, W.F. 1983. Apalachicola Bay: Geology and sedimentology. Pages 8-10 in S. Andree, ed. Apalachicola Oyster Industry: Conference Proceedings. Florida Sea Grant Report No. SGR-57.
- Taylor, J.L., D.L. Feigenbaum, and M.L. Stursa. 1973. Utilization of marine and coastal resources. Pages IV1-IV63 in Summary of Knowledge of the Eastern Gulf of Mexico SUSIO.
- Thompson, D. 1970. Vegetative cover types of St. Vincent Island Refuge. Unpub. Rpt.
- Thorhaug, A. 1981. Seagrasses in the Gulf of Mexico, Florida and Caribbean including restoration and mitigation of seagrasses. pp. 161-178 in Proceedings U.S. Fish and Wildlife Service Workshop on Coastal Ecosystems of the Southeastern United States. R.C. Carey, P.S. Markovits, and J.B. Kirkwood, eds. U.S. Fish and Wildlife Service, Office of Biological Services, Washington, D.C. FWS/OBS-80/59. 257 pp.
- Trueblood, D.D., A. Stratton, E. Wenner, L. Edmiston, D. Nemazie, J. Shields, W. Meredith, J. Caffrey, P. Wellenberger, C. Nieder, C. Gonzalez, A. Beck, S. Ross, J. Schubauer-Berigan, D. Klarer, D. Bulthuis, T. Hopkins, S. Stevens, S. Rumrill, J. Kervavez, R. Crawford, B. McCormack, and M. Dionne. 1996. A national non-point source pollution monitoring program for the National Estuarine Research Reserve System. In: Watershed '96 Proceedings. 874-876. Wilber, D.H., 1992. Associations between freshwater inflows and oyster productivity in Apalachicola Bay, Florida. Estuar. Coast. Shell. Sci. 35, 179-190.
- Turner, R.E., S.W. Forsythe, and N.J. Craig. 1981. Bottomland hardwood forest land resources of the Southeastern United States. Pages 13-28 in J.R. Clark and J. Benforado, eds. Wetlands of Bottomland Hardwood Forests. Elsevier Scient. Publ. Co. N.Y. 401 pp.

- Twichell, D., B. Andrews, L. Edmiston, and W. Stevenson. 2006. Geophysical mapping of oyster habitats in a shallow estuary: Apalachicola Bay, Florida. U.S. Geological Survey Open File Report 2006-1381.
- Twilley, R.R., J. Cowan, T. Miller-Way, P. Montagna and B. Mortazavi. 1999. Benthic fluxes in selected estuaries in the Gulf of Mexico. In T.S. Bianchi, J.R. Pennock and R.R. Twilley, eds., *Biogeochemistry of Gulf of Mexico Estuaries*. John Wiley and Sons, Inc. New York, NY. Pages 163-209.
- U.S. Army Corps of Engineers. 1978. Coordination report on navigational improvements for Apalachicola River below Jim Woodruff Dam, Florida. U.S. Army Corps of Engineers, Mobile District.
- U.S. Army Corps of Engineers. 1986. Navigation maintenance plan for the Apalachicola-Chattahoochee-Flint Waterway, U.S. Army Corps of Engineers, Mobile District. Volume I and II.
- U.S. Army Corps of Engineers. 2001. The 2001 annual maintenance report and five-year analysis report for the A-C-F waterway. Mobile, AL. 55 pages.
- U.S. Army Corps of Engineers, Mobile District. 1980. Water resources study: Apalachicola River basin.
- U.S. Census Bureau. 2007. [www.census.gov/](http://www.census.gov/).
- U.S. Department of Agriculture. 1975. Soil Taxonomy: A basic system of soil classification for making and interpreting soil surveys. Soil Conservation Service, U.S. Dept. Agric. Handbook. 436, 754pp.
- U.S. Fish and Wildlife Service. 1981. Annual progress report FY 1981 Apalachicola River striped bass project: Biology, population dynamics and management of *Morone* spp., with emphasis on native Gulf of Mexico race and introduced Atlantic race striped bass. Panama City, Florida USFWS Field Office
- U.S. Fish and Wildlife Service. 1986. Review of Mobile District Corps of Engineers 1985 Draft Maintenance Plan for the ACF waterway. Panama City, FL.
- U.S. Fish and Wildlife Service. 1987. Natural resources inventory Apalachicola-Chattahoochee-Flint-River Basin. Panama City, Florida Field Office. 154 pp.
- U.S. Fish and Wildlife Service. 1988. Annual Report. Panama City, Florida Field Office.
- U. S. Fish and Wildlife Service. 1996. 1996 International Piping Plover Census.
- U.S. Fish and Wildlife Service. 1991. Unpublished report. Jacksonville, FL.
- US Fish and Wildlife Service. 1998. Endangered and threatened wildlife and plants; determination of endangered status for five freshwater mussels and threatened status for two freshwater mussels from the eastern Gulf Slope drainages of Alabama, Florida, and Georgia. Federal Register 63: 12664-12687.
- U.S. Fish and Wildlife Service. 2004. Gulf sturgeon. <http://www.fws.gov/southeast/drought/SturgeonFactS08.pdf>
- U.S. Fish and Wildlife Service. 2006. The endangered red wolf - Program Report - Spring, 2006. U.S. Fish and Wildlife Service. <http://www.fws.gov/alligatorriver/red%20wolf/rwildpopreport.html>
- U.S. Fish and Wildlife Service and Gulf States Marine Fisheries Commission. 1995. Gulf sturgeon recovery plan. Atlanta, GA. 170 pp.
- United States Forest Service USFS. 1984. Soils and vegetation of Apalachicola National Forest. United States Forest Service, Tallahassee, FL.
- Valente, R.M. 2007. Statistical analysis results and interpretation of benthic data from Apalachicola Bay, Florida. Final report to NOAA Coastal Services Center. 19 pp plus appendices.
- Van Den Avyle, M.J., Evans, J.W. 1990. Temperature selection by striped bass in a Gulf of Mexico coastal river system. *North American Journal of Fisheries Management*. 10:58-66.
- Vansant, L. 1980. A numerical model of tidal currents in Apalachicola Bay, Florida. M.S. Thesis, Florida State University. Tallahassee, FL.
- Vernon, R.O. 1942. Tributary valley lakes of western Florida. *Journal of Geomorphology* 5(4):302-311.
- Wagner, J.R. 1988. Fundamental ground water conditions within the Northwest Florida Water Management District. NFWFMD Public Information Bulletin 88-1. 22 pages.
- Walsh, S.J., W.B. Tate and M.A. Burgess. 2006. Fishes of the Apalachicola River Floodplain: Role of habitat and hydrology to recruitment. U.S. Geological Survey Final report to FI. Fish and Wildlife Cons. Comm. Tallahassee, FL. 124 pp.
- Wharton, C.H. 1977. The natural environments of Georgia. Georgia Geological Survey, Department of Natural Resources. 227 pp.
- Wharton, C.H., W.M. Kitchens, T.W. Pendleton and T.W. Sipe. 1982. The ecology of bottomland hardwood swamps of the Southeast: a community profile. U.S. Fish and Wildlife Service. FWS/OBS-81/37. 133 pages.
- Wharton, C.H., V.W. Lambou, J. Newson, P.V. Winger, L.L. Gaddy, and R. Mancke. 1981. The fauna of bottomland hardwoods in Southeastern United States. Pages 87-160 in J.R. Clark and J. Benforado, eds. *Wetlands of bottomland hardwood forests*. Elsevier Scient. Publ. Co. N.Y. 401 pp.
- Wharton, C.H., H.T. Odum, K. Ewel, M. Duever, A. Lugo, R. Boynton, J. Bartholomew, E. DeBelleue, S. Brown, M. Brown, and L. Duever. 1977. Forested wetlands of Florida their management and use. University of Florida, Gainesville. 348 pp.



- Whitaker, John O., Jr. 1996. Field Guide to North American Mammals. National Audubon Society. Alfred A. Knopf, Inc. New York. 937 pp.
- White, D.O. 1977. Resource inventory for St. George Island State Park. Florida Department of Natural Resources. 38 pp.
- White, D.C., R.J. Livingston, R.J. Bobbie and J.S. Nickels. 1979. Effects of surface composition, water column chemistry, and time of exposure on the composition of the detrital microflora and associated macrofauna in Apalachicola Bay, Florida. In *Ecological Processes in Coastal and Marine Systems*, edited by R.J. Livingston, pp 83-116. New York, Plenum Press.
- White, N.M. 1981. Archaeological survey at Lake Seminole. Cleveland Museum of Natural History Archaeological Research Report #29.
- White, N.M. 1986. Prehistoric cultural chronology in the Apalachicola Valley: The evolution of native chiefdoms in northwest Florida. In *Threads of Traditions and Culture Along the Gulf Coast*, edited by R.V. Evans. Gulf Coast History and Humanities Conference, Pensacola. 194-215 pp.
- White, N.M. 1996. Archaeological investigations of the 1994 record flood impacts in the Apalachicola Valley, Northwest Florida. Report to the Division of Historical Resources, Florida Dept. of State. Tallahassee, FL. 109 pages.
- White, N.M. and A. Trauner. 1987. Archaeological survey in the Chipola River Valley, Northwest Florida. Report to the Division of Historical Resources, Tallahassee. Department of Anthropology, University of South Florida, Tampa.
- White, N.M., T.L. Simpson, and S. McMillan. 1992. Apalachicola Valley Archaeology. W.T. Neal Civic Center. Blountstown. 33pp.
- Whitfield, W.K., Jr. and D.S. Beaumariage. 1977. Shellfish management in Apalachicola Bay: past, present, future. Pages 130-140 in R.J. Livingston and E.A. Joyce, Jr., eds. *Proceedings of the Conference on the Apalachicola Drainage System*. Florida Marine Research Publications No. 26. 177 pp.
- Whitlatch, R.B. 1982. The ecology of new England tidal flats: a community profile. U.S. Fish and Wildlife Services FWS/OBS-81/01. 125 pp.
- Wilber, D. H. 1994. The influence of Apalachicola River flows on blue crab, *Callinectes sapidus*, in north Florida. *Fishery Bulletin* 92: 180-188.
- Williams, B.K., Szaro, R.C., and Shapiro, C.D. (2009). Adaptive Management: The U.S. Department of the Interior Technical Guide. Adaptive Management Working Group. U.S. Department of the Interior, Washington, DC. ([www.doi.gov/initiatives/AdaptiveManagement/TechGuide.pdf](http://www.doi.gov/initiatives/AdaptiveManagement/TechGuide.pdf))
- Williams, L.E., Jr. 1978. Florida black bear. Pages 23-25 in J.N. Layne, ed. *Rare and endangered biota of Florida*. Vol. 1. Mammals. Univ. Presses of Fla., Gainesville.
- Williams, L.A., Pathogenic *Vibrios* in the marine environment, 1990. Doctoral Dissertation, Florida State University. Tallahassee, Florida. 63 pp.
- Williams, L.A., and Larock, P.A., 1985, Temporal occurrence of *Vibrio* species and *Aeromonas hydrophila* in estuarine sediments. *Applied and Environmental Microbiology*, Vol. 50, No. 6, pp 1490-1495.
- Winchester, J. W. and J.M. Fu. 1992. Atmospheric deposition of nitrate and its transport to the Apalachicola Bay Estuary in Florida. *Water, Air, and Soil Pollution* 65:23-42.
- Wolfe, S.H., Reidenauer, J.A., and D.B. Means. 1988. An ecological characterization of the Florida Panhandle. U. S. Fish Wildl. Serv. Biol. Rep. 88(12); Minerals Manage. Serv. OCS Study\MMS88-0063; 277 pp.
- Wood, D. A. 1996. Florida's Endangered Species, Threatened Species and Species of Special Concern. Official Lists. Florida Game and Fresh Water Fish Commission. 14 pp.
- Wooding, J.B. and J.R. Brady. 1987. Black bear roadkills in Florida. *Proc. Annu. Conf. Southeast. Assoc. Fish and Wildl. Agencies* 41: 438-442.
- Wooley, C.M. 1982. Stock concept related to Gulf coast states striped bass management. *Proc. Annu. Conf. SEAFWA*.
- Wooley, C.M. and E.J. Crateau. 1983. Biology, population estimates, and movement of native and introduced striped bass, Apalachicola River, Florida. *North American Journal of Fisheries Management* Vol. 3:383-394.
- Wooley, C.M. and Crateau, E.J. 1985. Movement, microhabitat, exploitation, and management of Gulf of Mexico Sturgeon, Apalachicola River, Florida. *North American Journal of Fisheries Management*. 5: 590-605.
- Wren, K.M., H.L. Edmiston, G.O. Bailey, T.J. Calleson, L. Levi and J. Stewart. 2004. Management of protected species in the Apalachicola National Estuarine Research Reserve. ANERR unpublished report, Florida Dept. of Environ. Prot. 51 pp.
- Yerger, R.W. 1977. Fishes of the Apalachicola River. In R.J. Livingston and E.A. Joyce, Jr., (eds), *Proceedings of the Conference on the Apalachicola Drainage System*, 23-24 April 1976, Gainesville, Florida, p. 22-33. Fla. Dept. Nat. Res. Lab. Mar. Res. Publ. 26.
- Zieman, J.C. 1982. The ecology of the seagrasses of South Florida: a community profile. FWS/OBS 82/25.
- Zieman, J.C. and R.T. Zieman. 1989. The ecology of the seagrass meadows of the west coast of Florida: A community profile. U.S. Fish and Wildlife Service Biological Report No. 85 (7.25). 155 pp.



## B.4 | Species Lists

Taken from A River Meets the Bay- A Characterization of the Apalachicola River and Bay System (Edmiston, 2008).

### B.4.1 | Species of the Apalachicola River and Bay Basin

Scientific Name	Common Name
<b>Legend:</b> FE = Federally-designated Endangered • FT = Federally-designated Threatened • FT(S/A) = Federally-designated Threatened species due to similarity of appearance • ST = State-designated Threatened • SSC = State Species of Special Concern	
<b>PLANTS</b>	
<i>Abelia grandiflora</i>	Glossy abelia
<i>Acacia farnesiana</i>	Sweet acacia
<i>Acalypha gracilens</i>	Three-seeded mercury
<i>Acalypha rhomboidea</i>	Three-seeded mercury
<i>Acanthospermum hispidum</i>	
<i>Acer negundo</i>	Box-elder
<i>Acer rubrum</i>	Red maple
<i>Acer saccharinum</i>	Silver maple
<i>Acer saccharum</i>	Sugar maple
<i>Acer saccharum ssp. floridanum</i>	Florida maple
<i>Achillea millefolium</i>	Common yarrow
<i>Achyranthes aspera</i>	Devil's horsewhip
<i>Acmella pusilla</i>	Dwarf spotflower
<i>Acmella repens</i>	Oppositeleaf spotflower
<i>Acnida cannabinus</i>	Water-hemp
<i>Actaea pachypoda (SE)</i>	Baneberry
<i>Adiantum capillus-veneris</i>	Southern maidenhair fern
<i>Aeschynomene americana</i>	Shyleaf
<i>Aeschynomene indica</i>	
<i>Aeschynomene viscidula</i>	
<i>Aesculus pavia</i>	Red buckeye
<i>Agalinis aphylla</i>	Gerardia
<i>Agalinis divaricata</i>	Gerardia
<i>Agalinis fasciculata</i>	Gerardia
<i>Agalinis filifolia</i>	Gerardia
<i>Agalinis maritima</i>	Gerardia
<i>Agalinis pinetorum</i>	Gerardia
<i>Agalinis purpurea</i>	Gerardia, purple false foxglove
<i>Agalinis setacea</i>	Gerardia
<i>Agrostis perennans</i>	Autumn bentgrass
<i>Ailanthus altissima</i>	Tree of heaven
<i>Albizia julibrissin (N)</i>	Mimosa, silktree
<i>Aletris lutea</i>	Yellow colic-root
<i>Aletris obovata</i>	White colic-root
<i>Allium canadense</i>	Wild onion
<i>Allium canadense var. mobilense</i>	Meadow garlic
<i>Allium inodorum</i>	
<i>Allium neapolitanum</i>	White garlic
<i>Alnus serrulata</i>	Hazel alder
<i>Alternanthera philoxeroides (N)</i>	Alligator-weed
<i>Alternanthera sessilis</i>	Chaff-flower
<i>Alysicarpus ovalifolius</i>	Alyce clover
<i>Alysicarpus vaginalis</i>	White moneywort
<i>Amaranthus australis</i>	Southern water hemp
<i>Amaranthus blitum</i>	Purple amaranth
<i>Amaranthus blitum var. emarginatus</i>	
<i>Amaranthus tuberculatus</i>	
<i>Amaranthus viridis</i>	

Scientific Name	Common Name
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<i>Ambrosia artemisiifolia</i>	Common ragweed
<i>Ambrosia trifida</i>	Great ragweed
<i>Ambrosia trifida</i> var. <i>trifida</i>	Great ragweed
<i>Ammannia coccinea</i>	Scarlet ammannia
<i>Ammannia latifolia</i>	Toothcups, pink redstem
<i>Amorpha fruticosa</i>	False-indigo
<i>Amorpha herbacea</i>	
<i>Ampelaster carolinianus</i>	Climbing aster
<i>Ampelopsis arborea</i>	Pepper-vine
<i>Ampelopsis cordata</i>	
<i>Amphicarpum muhlenbergianum</i>	Blue maidencane
<i>Amsonia tabernaemontana</i>	Texas-star
<i>Anagallis minima</i>	Chaffweed
<i>Andropogon arctatus</i> (ST)	Chapman pinewoods bluestem, pinewoods bluestem
<i>Andropogon eliottii</i>	Broomstraw
<i>Andropogon floridanus</i>	Florida bluestem
<i>Andropogon glomeratus</i>	Bushy beardgrass
<i>Andropogon glomeratus</i> var. <i>glaucopsis</i>	Bushy beardgrass
<i>Andropogon glomeratus</i> var. <i>pumilus</i>	Bushy beardgrass
<i>Andropogon gyrans</i>	Beardgrass
<i>Andropogon gyrans</i> var. <i>stenophylla</i>	Beardgrass
<i>Andropogon longiberbis</i>	Beardgrass, hairy bluestem
<i>Andropogon virginicus</i>	Broomsedge
<i>Andropogon virginicus</i> var. <i>glaucus</i>	Broomsedge
<i>Anemonella thalictroides</i>	Rue anemone
<i>Angelica dentata</i>	
<i>Anthaenaria rufa</i>	Purple silkyscale
<i>Anthaenaria villosa</i>	Green silkyscale
<i>Antigonon leptopus</i>	Coral vine
<i>Apios americana</i>	Ground nut
<i>Apium graveolens</i>	Wild celery
<i>Apium graveolens</i> var. <i>dulce</i>	Wild celery
<i>Apium leptophyllum</i>	Marsh parsley
<i>Apocynum cannabinum</i>	Dogbane, indian hemp
<i>Aquilegia canadensis</i> (SE)	Columbine
<i>Arabis canadensis</i> (SE)	Sickelpod
<i>Aralia spinosa</i>	Devils-walkingstick
<i>Ardisia crenata</i> (N)	Coral ardisia, hen's eyes
<i>Arenaria lanuginosa</i>	Sandwort
<i>Arenaria serpyllifolia</i>	Thyme-leaved sandwort
<i>Argemone albiflora</i>	Carolina poppy
<i>Argemone mexicana</i>	Mexican pricklypoppy
<i>Arisaema dracontium</i>	Green dragon
<i>Aristida condensata</i>	Big threeawn, piedmont threeawn
<i>Aristida gyrans</i>	
<i>Aristida mohrii</i>	Mohr's threeawn
<i>Aristida patula</i>	Tall threeawn
<i>Aristida purpurescens</i>	Arrowfeather
<i>Aristida spiciformis</i>	Bottlebrush threeawn
<i>Aristida stricta</i>	Wiregrass, pineland threeawn
<i>Aristida tuberculosa</i>	Seaside threeawn
<i>Aristolochia serpentaria</i>	Snake root
<i>Aristolochia tomentosa</i> (SE)	Pipevine, wooly dutchman's pipe

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<i>Arnica acaulis</i> (SE)	Leopard's-bane
<i>Arnoglossum atriplicifolium</i>	Indian plantain
<i>Arnoglossum diversifolium</i> (ST)	Indian plantain, variable leaved indian plantain
<i>Arnoglossum ovatum</i>	Indian plantain
<i>Aronia arbutifolia</i>	Red chokeberry
<i>Arundinaria gigantea</i>	Cane
<i>Arundinaria tecta</i>	
<i>Arundo donax</i> (N)	Giant reed
<i>Asclepias cinerea</i>	Milkweed
<i>Asclepias lanceolata</i>	Milkweed
<i>Asclepias pedicellata</i>	Milkweed
<i>Asclepias perennis</i>	Milkweed
<i>Asclepias viridiflora</i> (SE)	Milkweed, green-flowered milkweed, green milkweed
<i>Asclepias viridula</i> (ST)	Southern milkweed, green milkweed
<i>Asimina longifolia</i> var. <i>spathulata</i>	
<i>Asimina parviflora</i>	Small-fruited pawpaw
<i>Asplenium platyneuron</i>	Ebony spleenwort
<i>Asplenium resiliens</i>	Blackstem spleenwort
<i>Aster adnatus</i>	
<i>Aster carolinianus</i>	Climbing aster
<i>Aster chapmanii</i>	
<i>Aster concolor</i>	
<i>Aster dumosus</i>	
<i>Aster eryngiifolius</i>	
<i>Aster lateriflorus</i>	Starved aster
<i>Aster puniceus</i> ssp. <i>elliottii</i>	
<i>Aster shortii</i>	
<i>Aster spinulosus</i> (SE)	Pinewoods aster, Apalachicola aster
<i>Aster subulatus</i>	
<i>Aster tenuifolius</i>	Perennial salt marsh aster
<i>Aster tortifolius</i>	White-topped aster
<i>Aster vimineus</i>	
<i>Atriplex cristata</i>	Crested saltbush
<i>Atriplex pentandra</i>	Seabeach orach
<i>Aureolaria flava</i>	Yellow foxglove
<i>Aureolaria pedicularia</i>	
<i>Avena sativa</i>	Common oat
<i>Avicennia germinans</i>	Black mangrove
<i>Axonopus affinis</i>	Common carpetgrass
<i>Axonopus furcatus</i>	Big carpetgrass
<i>Azolla caroliniana</i>	Mosquitofern, waterfern, Carolina mosquitofern
<i>Baccharis angustifolia</i>	False willow
<i>Baccharis glomeruliflora</i>	Groundsel tree
<i>Baccharis halimifolia</i>	Groundsel tree, sea myrtle
<i>Bacopa caroliniana</i>	Blue hyssop
<i>Bacopa monnieri</i>	Water hyssop
<i>Balduina uniflora</i>	
<i>Bambusa multiplex</i>	Bamboo, hedge bamboo
<i>Baptisia lactea</i>	White wild indigo
<i>Baptisia lecontei</i>	Wild indigo, pineland wild indigo
<i>Baptisia megacarpa</i> (SE)	Apalachicola wild indigo
<i>Baptisia simplicifolia</i> (ST)	Scare-weed
<i>Bartonia verna</i>	



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<i>Batis maritima</i>	Saltwort, turtleweed
<i>Berchemia scandens</i>	Rattan vine
<i>Betula nigra</i>	River birch
<i>Bidens alba</i> var. <i>radiata</i>	Beggar-ticks
<i>Bidens bipinnata</i>	Spanish needles
<i>Bidens cernua</i>	
<i>Bidens discoidea</i>	Beggar-ticks
<i>Bidens frondosa</i>	Beggar-ticks
<i>Bidens laevis</i>	Wild goldenglow, smooth beggartick
<i>Bidens mitis</i>	Beggar-ticks
<i>Bigelovia nudata</i>	Rayless goldenrod
<i>Bignonia capreolata</i>	Cross-vine
<i>Boehmeria cylindrica</i>	False nettle, bog hemp
<i>Boerhavia erecta</i>	Erect spiderling
<i>Boltonia apalachicolensis</i>	Apalachicola daisy
<i>Boltonia asteroides</i>	
<i>Boltonia diffusa</i>	Doll's daisy, false aster
<i>Borreria laevis</i>	Borreria
<i>Borrchia frutescens</i>	Sea oxeye, sea daisies, bushy seaside tansy
<i>Botrychium biternatum</i>	Southern grapefern
<i>Bowlesia incana</i>	Hoary bowlesia
<i>Brasenia schreberi</i>	Watershield
<i>Brassica oleracea</i> var. <i>capitata</i> D	
<i>Briza minor</i>	Little quaking grass
<i>Bromus unioloides</i>	Rescuegrass, bromegrass
<i>Brunnichia ovata</i>	Buckwheat vine
<i>Buchnera floridana</i>	Bluehart
<i>Bulbostylis barbata</i>	Watergrass
<i>Bulbostylis capillaris</i>	Densetuft hairsedge
<i>Bulbostylis capillaris</i> ssp. <i>capillaris</i>	Densetuft hairsedge
<i>Bulbostylis ciliatifolia</i>	
<i>Bulbostylis ciliatifolia</i> var. <i>coarctata</i>	
<i>Bulbostylis stenophylla</i>	Sandy field hairsedge
<i>Bumelia lanuginosa</i>	Black-haw, gum bumelia
<i>Bumelia lycioides</i>	Buckthorn, gopherwood buckthorn
<i>Burmannia capitata</i>	
<i>Cakile constricta</i>	Sea rocket
<i>Cakile edentula</i>	Sea rocket, northern sea rocket
<i>Cakile lanceolata</i>	Coastal sea rocket
<i>Calamintha dentata</i> (ST)	Florida calamint, toothed savory
<i>Calibrachoa parviflora</i>	Seaside petunia
<i>Callicarpa americana</i>	American beautyberry
<i>Callirhoe papaver</i> (SE)	Poppy mallow, woodland poppy mallow
<i>Callisia graminea</i>	Grassleaf roseling
<i>Callisia repens</i>	Creeping inchplant
<i>Callitriche heterophylla</i>	Twoheaded water-starwort
<i>Callitriche heterophylla</i> ssp. <i>heterophylla</i>	Twoheaded water-starwort
<i>Calopogon barbatus</i>	Bearded grass-pink
<i>Calopogon multiflorus</i> (ST)	Many-flowered grass pink
<i>Calopogon pallidus</i>	Pale grass-pink
<i>Calopogon tuberosus</i>	Grass-pink
<i>Calycanthus floridus</i> (SE)	Sweet-shrub, Carolina-allspice, bubby-shrub
<i>Calycocarpum lyonii</i>	Cup-seed

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<i>Calyptocarpus vialis</i>	Straggler daisy
<i>Calystegia sepium</i>	Hedge bindweed
<i>Campanula floridana</i>	Florida bellflower
<i>Campsis radicans</i>	Trumpet-vine, scarlet creeper
<i>Canavalia maritima</i>	
<i>Canna flaccida</i>	Yellow canna, bandanna of the Everglades
<i>Cannabis sativa</i> (N)	Marijuana
<i>Cardamine hirsuta</i>	Butter cress
<i>Cardamine laciniata</i>	Pepper root
<i>Cardamine pensylvanica</i>	
<i>Cardamine pensylvanica</i> var. <i>brittoniana</i>	
<i>Carex abscondita</i>	
<i>Carex albolutescens</i>	
<i>Carex baltzellii</i> (ST)	Baltzell's sedge
<i>Carex caroliniana</i>	Carolina sedge
<i>Carex cephalophora</i>	
<i>Carex cherokeensis</i>	Cherokee sedge
<i>Carex corrugata</i>	Prune-fruit sedge
<i>Carex crebriflora</i>	
<i>Carex crus-corvi</i>	
<i>Carex debilis</i>	
<i>Carex fissa</i>	Hammock sedge
<i>Carex fissa</i> var. <i>aristata</i>	Hammock sedge
<i>Carex folliculata</i>	
<i>Carex frankii</i>	
<i>Carex glaucescens</i>	
<i>Carex gracilescens</i>	
<i>Carex howei</i>	
<i>Carex hyalinolepis</i>	
<i>Carex intumescens</i>	
<i>Carex jorii</i>	
<i>Carex laevivaginata</i>	Smoothsheath sedge
<i>Carex louisianica</i>	
<i>Carex lupulina</i>	
<i>Carex lurida</i>	
<i>Carex physorhyncha</i>	
<i>Carex reniformis</i>	
<i>Carex stipata</i>	
<i>Carex styloflexa</i>	
<i>Carex tribuloides</i>	
<i>Carex turgescens</i>	
<i>Carex verrucosa</i>	
<i>Carex vexans</i>	Florida hammock sedge
<i>Carphephorus odoratissimus</i>	Deer's tongue, vanilla plant
<i>Carphephorus paniculatus</i>	
<i>Carphephorus pseudoliatris</i>	
<i>Carpinus caroliniana</i>	Ironwood, American horn beam, blue-beech
<i>Carpobrotus edulis</i>	Hottentot fig
<i>Carya aquatica</i>	Water hickory
<i>Carya cordiformis</i>	Bitternut hickory
<i>Carya glabra</i>	Pignut hickory
<i>Carya illinoensis</i>	Pecan
<i>Carya ovata</i>	Shagbark hickory

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<i>Carya tomentosa</i>	Mockernut hickory
<i>Cassia fasciculata</i>	Partridge-pea
<i>Cassia marilandica</i>	Wild senna
<i>Cassia nictitans</i>	Wild sensitive plant
<i>Cassia obtusifolia</i>	Coffee weed
<i>Catalpa bignonioides</i>	Catalpa
<i>Catapodium rigidum</i>	Ferngrass
<i>Catharanthus roseus</i>	Madagascar periwinkle
<i>Celtis laevigata</i>	Sugarberry, hackberry
<i>Cenchrus echinatus</i>	Southern sandspur
<i>Cenchrus incertus</i>	Coast sandspur
<i>Cenchrus tribuloides</i>	Dune sandspur
<i>Centella asiatica</i>	Spadeleaf
<i>Centrosema virginianum</i>	Butterfly-pea
<i>Cephalanthus occidentalis</i>	Buttonbush
<i>Cerastium glomeratum</i>	Mouse-ear chickweed
<i>Ceratiola ericoides</i>	Rosemary, Florida rosemary
<i>Ceratophyllum demersum</i>	Hornwort, coon's tail
<i>Ceratophyllum muricatum</i>	Prickly hornwort
<i>Ceratophyllum muricatum ssp. australe</i>	Prickly hornwort
<i>Cercis canadensis</i>	Redbud
<i>Chaerophyllum procumbens</i>	Spreading chervil
<i>Chaerophyllum procumbens var. procumbens</i>	Spreading chervil
<i>Chaerophyllum tainturieri</i>	Wild chervil
<i>Chamaecyparis thyoides</i>	Atlantic white-cedar
<i>Chamaesyce ammannioides</i>	Sand-dune spurge
<i>Chamaesyce hirta</i>	Hairy spurge
<i>Chamaesyce humistrata</i>	
<i>Chamaesyce hyssopifolia</i>	Eyebane
<i>Chamaesyce maculata</i>	Milk purslane
<i>Chamaesyce nutans</i>	Eyebane
<i>Chamaesyce ophthalmica</i>	Florida hammock sandmat
<i>Chamaesyce polyggonifolia</i>	Seaside spurge
<i>Chamaesyce prostrata</i>	Prostrate sandmat
<i>Chamaesyce serpens</i>	Matted sandmat
<i>Chasmanthium latifolium</i>	Spikegrass
<i>Chasmanthium laxum</i>	Spikegrass
<i>Chasmanthium nitidum</i>	Spikegrass
<i>Chasmanthium ornithorhynchum</i>	Spikegrass
<i>Chasmanthium sessiliflorum</i>	Spikegrass
<i>Chenopodium album</i>	Lamb's quarters
<i>Chenopodium ambrosioides (N)</i>	Mexican tea
<i>Chenopodium ambrosioides var. ambrosioides (N)</i>	Mexican tea
<i>Chenopodium berlandieri</i>	Pitseed goosefoot
<i>Chenopodium berlandieri var. boscianum</i>	Pitseed goosefoot
<i>Chloris glauca</i>	Fingergrass
<i>Chloris petraea</i>	Fingergrass
<i>Chrysoma pauciflosculosa</i>	Bush goldenrod
<i>Chrysopsis gossypina ssp. gossypina f. decumbens</i>	
<i>Chrysopsis gossypina ssp. Hyssopifolia</i>	
<i>Cicuta maculata</i>	Spotted water hemlock



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<i>Cicuta maculata</i> var. <i>maculata</i>	Spotted water hemlock
<i>Cicuta mexicana</i>	Water hemlock
<i>Cinnamomum camphora</i> (N)	Camphor tree
<i>Cirsium horridulum</i>	Yellow thistle
<i>Cirsium nuttallii</i>	
<i>Cissus incisa</i>	Marine-ivy
<i>Citrullus lanatus</i>	Watermelon
<i>Citrus medica</i>	Citron
<i>Cladium jamaicense</i>	Sawgrass
<i>Cladium mariscoides</i>	Smooth sawgrass
<i>Cladium mariscus</i>	Swamp sawgrass
<i>Cladium mariscus</i> ssp. <i>jamaicense</i>	Jamaica swamp sawgrass
<i>Cladonia evansii</i>	
<i>Cladonia leporina</i>	
<i>Cleistes divaricata</i> (SE)	Rosebud orchid, spreading pogonia, lady's ettercap, rose orchid
<i>Clematis crispa</i>	Leather-flower
<i>Clematis glaucophylla</i>	
<i>Clematis reticulata</i>	Netleaf leather flower
<i>Clematis viorna</i>	Leather flower
<i>Cleome gynandra</i>	Spiderwisp
<i>Clerodendrum indicum</i>	Turk's turbin
<i>Clethra alnifolia</i>	Sweet pepperbush
<i>Cliftonia monophylla</i>	Black titi
<i>Clitoria mariana</i>	Butterfly-pea
<i>Cnidioscolus stimulosus</i>	Tread softly
<i>Cocculus carolinus</i>	Coralbeads
<i>Coelorachis rugosa</i>	Wrinkled jointtail grass
<i>Colocasia esculenta</i> (N)	Wild taro
<i>Commelina benghalensis</i>	Jio
<i>Commelina diffusa</i>	Common dayflower, climbing dayflower
<i>Commelina erecta</i>	Dayflower
<i>Commelina erecta</i> var. <i>angustifolia</i>	Dayflower
<i>Commelina virginica</i>	Dayflower
<i>Conoclinium coelestinum</i>	Mist flower
<i>Conradina canescens</i>	Scrub rosemary
<i>Conradina glabra</i> (FE)	Apalachicola rosemary, Apalachicola false rosemary
<i>Conyza bonariensis</i>	
<i>Conyza canadensis</i>	Horseweed
<i>Conyza canadensis</i> var. <i>pusilla</i>	Horseweed
<i>Corchorus aestuans</i>	Jute
<i>Coreopsis falcata</i>	
<i>Coreopsis gladiata</i>	
<i>Coreopsis lanceolata</i>	
<i>Coreopsis leavenworthii</i>	Leavenworth's tickseed
<i>Coreopsis linifolia</i>	
<i>Cornus alterniflora</i> (SE)	Pagoda dogwood, alternateleaf dogwood, pagoda cornel, umbrella cornel
<i>Cornus amomum</i>	Silky cornel
<i>Cornus florida</i>	Flowering dogwood
<i>Cornus foemina</i>	Stiff cornel
<i>Cornus stricta</i>	Swamp dogwood
<i>Corydalis flavula</i>	

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<i>Corydalis micrantha</i> var. <i>australis</i>	Harlequin slender fumeroot
<i>Crataegus marshallii</i>	Parsley haw
<i>Crataegus spathulata</i>	
<i>Crataegus viridis</i>	Green haw
<i>Crinum americanum</i>	Swamp lily, seven sisters
<i>Crinum zeylanicum</i>	Ceylon swampily
<i>Crocasmia crocosmiiflora</i>	Montbretia
<i>Croomia pauciflora</i> (SE)	Few-flowered croomia, croomia
<i>Crotalaria lanceolata</i>	Rattle-box
<i>Crotalaria ochroleuca</i>	Slender leaf rattlebox
<i>Crotalaria pallida</i>	Smooth rattlebox
<i>Crotalaria pallida</i> var. <i>obovata</i>	Smooth rattlebox
<i>Crotalaria purshii</i>	Rattle-box
<i>Crotalaria rotundifolia</i>	Rabbit-bells
<i>Crotalaria spectabilis</i>	Rabbit-bells
<i>Croton capitatus</i>	Wooly croton
<i>Croton elliotii</i>	
<i>Croton glandulosus</i> var. <i>septentrionalis</i>	
<i>Croton punctatus</i>	Silver-leaf croton, beach tea
<i>Cryptotaenia canadensis</i> (SE)	Honewort, wild chervil, Canadian honewort
<i>Ctenium aromaticum</i>	Toothache grass
<i>Cucumis sativus</i>	Cucumber, garden cucumber
<i>Cuphea aspera</i> (SE)	Florida waxweed, tropical waxweed, Chapman's waxweed
<i>Cuphea carthagenensis</i>	Waxweed
<i>Cuscuta campestris</i>	Field dodder
<i>Cuscuta compacta</i>	Compact dodder
<i>Cuscuta indecora</i>	Bigseed alfalfa dodder
<i>Cuscuta indecora</i> var. <i>indecora</i>	Bigseed alfalfa dodder
<i>Cuscuta pentagona</i>	Dodder, love vine, fiveangled dodder
<i>Cuscuta pentagona</i> var. <i>pentagona</i>	Fiveangled dodder
<i>Cymodocea filiformis</i>	Manatee grass
<i>Cynanchum angustifolium</i>	
<i>Cynanchum scoparium</i>	
<i>Cynodon dactylon</i> (N)	Bermuda grass
<i>Cynoglossum virginianum</i> (SE)	Wild comfrey
<i>Cyperus articulatus</i>	Jointed flatsedge
<i>Cyperus brevifolius</i>	
<i>Cyperus compressus</i>	
<i>Cyperus croceus</i>	
<i>Cyperus distinctus</i>	Swamp flatsedge
<i>Cyperus esculentus</i>	Yellow nut grass, chufas
<i>Cyperus esculentus</i> var. <i>macrostachyus</i>	Yellow nut grass, chufas
<i>Cyperus filiculmis</i>	
<i>Cyperus haspan</i>	
<i>Cyperus iria</i>	
<i>Cyperus lanceolatus</i>	
<i>Cyperus lecontei</i>	
<i>Cyperus odoratus</i>	
<i>Cyperus polystachyos</i>	Manyspike flatsedge
<i>Cyperus polystachyos</i> var. <i>texensis</i>	Texan flatsedge
<i>Cyperus pseudovegetus</i>	
<i>Cyperus pumilus</i>	Low flatsedge

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<i>Cyperus retrorsus</i>	
<i>Cyperus robustus</i>	
<i>Cyperus rotundus</i>	Nut grass, sand coco-grass
<i>Cyperus sesquiflorus</i>	
<i>Cyperus strigosus</i>	Strawcolored flatsedge
<i>Cyperus strigosus</i>	
<i>Cyperus surinamensis</i>	
<i>Cyperus tetragonus</i>	
<i>Cyperus virens</i>	
<i>Cyrilla racemiflora</i>	Titi, leatherwood
<i>Cyrilla racemiflora var. parvifolia</i>	Titi, leatherwood
<i>Dactylis glomerata</i>	Orchard grass
<i>Dactylis glomerata ssp. glomerata</i>	Orchard grass
<i>Dactyloctenium aegyptium</i>	Crowfoot grass
<i>Dalea feayi</i>	Feay's prairie clover
<i>Datura stramonium</i>	Jimsonweed
<i>Datura wrightii</i>	Sacred thorn-apple
<i>Daucus carota</i>	Queen Anne's lace
<i>Daucus pusillus</i>	Wild carrot
<i>Decumaria barbara</i>	Climbing hydrangea, wood vamp
<i>Delphinium carolinianum (SE)</i>	Larkspur, Carolina larkspur
<i>Descurainia pinnata</i>	Tansy mustard
<i>Desmodium ciliare</i>	Beggar's lice
<i>Desmodium incanum</i>	Beggar's lice, zarzabacoa comun
<i>Desmodium incanum var. incanum</i>	Zarzabacoa comun
<i>Desmodium lineatum</i>	Beggar's lice
<i>Desmodium obtusum</i>	Stiff ticktrefoil
<i>Desmodium paniculatum</i>	Beggar's lice
<i>Desmodium strictum</i>	Beggar's lice
<i>Desmodium viridiflorum</i>	Beggar's lice
<i>Deutzia scabra</i>	Fuzzy pride-of-Rochester
<i>Dichanthelium aciculare</i>	
<i>Dichanthelium acuminatum</i>	
<i>Dichanthelium commutatum</i>	
<i>Dichanthelium dichotomum</i>	
<i>Dichanthelium erectifolium</i>	
<i>Dichanthelium oligosanthes</i>	
<i>Dichanthelium ovale</i>	
<i>Dichanthelium sabulorum</i>	
<i>Dichanthelium sphaerocarpon</i>	
<i>Dichanthelium strigosum var. leucoblepharis</i>	Roughhair rosette grass
<i>Dichanthelium tenue</i>	
<i>Dichondra carolinensis</i>	Pony-foot
<i>Dichromena colorata</i>	Starrush
<i>Dichromena latifolia</i>	White-tops
<i>Dicliptera brachiata</i>	
<i>Dicliptera halei</i>	
<i>Dicranopteris flexuosa</i>	Drooping forkedfern
<i>Digitaria ciliaris</i>	Southern crabgrass
<i>Digitaria decumbens</i>	Pangola grass
<i>Digitaria eriantha</i>	Digitgrass
<i>Digitaria filiformis</i>	Slender crabgrass
<i>Digitaria serotina</i>	Blanket crabgrass, dwarf crabgrass



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<i>Dioclea multiflora</i>	
<i>Diodia teres</i>	Poor joe, buttonweed
<i>Diodia virginiana</i>	Buttonweed
<i>Dioscorea bulbifera</i> (N)	Air yam
<i>Dioscorea villosa</i>	Wild yam
<i>Diospyros virginiana</i>	Persimmon
<i>Dirca palustris</i>	Leatherwood
<i>Distichlis spicata</i>	Saltgrass
<i>Drosera brevifolia</i>	Dwarf sundew
<i>Drosera capillaris</i>	Pink sundew
<i>Drosera intermedia</i> (ST)	Spoon-leaved sundew, water sundew, narrowleaf sundew
<i>Drosera tracyi</i>	Dew-threads
<i>Duchesnea indica</i>	Mock strawberry
<i>Dulichium arundinaceum</i>	Sheathed galingale
<i>Dyschoriste humistrata</i>	Swamp snakeherb
<i>Echinacea purpurea</i> (SE)	Purple coneflower
<i>Echinochloa colona</i>	Jungle-rice
<i>Echinochloa crusgalli</i>	Barnyard grass
<i>Echinochloa crus-pavonis</i>	Gulf cockspur grass
<i>Echinochloa crus-pavonis</i> var. <i>crus-pavonis</i>	Gulf cockspur grass
<i>Echinochloa muricata</i>	Rough barnyard grass
<i>Echinochloa walteri</i>	Coast cockspur grass
<i>Echinodorus cordifolius</i>	Burhead
<i>Eclipta alba</i>	
<i>Eichhornia crassipes</i>	Common water hyacinth
<i>Elaeagnus pungens</i>	Silverthorn, thorny olive
<i>Eleocharis acicularis</i>	
<i>Eleocharis albida</i>	
<i>Eleocharis baldwinii</i>	Roadgrass
<i>Eleocharis cellulosa</i>	
<i>Eleocharis elongata</i>	
<i>Eleocharis equisetoides</i>	Knotted spikerush
<i>Eleocharis flavescens</i>	Pale spikerush, yellow spikerush
<i>Eleocharis flavescens</i> var. <i>flavescens</i>	Yellow spikerush
<i>Eleocharis geniculata</i>	
<i>Eleocharis interstincta</i>	Knotted spikerush
<i>Eleocharis melanocarpa</i>	Black spikerush
<i>Eleocharis minima</i>	
<i>Eleocharis montevidensis</i>	
<i>Eleocharis nana</i>	Hairlike spikerush
<i>Eleocharis nigrescens</i>	Black spikerush
<i>Eleocharis obtusa</i>	
<i>Eleocharis olivacea</i>	Bright green spikerush
<i>Eleocharis olivacea</i> var. <i>olivacea</i>	Bright green spikerush
<i>Eleocharis parvula</i>	
<i>Eleocharis quadrangulata</i>	Squarestem spikerush
<i>Eleocharis tortilis</i>	
<i>Eleocharis tuberculosa</i>	
<i>Eleocharis vivipara</i>	Viviparous spikerush
<i>Elephantopus carolinianus</i>	Elephant's-foot
<i>Elephantopus elatus</i>	Florida elephant's-foot
<i>Elephantopus nudatus</i>	Purple elephant's-foot

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<i>Eleusine indica</i>	Goosegrass
<i>Elionurus tripsacoides</i>	Pan-American balsamscale
<i>Elymus virginicus</i>	Virginia wild rye
<i>Epidendrum conopseum</i>	Green-fly orchid
<i>Epigaea repens (SE)</i>	Trailing arbutus
<i>Eragrostis atrovirens</i>	Thalia lovegrass
<i>Eragrostis bahiensis</i>	Bahia lovegrass
<i>Eragrostis elliottii</i>	Elliott lovegrass
<i>Eragrostis glomerata</i>	Pond lovegrass
<i>Eragrostis hirsuta</i>	Bigtop lovegrass
<i>Eragrostis hypnoides</i>	Teal lovegrass
<i>Eragrostis lugens</i>	Mourning lovegrass
<i>Eragrostis mexicana</i>	Mexican lovegrass
<i>Eragrostis mexicana ssp. virescens</i>	Mexican lovegrass
<i>Eragrostis pectinacea</i>	Tufted lovegrass, Carolina lovegrass
<i>Eragrostis pectinacea var. miserrima</i>	Desert lovegrass
<i>Eragrostis pilosa</i>	Indian lovegrass
<i>Eragrostis refracta</i>	Coastal lovegrass
<i>Eragrostis secundiflora ssp. oxylepis</i>	Red lovegrass
<i>Eragrostis spectabilis</i>	Purple lovegrass, tumble-grass
<i>Eragrostis tephrosanthos</i>	
<i>Erechtites hieracifolia</i>	Fireweed
<i>Eremochloa ophiuroides</i>	Centipede grass
<i>Erianthus brevibarbis</i>	Plumegrass
<i>Erianthus giganteus</i>	Sugarcane plumegrass
<i>Erianthus strictus</i>	Narrow plumegrass
<i>Erigeron annuus</i>	Eastern daisy fleabane
<i>Erigeron quercifolius</i>	Southern fleabane
<i>Erigeron strigosus</i>	White-tops
<i>Erigeron vernus</i>	
<i>Eriocaulon compressum</i>	Hat pins
<i>Eriocaulon decangulare</i>	Common pipewort
<i>Eriochloa michauxii</i>	Longleaf cupgrass
<i>Eryngium aromaticum</i>	Fragrant eryngo
<i>Eryngium baldwinii</i>	
<i>Eryngium prostratum</i>	
<i>Erythrina herbacea</i>	Coral bean, Cherokee bean
<i>Erythronium umbilicatum (SE)</i>	Dogtooth-violet, dimpled dogtooth-violet, trout lily, amberbell, dimpled trout lily
<i>Euonymus americanus</i>	Strawberry bush
<i>Euonymus atropurpureus (SE)</i>	Burningbush, wahoo, spindle tree, strawberry bush, arrow wood, eastern wahoo
<i>Eupatorium capillifolium</i>	Dog fennel
<i>Eupatorium compositifolium</i>	Dog fennel
<i>Eupatorium cuneifolium</i>	
<i>Eupatorium leptophyllum</i>	Dog fennel
<i>Eupatorium mikanioides</i>	Semaphore eupatorium
<i>Eupatorium mohrii</i>	
<i>Eupatorium perfoliatum</i>	Boneset
<i>Eupatorium rotundifolium</i>	False hoarhound
<i>Eupatorium rugosum</i>	
<i>Eupatorium semiserratum</i>	
<i>Eupatorium serotinum</i>	

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<i>Euphorbia cyathophora</i>	
<i>Euphorbia discoidalis</i>	
<i>Euphorbia exserta</i>	
<i>Euphorbia maculata</i>	
<i>Euphorbia telephioides</i> (FT, SE)	Telephus spurge
<i>Euthamia graminifolia</i> var. <i>hirtipes</i>	
<i>Euthamia leptoccephala</i>	
<i>Euthamia minor</i>	
<i>Euthamia tenuifolia</i>	
<i>Fagopyrum esculentum</i>	Buckwheat
<i>Fagus grandifolia</i>	American beech
<i>Fatoua villosa</i>	Hairy crabweed
<i>Festuca arundinacea</i>	
<i>Fimbristylis autumnalis</i>	
<i>Fimbristylis caroliniana</i>	
<i>Fimbristylis castanea</i>	
<i>Fimbristylis miliacea</i>	
<i>Fimbristylis puberula</i>	
<i>Fimbristylis schoenoides</i>	
<i>Fimbristylis spadicea</i>	
<i>Fimbristylis tomentosa</i>	
<i>Fimbristylis vahlii</i>	
<i>Fleischmannia incarnata</i>	
<i>Forestiera acuminata</i>	Swamp privet
<i>Fraxinus americana</i>	White ash
<i>Fraxinus caroliniana</i>	Carolina ash, pop ash
<i>Fraxinus pennsylvanica</i>	Green ash
<i>Fraxinus profunda</i>	Pumpkin ash
<i>Freesia corymbosa</i>	Common freesia
<i>Froelichia floridana</i>	Cottonweed
<i>Fuirena breviseta</i>	Umbrellagrass
<i>Fuirena longa</i>	Umbrellagrass
<i>Fuirena scirpoidea</i>	Umbrellagrass
<i>Fuirena squarrosa</i>	Umbrellagrass
<i>Fumaria capreolata</i>	Ramping fumitory, white ramping fumitory
<i>Gaillardia pulchella</i>	Firewheel
<i>Gaillardia pulchella</i> var. <i>pulchella</i>	Firewheel
<i>Galactia floridana</i>	Milk-pea
<i>Galactia macreei</i>	Milk-pea
<i>Galactia mollis</i>	Soft milkpea
<i>Galactia volubilis</i>	Milk pea
<i>Galium aparine</i>	Bedstraw, goosegrass
<i>Galium hispidulum</i>	Bedstraw, coastal bedstraw
<i>Galium pilosum</i> var. <i>laevicaule</i>	Bedstraw
<i>Galium tinctorium</i>	Bedstraw
<i>Gaura angustifolia</i>	Southern gaura
<i>Gaylussacia dumosa</i>	Dwarf huckleberry
<i>Gaylussacia frondosa</i>	Dangleberry
<i>Gaylussacia mosieri</i>	
<i>Gelsemium rankinii</i>	Yellow jessamine
<i>Gelsemium sempervirens</i>	
<i>Gentiana pennelliana</i> (SE)	Wiregrass gentian
<i>Gentiana saponaria</i>	Soapwort gentian



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<i>Geranium carolinianum</i>	Cranesbill
<i>Gladiolus gandavensis</i>	
<i>Gleditsia aquatica</i>	Water locust
<i>Gleditsia tricanthos</i>	Honey locust
<i>Gnaphalium falcatum</i>	Cudweed
<i>Gnaphalium obtusifolium</i>	Sweet everlasting
<i>Gnaphalium pensilvanicum</i>	Rabbit tobacco
<i>Gnaphalium purpureum</i>	Purple cudweed
<i>Gnaphalium spicatum</i>	Rabbit tobacco
<i>Gomphrena serrata</i>	Arrasa con todo
<i>Goodyera pubescens (SE)</i>	Downy rattlesnake plantain, downy rattlesnake orchid
<i>Gratiola brevifolia</i>	Sticky hedgehyssop
<i>Gratiola floridana</i>	
<i>Gratiola hispida</i>	
<i>Gratiola pilosa</i>	
<i>Gratiola virginiana</i>	
<i>Gymnostyles anthemifolia</i>	Button burrweed
<i>Habenaria repens</i>	Water spider orchid
<i>Halesia carolina</i>	Silverbells
<i>Halesia diptera</i>	Silverbells
<i>Halodule wrightii</i>	Shoal grass
<i>Halophila engelmannii</i>	Engelmann's seagrass
<i>Hamamelis virginiana</i>	Witch hazel
<i>Haplopappus divaricatus</i>	Scratch daisy
<i>Harperocallis flava (FE)</i>	Harper's beauty
<i>Hedychium coronarium</i>	White garland-lily
<i>Hedyotis boscii</i>	
<i>Hedyotis corymbosa</i>	
<i>Hedyotis procumbens</i>	Innocence
<i>Hedyotis uniflora</i>	
<i>Helenium amarum</i>	Bitterweed
<i>Helenium autumnale</i>	Sneezeweed
<i>Helianthemum arenicola</i>	Rockrose
<i>Helianthemum carolinianum</i>	Rockrose
<i>Helianthemum corymbosum</i>	Pine barren frostweed, rockrose
<i>Helianthemum georgianum</i>	Georgia frostweed
<i>Helianthemum nashii</i>	Florida scrub frostweed
<i>Helianthus angustifolius</i>	Sunflower
<i>Helianthus annuus</i>	Common sunflower
<i>Helianthus argophyllus</i>	Silverleaf sunflower
<i>Helianthus debilis ssp. tardiflorus</i>	Cucumberleaf sunflower
<i>Helianthus heterophyllus</i>	Sunflower
<i>Helianthus strumosus</i>	Sunflower
<i>Heliopsis helianthoides</i>	Oxeye
<i>Heliotropium amplexicaule</i>	Clasping heliotrope
<i>Heliotropium curassavicum</i>	Salt heliotrope, seaside heliotrope
<i>Heliotropium curassavicum var. curassavicum</i>	Salt heliotrope
<i>Heliotropium indicum</i>	Turnsole
<i>Hemerocallis fulva</i>	Orange daylily
<i>Hemicarpha micrantha</i>	
<i>Hepatica nobilis (SE)</i>	Liverleaf, round-lobed liverleaf
<i>Heteranthera dubia</i>	Mud plantain, grassleaf mudplantain
<i>Heteranthera reniformis</i>	

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<i>Heterotheca subaxillaris</i>	Telegraph weed
<i>Hexastylis arifolia</i> (ST)	Wild ginger, heartleaf, heartleaf wild ginger, little-brown-jug
<i>Hibiscus aculeatus</i>	
<i>Hibiscus coccineus</i>	Scarlet rosemallow
<i>Hibiscus grandiflorus</i>	Swamp hibiscus
<i>Hibiscus militaris</i>	Halberd-leaved marshmallow
<i>Hibiscus moscheutos</i>	Rose mallow
<i>Hibiscus moscheutos</i> ssp. <i>incanus</i>	Rose mallow
<i>Hibiscus trionum</i>	Flower of an hour
<i>Hordeum pusillum</i>	Little barley
<i>Hybanthus concolor</i> (SE)	Green violet
<i>Hydrangea arborescens</i> (SE)	Smooth hydrangea, wild hydrangea, mountain hydrangea, seven-bark, American hydrangea
<i>Hydrangea arborescens</i> ssp. <i>discolor</i>	Smooth hydrangea
<i>Hydrilla verticillata</i> (N)	Hydrilla, waterthyme
<i>Hydrochloa caroliniensis</i>	Watergrass
<i>Hydrocotyle bonariensis</i>	
<i>Hydrocotyle prolifera</i>	Whorled marsh pennywort
<i>Hydrocotyle ranunculoides</i>	
<i>Hydrocotyle umbellata</i>	Whorled pennywort, marsh pennywort, manyflower
<i>Hydrocotyle verticillata</i>	Swamp pennywort
<i>Hydrocotyle verticillata</i> var. <i>triradiata</i>	Swamp pennywort
<i>Hydrolea quadrivalvis</i>	
<i>Hygrophila lacustris</i>	
<i>Hymenocallis carolinensis</i>	Spider-lily
<i>Hymenocallis floridana</i>	
<i>Hymenocallis franklinensis</i>	Franklin spiderlily
<i>Hymenocallis henryae</i> (SE)	Panhandle spiderlily, Mrs. Henry's spiderlily, green pine lily, green spiderlily
<i>Hypericum brachyphyllum</i>	
<i>Hypericum cistifolium</i>	St. John's-wort, cluster-leaf St. John's-wort
<i>Hypericum fasciculatum</i>	Sandweed
<i>Hypericum frondosum</i>	St. John's-wort
<i>Hypericum galioides</i>	St. John's-wort, bedstraw St. John's-wort
<i>Hypericum gentianoides</i>	Pineweed
<i>Hypericum hypericoides</i>	St. Andrew's cross
<i>Hypericum lissophloeus</i> (SE)	Smooth-barked St. John's-wort, water-cedar
<i>Hypericum microsepalum</i>	St. John's-wort
<i>Hypericum mutilum</i>	Dwarf St. John's-wort
<i>Hypericum nitidum</i>	St. John's-wort
<i>Hypericum reductum</i>	Atlantic St. Johnswort, St. John's-wort
<i>Hypericum tetrapetalum</i>	St. John's-wort
<i>Hypochoeris brasiliensis</i>	Cat's-ears
<i>Hypoxis juncea</i>	Common stargrass
<i>Hypoxis leptocarpa</i>	Swamp stargrass
<i>Hypoxis rigida</i>	
<i>Hyptis alata</i>	Musky mint, Cluster bushmint
<i>Hyptis mutabilis</i>	
<i>Ilex ambigua</i>	Carolina holly, sand holly
<i>Ilex cassine</i>	Dahoon, dahoon holly
<i>Ilex coriacea</i>	Large gallberry, sweet gallberry
<i>Ilex decidua</i>	Possum haw
<i>Ilex glabra</i>	Gallberry

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<i>Ilex myrtifolia</i>	Myrtle-leaf holly
<i>Ilex opaca</i>	American holly
<i>Ilex vomitoria</i>	Yaupon
<i>Illicium floridanum</i>	Purple anise, Florida anise-tree
<i>Impatiens capensis</i>	Jewel weed
<i>Imperata cylindrica</i> (N)	Cogongrass
<i>Indigofera hirsuta</i>	Roughhairy indigo
<i>Ipomoea cairica</i>	Mile-a-minute vine
<i>Ipomoea hederacea</i>	Ivyleaf morning-glory
<i>Ipomoea hederifolia</i>	Red morning-glory
<i>Ipomoea imperati</i>	Beach morning-glory
<i>Ipomoea indica</i>	Oceanblue morning-glory
<i>Ipomoea lacunosa</i>	White morning-glory
<i>Ipomoea pandurata</i>	Manroot, wild potato vine
<i>Ipomoea pes-caprae</i>	Railroad vine
<i>Ipomoea quamoclit</i>	Cypress vine
<i>Ipomoea sagittata</i>	Saltmarsh morning-glory
<i>Ipomoea trichocarpa</i>	
<i>Iris hexagona</i>	Dixie iris, prairie iris
<i>Iris tridentata</i>	
<i>Iris virginica</i>	Blue-flag
<i>Isoetes appalachiana</i>	Appalachian quillwort
<i>Isoetes flaccida</i>	Florida quillwort, southern quillwort
<i>Isopyrum biternatum</i> (SE)	False rue-anemone
<i>Itea virginica</i>	Virginia willow
<i>Iva annua</i>	
<i>Iva frutescens</i>	Jesuit's bark, marsh elder
<i>Iva frutescens</i> ssp. <i>frutescens</i>	Jesuit's bark
<i>Iva imbricata</i>	Seacoast marsh elder
<i>Iva microcephala</i>	
<i>Jacquemontia tamnifolia</i>	
<i>Juglans nigra</i>	Black walnut
<i>Juncus acuminatus</i>	Rush, tapertip rush
<i>Juncus bufonius</i>	Toad rush
<i>Juncus coriaceus</i>	Rush
<i>Juncus dichotomus</i>	Rush
<i>Juncus diffusissimus</i>	Rush
<i>Juncus effusus</i>	Soft rush
<i>Juncus elliotii</i>	Bog rush
<i>Juncus marginatus</i>	Shore rush
<i>Juncus megacephalus</i>	Rush
<i>Juncus polycephalus</i>	Rush
<i>Juncus repens</i>	Lesser creeping rush
<i>Juncus roemerianus</i>	Needlerush, black rush
<i>Juncus scirpoides</i>	Rush
<i>Juncus scirpoides</i>	Rush
<i>Juncus tenuis</i>	Path rush
<i>Juncus trigonocarpus</i>	Rush
<i>Juncus validus</i>	Rush
<i>Juniperus communis</i> var. <i>depressa</i>	Ground juniper
<i>Juniperus silicicola</i>	Southern red cedar
<i>Juniperus virginiana</i>	Red cedar
<i>Justicia americana</i>	Water-willow



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<i>Justicia angusta</i>	Pineland water-willow
<i>Justicia crassifolia</i> (SE)	Thick-leaved water willow
<i>Justicia ovata</i>	
<i>Justicia ovata</i> var. <i>lanceolata</i>	
<i>Kallstroemia</i>	Caltrop
<i>Kallstroemia pubescens</i>	Caribbean caltrop
<i>Kalmia hirsuta</i>	Wicky
<i>Kalmia latifolia</i> (ST)	Mountain laurel, ivybush, calico bush, spoon wood
<i>Kosteletzkya virginica</i>	Seashore mallow
<i>Krigia cespitosa</i>	
<i>Krigia virginica</i>	Dwarf dandelion
<i>Kummerowia striata</i>	Common lespedeza
<i>Lachnanthes caroliniana</i>	Redroot, Carolina redroot
<i>Lactuca canadensis</i>	Wood-lettuce, wild lettuce
<i>Lactuca graminifolia</i>	Blue lettuce
<i>Lagascea mollis</i>	Silkleaf
<i>Lagerstroemia</i> spp.	Lagerstroemia
<i>Lagerstroemia indica</i>	Crape myrtle
<i>Lamium amplexicaule</i>	Henbit, henbit deadnettle
<i>Lantana camara</i> (N)	Shrub verbena, lantana
<i>Lantana montevidensis</i>	Trailing shrubverbena
<i>Laportea canadensis</i>	Wood-nettle
<i>Lechea deckertii</i>	Deckert's pinweed
<i>Lechea minor</i>	Pinweed
<i>Lechea mucronata</i>	Pinweed
<i>Lechea pulchella</i>	Pinweed
<i>Lechea sessiliflora</i>	Pinweed
<i>Lechea torreyi</i>	Pinweed
<i>Leersia hexandra</i>	Southern cutgrass, clubhead cutgrass
<i>Leersia lenticularis</i>	Catchflygrass
<i>Leersia oryzoides</i>	Rice cutgrass
<i>Leersia virginica</i>	Whitegrass
<i>Leitneria floridana</i> (ST)	Florida corkwood, corkwood
<i>Lemna obscura</i>	Little duckweed
<i>Lemna valdiviana</i>	Duckweed, little duckweed
<i>Leonotis nepetifolia</i>	Lion's ear
<i>Lepidium virginicum</i>	Peppergrass
<i>Leptochloa fascicularis</i>	Bearded spangletop, saltgrass
<i>Lespedeza angustifolia</i>	
<i>Lespedeza capitata</i>	Dusty clover
<i>Lespedeza cuneata</i>	Sericea lespedeza
<i>Lespedeza hirta</i>	Bush clover
<i>Lespedeza hirta</i> ssp. <i>curtissii</i>	Bush clover
<i>Leucothoe racemosa</i>	Fetterbush, swamp doghobble
<i>Liatris chapmanii</i>	Blazing star
<i>Liatris gracilis</i>	Blazing star
<i>Liatris provincialis</i> (SE)	Godfrey's blazing star, Godfrey's gayfeather
<i>Liatris spicata</i>	Blazing star
<i>Liatris tenuifolia</i>	Blazing star
<i>Liatris tenuifolia</i> var. <i>quadriflora</i>	Shortleaf blazing star
<i>Licania michauxii</i>	Gopher apple
<i>Ligustrum japonicum</i> (N)	Japanese privet
<i>Ligustrum lucidum</i> (N)	Wax-leaf privet

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<i>Lilaeopsis carolinensis</i>	
<i>Lilaeopsis chinensis</i>	
<i>Lilium catesbaei</i> (ST)	Pine lily, Catesby lily, leopard lily, southern red lily
<i>Lilium michauxii</i> (SE)	Carolina lily, turk's cap lily
<i>Limnobium spongia</i>	Frog's-bit
<i>Limnodea arkansana</i>	Ozark grass
<i>Limnophila sessiliflora</i>	
<i>Limonium carolinianum</i>	Sea lavender
<i>Linaria canadensis</i>	Blue toad-flax
<i>Linaria floridana</i>	
<i>Lindera benzoin</i>	Spicebush
<i>Lindernia anagallidea</i>	False pimpernel
<i>Lindernia dubia</i>	False pimpernel
<i>Lindernia grandiflora</i>	Savannah false pimpernel
<i>Linum macrocarpum</i>	Spring Hill flax, big seed flax
<i>Linum medium</i>	Yellow flax
<i>Linum medium var. texanum</i>	Yellow flax
<i>Linum sulcatum var. harperi</i>	Harper's grooved yellow flax
<i>Linum westii</i> (SE)	Orange-flowered flax, West's flax
<i>Lipocarpha micrantha</i>	Smallflower halfchaff sedge
<i>Liquidambar styraciflua</i>	Sweetgum
<i>Liriodendron tulipifera</i>	Yellow poplar
<i>Liriope muscari</i>	Lily-turf
<i>Liriope spicata</i>	Creeping liriope
<i>Lithospermum tuberosum</i>	Pucoons
<i>Lobelia amoena</i>	Lobelia
<i>Lobelia brevifolia</i>	Lobelia
<i>Lobelia cardinalis</i> (ST)	Cardinal flower
<i>Lobelia glandulosa</i>	Lobelia
<i>Lobelia paludosa</i>	Lobelia
<i>Lolium perenne</i>	English ryegrass
<i>Lonicera japonica</i> (N)	Japanese honeysuckle
<i>Lonicera sempervirens</i>	Coral honeysuckle, trumpet
<i>Lopadium leucoxanthum</i>	Wedding ring lichen
<i>Lophiola americana</i>	Goldcrest
<i>Ludwigia alata</i>	
<i>Ludwigia alternifolia</i>	Seedbox
<i>Ludwigia arcuata</i>	Piedmont primrose-willow
<i>Ludwigia curtissii</i>	Curtiss' primrose-willow
<i>Ludwigia decurrens</i>	Primrose willow
<i>Ludwigia erecta</i>	
<i>Ludwigia glandulosa</i>	Cylindric-fruited ludwigia
<i>Ludwigia lanceolata</i>	Lanceleaf primrose-willow
<i>Ludwigia leptocarpa</i>	
<i>Ludwigia linearis</i>	
<i>Ludwigia linifolia</i>	
<i>Ludwigia maritima</i>	
<i>Ludwigia microcarpa</i>	
<i>Ludwigia octovalvis</i>	
<i>Ludwigia palustris</i>	Marsh purslane
<i>Ludwigia peruviana</i>	Primrose willow, Peruvian primrose-willow
<i>Ludwigia pilosa</i>	
<i>Ludwigia repens</i>	Water primrose

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<i>Ludwigia sphaerocarpa</i>	Globefruit primrose-willow
<i>Ludwigia suffruticosa</i>	Shrubby primrose-willow
<i>Ludwigia virgata</i>	
<i>Lupinus diffusus</i>	Sky-blue lupine
<i>Lupinus westianus</i> (ST)	Sanddune lupine, Gulfcoast lupine
<i>Luzula acuminata</i>	Knot-leaved rush
<i>Luzula echinata</i>	Woodrush
<i>Lycium carolinianum</i>	Christmas-berry
<i>Lycopersicon esculentum</i>	Tomato
<i>Lycopodium appressum</i>	Southern clubmoss
<i>Lycopus angustifolius</i>	Bugleweed
<i>Lycopus rubellus</i>	Water hoarhound
<i>Lycopus virginicus</i>	Water hoarhound
<i>Lycoris radiata</i>	Red spider lily
<i>Lygodium japonicum</i> (N)	Japanese climbing fern
<i>Lyonia ferruginea</i>	Staggerbush, rusty lyonia
<i>Lyonia fruticosa</i>	Staggerbush
<i>Lyonia ligustrina</i>	Maleberry
<i>Lyonia lucida</i>	Fetterbush, shiny Lyonia
<i>Lyonia mariana</i>	Staggerbush, large flowered staggerbush
<i>Lysimachia ciliata</i>	Fringed loosestrife
<i>Lythrum curtissii</i> (SE)	Loosestrife, Curtiss' loosestrife, Curtiss' lythrum
<i>Lythrum lineare</i>	Loosestrife
<i>Macbridea alba</i> (FT,SE)	White birds-in-a-nest
<i>Macranthera flammea</i> (SE)	Hummingbird flower, flameflower
<i>Magnolia ashei</i> (SE)	Ashe's magnolia
<i>Magnolia grandiflora</i>	Southern magnolia
<i>Magnolia pyramidata</i> (SE)	Pyramid magnolia, cucumber tree, wood-oread
<i>Magnolia virginiana</i>	Sweetbay
<i>Malaxis unifolia</i> (SE)	Green adder's-mouth, green adder's-mouth orchid
<i>Malus angustifolia</i> (ST)	Crabapple, flowering crabapple, southern crabapple
<i>Malva parviflora</i>	Cheeseweed mallow
<i>Malvastrum</i> spp.	False mallow
<i>Malvastrum americanum</i>	Indian Valley false mallow
<i>Malvastrum coromandelianum</i>	Threelobe false mallow
<i>Malvaviscus arboreus</i>	Wax mallow
<i>Malvaviscus arboreus</i> var. <i>drummondii</i>	Wax mallow
<i>Malvaviscus penduliflorus</i>	Mazapan
<i>Manihot grahamii</i>	Graham's manihot
<i>Manisuris rugosa</i>	Wrinkled jointtail
<i>Manisuris tessellata</i>	Lattice jointtail
<i>Manisuris tuberculosa</i>	Florida jointtail
<i>Marshallia tenuifolia</i>	Barbara's-button
<i>Marsilea vestita</i>	Hairy waterclover
<i>Matelea alabamensis</i> (SE)	Alabama spiny-pod, Alabama milkvine
<i>Matelea baldwiniana</i> (SE)	Baldwin's spiny-pod, Baldwin's milkvine
<i>Matelea flavidula</i> (SE)	Yellow-flowered spiny-pod, yellow Carolina milkvine
<i>Matelea floridana</i> (SE)	Florida milkweed, Florida spiny-pod, Florida milkvine
<i>Matelea gonocarpa</i> (ST)	Angle-pod
<i>Mecardonia acuminata</i>	
<i>Medeola virginiana</i> (SE)	Indian cucumber-root, cushat lily
<i>Medicago lupulina</i>	Black medic
<i>Medicago polymorpha</i>	Bur clover



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<i>Melanthera nivea</i>	
<i>Melia azedarach</i> (N)	Chinaberry
<i>Melica mutica</i>	Twoflower melic
<i>Melilotus alba</i>	White sweet-clover
<i>Melilotus indica</i>	Sour clover
<i>Melilotus indicus</i>	Annual yellow sweetclover
<i>Melinis repens</i>	Rose natal grass
<i>Melochia corchorifolia</i>	Chocolate-weed
<i>Melothria pendula</i>	Creeping cucumber
<i>Mentha piperita</i>	Peppermint
<i>Mentha suaveolens</i>	Apple mint
<i>Merremia dissecta</i>	Noyau vine
<i>Micranthemum umbrosum</i>	
<i>Microstegium vimineum</i>	
<i>Mikania scandens</i>	Climbing hempweed
<i>Mimulus alatus</i>	Monkey flower
<i>Mitchella repens</i>	Twin berry, partridge berry
<i>Mitreola angustifolia</i>	
<i>Mitreola petiolata</i>	Miterwort
<i>Mitreola sessilifolia</i>	Miterwort
<i>Modiola caroliniana</i>	Carolina bristlemallow
<i>Mollugo verticillata</i>	Carpetweed, Indian chickweed
<i>Monanthochloe littoralis</i>	Keygrass, shoregrass
<i>Monarda punctata</i>	Horsemint, Spotted beebalm
<i>Morus alba</i>	White mulberry
<i>Morus rubra</i>	Red mulberry
<i>Muhlenbergia capillaris</i>	Hairgrass, hairawn muhly, Gulf muhly
<i>Muhlenbergia schreberi</i>	Nimblewill
<i>Murdannia nudiflora</i>	
<i>Myrica cerifera</i>	Wax myrtle, southern bayberry
<i>Myrica heterophylla</i>	Bayberry
<i>Myriophyllum aquaticum</i> (N)	Parrot feather watermilfoil
<i>Myriophyllum heterophyllum</i>	Two-leaf water milfoil
<i>Myriophyllum laxum</i>	Piedmont water milfoil
<i>Myriophyllum spicatum</i> (N)	Water milfoil
<i>Najas flexilis</i>	
<i>Najas guadalupensis</i>	Southern naiad
<i>Nandina domestica</i> (N)	Heavenly bamboo, nandina, sacred bamboo
<i>Nelumbo lutea</i>	Duck acorn
<i>Nemophila aphylla</i>	
<i>Neptunia pubescens</i>	Tropical puff
<i>Neptunia pubescens</i> var. <i>pubescens</i>	Tropical puff
<i>Nerium oleander</i>	Oleander
<i>Nolina atopocarpa</i> (ST)	Florida beargrass
<i>Nothoscordum borbonicum</i>	Fragrant false garlic
<i>Nuphar luteum</i>	Spatterdock
<i>Nuttallanthus floridanus</i>	Apalachicola toadflax
<i>Nymphaea mexicana</i>	Yellow water-lily
<i>Nymphaea odorata</i>	Fragrant water-lily
<i>Nymphoides aquatica</i>	Floating hearts
<i>Nyssa aquatica</i>	Water tupelo
<i>Nyssa biflora</i>	Blackgum, swamp tupelo
<i>Nyssa ogeche</i>	Ogeechee-lime, Ogeechee tupelo

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<i>Nyssa sylvatica</i>	Sour gum
<i>Nyssa ursina</i>	Bog tupelo, bear tupelo
<i>Oenothera biennis</i>	Weedy evening-primrose
<i>Oenothera fruticosa</i>	Narrowleaf evening-primrose
<i>Oenothera fruticosa ssp. fruticosa</i>	Narrowleaf evening-primrose
<i>Oenothera grandiflora</i>	Largeflower evening-primrose
<i>Oenothera humifusa</i>	Seaside evening-primrose
<i>Oenothera laciniata</i>	Cut-leaved evening-primrose
<i>Oenothera speciosa</i>	Pinkladies
<i>Onoclea sensibilis</i>	Sensitive fern
<i>Onosmodium virginianum</i>	False gromwell
<i>Ophioglossum nudicaule</i>	Least adderstongue
<i>Ophioglossum petiolatum</i>	Stalked adder's-tongue
<i>Oplismenus setarius</i>	Wood grass
<i>Opuntia humifusa</i>	Prickly pear
<i>Opuntia humifusa var. ammophila</i>	Prickly pear
<i>Opuntia pusilla</i>	Prickly pear
<i>Opuntia stricta</i> (ST)	Prickly pear, shell mound prickly pear, erect prickly pear, common prickly pear
<i>Opuntia stricta var. dillenii</i>	Prickly pear
<i>Orontium aquaticum</i>	Golden club
<i>Oryza sativa</i>	Rice
<i>Osmanthus americanus</i>	Wild olive
<i>Osmunda cinnamomea</i>	Cinnamon fern
<i>Osmunda regalis</i>	Royal fern
<i>Osmunda regalis var. spectabilis</i>	Royal fern
<i>Ostrya virginiana</i>	Hop-hornbeam
<i>Oxalis corniculata</i>	Lady's woodsorrel
<i>Oxalis debilis</i>	Pink woodsorrel
<i>Oxalis debilis var. corymbosa</i>	Pink woodsorrel
<i>Oxalis priceae ssp. colorea</i>	
<i>Oxalis rubra</i>	Windowbox woodsorrel
<i>Oxypolis filiformis</i>	Common water-dropwort
<i>Oxypolis greenmanii</i> (SE)	Giant water-dropwort, giant water cowbane
<i>Paederia foetida</i>	Stinkvine
<i>Panicum amarum</i>	Beachgrass, bitter panicum, bitter panicgrass
<i>Panicum amarum var. amarulum</i>	Beachgrass, bitter panicum
<i>Panicum anceps</i>	Beaked panicum
<i>Panicum dichotomiflorum</i>	Fall panicum
<i>Panicum gymnocarpon</i>	Savannah panicum
<i>Panicum hemitomom</i>	Maidencane
<i>Panicum hians</i>	Gaping panicum
<i>Panicum longifolium</i>	
<i>Panicum miliaceum</i>	Broomcorn millet, hog millet
<i>Panicum miliaceum ssp. miliaceum</i>	Broomcorn millet
<i>Panicum repens</i> (N)	Torpedo grass
<i>Panicum rigidulum</i>	Redtop panicum
<i>Panicum tenerum</i>	Bluejoint panicum
<i>Panicum texanum</i>	Texas panicum
<i>Panicum verrucosum</i>	Warty panicum
<i>Panicum virgatum</i>	Switchgrass
<i>Parietaria praetermissa</i>	Clustered pellitory
<i>Parnassia caroliniana</i> (SE)	Carolina grass-of-parnassus, coastal grass-of-parnassus, brook parnassia

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<i>Parnassia grandifolia</i> (SE)	Large-leaf grass-of-parnassus, undine
<i>Paronychia baldwinii</i>	Whitlow-wort
<i>Paronychia erecta</i>	
<i>Paronychia patula</i>	Whitlow-wort
<i>Paronychia rugelii</i>	Sand-squares
<i>Parthenium hysterophorus</i>	Santa Maria feverfew
<i>Parthenocissus quinquefolia</i>	Virginia creeper
<i>Paspalum boscianum</i>	Bull paspalum
<i>Paspalum dilatatum</i>	Dallisgrass
<i>Paspalum distichum</i>	Knotgrass
<i>Paspalum floridanum</i>	Florida paspalum
<i>Paspalum laeve</i>	Field paspalum
<i>Paspalum notatum</i> (N)	Bahiagrass
<i>Paspalum plicatulum</i>	Brownseed paspalum
<i>Paspalum praecox</i>	Early paspalum
<i>Paspalum setaceum</i>	Thin paspalum
<i>Paspalum urvillei</i>	Vaseygrass
<i>Passiflora lutea</i>	Yellow passionflower
<i>Pediomelum canescens</i>	Buckroot
<i>Peltandra virginica</i>	Green arum
<i>Penthorum sedoides</i>	Ditch stonecrop
<i>Perilla frutescens</i>	Beefsteak-plant
<i>Persea borbonia</i>	Redbay
<i>Persea palustris</i>	Swamp bay
<i>Petunia parviflora</i>	
<i>Phalaris caroliniana</i>	Carolina canarygrass
<i>Philadelphus inodorus</i>	Mock-orange
<i>Phlebodium aureum</i>	Golden polypody
<i>Phlox carolina</i>	Thick-leaf phlox
<i>Phoebanthus tenuifolia</i> (ST)	Narrow leaved phoebanthus, pineland false sunflower
<i>Phoradendron serotinum</i>	Mistletoe
<i>Phragmites australis</i> (N)	Common reed
<i>Phyla nodiflora</i>	Cape-weed
<i>Phyllanthus caroliniensis</i>	
<i>Phyllanthus tenellus</i>	Mascarene Island leaf-flower
<i>Phyllanthus urinaria</i>	
<i>Physalis angulata</i>	
<i>Physalis angustifolia</i>	Coastal groundcherry
<i>Physalis pubescens</i>	Groundcherry
<i>Physalis viscosa</i> var. <i>elliottii</i>	Groundcherry
<i>Physalis walteri</i>	Walter's groundcherry
<i>Physostegia godfreyi</i> (ST)	Obedient plant, Apalachicola dragon-head, Apalachicola obedience plant, Godfrey's dragonhead
<i>Physostegia leptophylla</i>	Obedient plant
<i>Physostegia purpurea</i>	Obedient plant
<i>Phytolacca americana</i>	Pokeweed, pokeberry
<i>Pieris phillyreifolia</i>	
<i>Pilea pumila</i>	Clearweed
<i>Pinckneya bracteata</i> (ST)	Fever tree, maiden's blushes, Georgia bark
<i>Pinguicula ionantha</i> (FT,SE)	Godfrey's butterwort, Panhandle butterwort, violet butterwort
<i>Pinguicula lutea</i> (ST)	Yellow-flowered butterwort
<i>Pinguicula planifolia</i> (ST)	Swamp butterwort, Chapman's butterwort, flatleaf butterwort



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<i>Pinguicula pumila</i>	Small butterwort
<i>Pinus clausa</i>	Sand pine
<i>Pinus echinata</i>	Shortleaf pine
<i>Pinus elliotii</i>	Slash pine
<i>Pinus glabra</i>	Spruce pine
<i>Pinus palustris</i>	Longleaf pine
<i>Pinus semolina</i>	Pond pine
<i>Pinus taeda</i>	Loblolly pine
<i>Pityopsis flexuosa</i> (SE)	Florida golden aster, zigzag silkgrass, bent golden aster
<i>Pityopsis graminifolia</i> var. <i>latifolia</i>	
<i>Pityopsis graminifolia</i> var. <i>microcephala</i>	Golden aster
<i>Pityopsis graminifolia</i> var. <i>tenuifolia</i>	Golden aster
<i>Pityopsis oligantha</i>	Golden aster
<i>Planera aquatica</i>	Planer tree, water elm
<i>Plantago lanceolata</i>	English plantain, narrowleaf plantain
<i>Plantago major</i>	Plantain
<i>Plantago virginica</i>	Hoary plantain
<i>Platanthera blephariglottis</i> (ST)	White-fringed orchid, plume of Navarre, large white-fringed orchid
<i>Platanthera cristata</i> (ST)	Crested fringed orchid
<i>Platanthera flava</i> (ST)	Southern rein-orchid, Southern tubercled orchid, gypsy-spikes, palegreen orchid
<i>Platanthera flava</i> var. <i>flava</i>	Palegreen orchid
<i>Platanthera integra</i> (SE)	Orange rein-orchid, Southern yellow fringeless orchid, frog arrow
<i>Platanthera nivea</i> (ST)	Snowy orchid, bog orchid , frog spear, white rein orchid
<i>Platanus occidentalis</i>	Sycamore, American sycamore
<i>Pluchea camphorata</i>	Marsh fleabane
<i>Pluchea foetida</i>	Marsh fleabane
<i>Pluchea odorata</i>	Salt marsh fleabane, sweetscent
<i>Pluchea odorata</i> var. <i>odorata</i>	Sweetscent
<i>Pluchea rosea</i>	Marsh fleabane
<i>Poa annua</i>	Annual bluegrass
<i>Pogonia ophioglossoides</i> (ST)	Rose pogonia , ettercap, crested ettercap, rose crested orchid
<i>Polygala balduinii</i>	White bachelor's button
<i>Polygala brevifolia</i>	Milkwort
<i>Polygala cruciata</i>	Drumheads
<i>Polygala cymosa</i>	Milkwort
<i>Polygala hookeri</i>	Milkwort
<i>Polygala incarnata</i>	Procession flower
<i>Polygala lutea</i>	Bog bachelor's button
<i>Polygala nana</i>	Wild bachelor's button
<i>Polygala ramosa</i>	Milkwort
<i>Polygala setacea</i>	Milkwort
<i>Polygonella fimbriata</i>	Sandhill jointweed
<i>Polygonella fimbriata</i> var. <i>robusta</i>	Sandhill wireweed
<i>Polygonella gracilis</i>	Wireweed
<i>Polygonella macrophylla</i> (ST)	Large-leaved jointweed
<i>Polygonella polygama</i>	October-flower
<i>Polygonella polygama</i> var. <i>brachystachya</i>	
<i>Polygonella robusta</i>	Largeflower jointweed

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<i>Polygonum aviculare</i>	Prostrate knotweed
<i>Polygonum caespitosum</i> var. <i>longisetum</i>	Smartweed
<i>Polygonum densiflorum</i>	Smartweed
<i>Polygonum hydropiperoides</i>	Wild water-pepper
<i>Polygonum lapathifolium</i>	Pale smartweed
<i>Polygonum pensylvanicum</i>	Pinkweed
<i>Polygonum persicaria</i>	Smartweed
<i>Polygonum punctatum</i>	Dotted smartweed
<i>Polygonum sagittatum</i>	Tearthumb
<i>Polygonum scandens</i>	False buckwheat
<i>Polygonum setaceum</i>	Bog smartweed
<i>Polygonum virginianum</i>	Jumpseed
<i>Polymnia uvedalia</i>	Bear's foot, yellow leafcup
<i>Polypodium polypodioides</i>	Resurrection fern
<i>Polypremum procumbens</i>	
<i>Polystichum acrostichoides</i>	Christmas fern
<i>Pontederia cordata</i>	Pickerelweed
<i>Pontederia cordata</i> var. <i>lancifolia</i>	Pickerelweed
<i>Pontederia lanceolata</i>	Pickerelweed
<i>Populus deltoides</i>	Cottonwood
<i>Populus heterophylla</i>	Swamp cottonwood
<i>Portulaca amilis</i>	Paraguayan purslane
<i>Portulaca oleracea</i>	
<i>Portulaca oleracea</i> ssp. <i>nicaraguensis</i>	
<i>Portulaca pilosa</i>	Pink purslane
<i>Potamogeton illinoensis</i>	Illinois pondweed
<i>Potamogeton pectinatus</i>	Sago pondweed
<i>Potamogeton perfoliatus</i>	Pondweed
<i>Potamogeton pusillus</i>	Pondweed
<i>Proserpinaca palustris</i>	Mermaid-weed
<i>Proserpinaca pectinata</i>	
<i>Prunus americana</i>	Wild plum
<i>Prunus angustifolia</i>	Chickasaw plum
<i>Prunus angustifolia</i> var. <i>angustifolia</i>	Chickasaw plum
<i>Prunus caroliniana</i>	Laurel cherry
<i>Prunus serotina</i>	Black cherry
<i>Prunus umbellata</i>	Hog plum
<i>Psilocarya nitens</i>	Baldrush
<i>Ptelea trifoliata</i>	Wafer ash
<i>Pteridium aquilinum</i>	Bracken fern
<i>Pteridium aquilinum</i> var. <i>pseudocaudatum</i>	
<i>Pterocaulon pycnostachyum</i>	Blackroot
<i>Ptilimnium capillaceum</i>	Mock bishop's-weed
<i>Pueraria montana</i> (N)	Kudzu
<i>Pueraria montana</i> var. <i>lobata</i> (N)	Kudzu
<i>Pycnanthemum flexuosum</i>	Mountain-mint
<i>Pyrrhopappus carolinianus</i>	False dandelion
<i>Quercus ashei</i>	
<i>Quercus comptoniae</i>	
<i>Quercus alba</i>	White oak
<i>Quercus chapmanii</i>	Chapman oak
<i>Quercus falcata</i>	Southern red oak
<i>Quercus falcata</i> var. <i>pagodifolia</i>	Cherry bark oak

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<i>Quercus geminata</i>	Sand-live oak, scrub oak
<i>Quercus hemisphaerica</i>	Laurel oak
<i>Quercus incana</i>	Blue-jack oak
<i>Quercus laevis</i>	Turkey oak
<i>Quercus laurifolia</i>	Diamond-leaf oak, laurel oak
<i>Quercus lyrata</i>	Overcup oak
<i>Quercus margaretta</i>	Sand-post oak
<i>Quercus marilandica</i>	Blackjack oak
<i>Quercus michauxii</i>	Swamp chestnut oak
<i>Quercus minima</i>	Dwarf-live oak
<i>Quercus muhlenbergii</i>	Chinquapin oak
<i>Quercus myrtifolia</i>	Myrtle oak
<i>Quercus nigra</i>	Water oak
<i>Quercus pagoda</i>	Cherrybark oak
<i>Quercus pumila</i>	Runner oak
<i>Quercus shumardii</i>	Shumard oak
<i>Quercus stellata</i>	Post oak
<i>Quercus velutina</i>	Black oak
<i>Quercus virginiana</i>	Live oak
<i>Raphanus raphanistrum</i>	Wild radish
<i>Ratibida pinnata</i>	
<i>Rhamnus caroliniana</i>	Buckthorn
<i>Rhapidophyllum hystrix</i>	Needle palm
<i>Rhexia alifanus</i>	Meadow-beauty
<i>Rhexia cubensis</i>	Meadow-beauty
<i>Rhexia lutea</i>	Meadow-beauty
<i>Rhexia mariana</i>	Pale meadow-beauty
<i>Rhexia nashii</i>	Meadow-beauty
<i>Rhexia parviflora</i> (SE)	Apalachicola meadow-beauty, small-flowered meadow-beauty
<i>Rhexia petiolata</i>	Meadow-beauty
<i>Rhexia salicifolia</i> (ST)	Panhandle meadow-beauty
<i>Rhexia virginica</i>	Meadow-beauty
<i>Rhododendron austrinum</i> (SE)	Florida flame azalea, orange azalea
<i>Rhododendron canescens</i>	Sweet pinxter azalea, wild azalea
<i>Rhododendron chapmanii</i> (FE)	Chapman's rhododendron, rose-bay
<i>Rhododendron serrulatum</i>	Swamp honeysuckle, swamp azalea
<i>Rhus copallina</i>	Winged sumac, shining sumac
<i>Rhus glabra</i>	Smooth sumac
<i>Rhynchosia difformis</i>	Doubleform snoutbean
<i>Rhynchosia minima</i>	Least snoutbean
<i>Rhynchospora caduca</i>	Beakrush
<i>Rhynchospora cephalantha</i>	Beakrush
<i>Rhynchospora corniculata</i>	Hornedrush
<i>Rhynchospora curtissii</i>	Beakrush
<i>Rhynchospora divergens</i>	Beakrush
<i>Rhynchospora fascicularis</i>	Beakrush
<i>Rhynchospora fernaldii</i>	Beakrush
<i>Rhynchospora gracilentia</i>	Beakrush
<i>Rhynchospora megalocarpa</i>	Sandyfield beaksedge
<i>Rhynchospora microcarpa</i>	Beakrush
<i>Rhynchospora miliacea</i>	Beakrush
<i>Rhynchospora mixta</i>	Beakrush



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<i>Rhynchospora odorata</i>	Beakrush
<i>Rhynchospora pineticola</i>	Pine barren beaksedge
<i>Rhynchospora plumosa</i>	Beakrush
<i>Rhynchospora tracyi</i>	Beakrush
<i>Richardia scabra</i>	
<i>Ricinus communis</i>	Castorbean
<i>Robinia hispida</i>	Bristly locust
<i>Robinia hispida var. hispida</i>	Bristly locust
<i>Robinia pseudoacacia</i>	Black locust
<i>Rorippa sessiliflora</i>	Yellow cress
<i>Rosa palustris</i>	Swamp rose
<i>Rotala ramosior</i>	Toothcups
<i>Rubus argutus</i>	Highbush blackberry
<i>Rubus cuneifolius</i>	Sand blackberry
<i>Rubus trivialis</i>	Dewberry
<i>Rudbeckia graminifolia</i>	Coneflower
<i>Rudbeckia mohrii</i>	
<i>Ruellia caerulea</i>	Britton's wild petunia
<i>Ruellia caroliniensis</i>	Wild petunia
<i>Ruellia noctiflora (SE)</i>	Night-flowering ruellia, night-flowering petunia
<i>Rumex chrysocarpus</i>	Dock, amamastla
<i>Rumex crispus</i>	Curled dock
<i>Rumex crispus ssp. crispus</i>	Curly dock
<i>Rumex hastatulus</i>	Sourdock
<i>Rumex obovatus</i>	Tropical dock
<i>Rumex paraguayensis</i>	Paraguayan dock
<i>Rumex pulcher</i>	Fiddle dock
<i>Rumex verticillatus</i>	Swamp dock
<i>Ruppia maritima</i>	Widgeon-grass
<i>Sabal minor</i>	Bluestem, dwarf palmetto
<i>Sabal palmetto</i>	Cabbage palm
<i>Sabatia bartramii</i>	Marsh pink
<i>Sabatia brevifolia</i>	Marsh pink
<i>Sabatia calycina</i>	Marsh pink
<i>Sabatia campanulata</i>	Marsh pink
<i>Sabatia dodecandra</i>	Marsh pink, marsh rose gentian
<i>Sabatia grandiflora</i>	Marsh pink, largeflower rose gentian
<i>Sabatia stellaris</i>	
<i>Sacciolepis indica</i>	India cupscale
<i>Sacciolepis striata</i>	American cupscale
<i>Sacciolepis striata</i>	American cupscale
<i>Sageretia minutiflora</i>	Buckthorn
<i>Sagina decumbens</i>	Pearlwort
<i>Sagittaria australis</i>	Longbeak arrowhead
<i>Sagittaria graminea</i>	Arrowhead
<i>Sagittaria graminea var. chapmanii</i>	Arrowhead
<i>Sagittaria lancifolia</i>	Arrowhead, bulltongue arrowhead
<i>Sagittaria latifolia</i>	Duck potato
<i>Sagittaria latifolia var. pubescens</i>	Duck potato
<i>Sagittaria platyphylla</i>	Delta arrowhead
<i>Sagotia triflora</i>	
<i>Salicornia virginica</i>	Perennial glasswort
<i>Salix caroliniana</i>	Coastal plain willow

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<i>Salix nigra</i>	Black willow
<i>Salsola kali</i>	Russian thistle, saltwort
<i>Salvia lyrata</i>	Lyre-leaved sage
<i>Sambucus canadensis</i>	Elderberry
<i>Samolus ebracteatus</i>	Water pimpernel
<i>Samolus parviflorus</i>	Pineland pimpernel
<i>Sanicula canadensis</i>	Black snakeroot
<i>Sapindus marginatus</i>	Soapberry
<i>Sapium sebiferum (N)</i>	Chinese tallow
<i>Sarcocornia ambigua</i>	Perennial glasswort
<i>Sarcocornia perennis</i>	Chickenclaws
<i>Sarracenia formosa</i>	
<i>Sarracenia flava</i>	Trumpets
<i>Sarracenia leucophylla (SE)</i>	White-top pitcher-plant
<i>Sarracenia psittacina (ST)</i>	Parrot pitcher-plant
<i>Sassafras albidum</i>	Sassafras
<i>Saururus cernuus</i>	Lizard's tail
<i>Schedonorus</i>	
<i>Schedonorus phoenix</i>	Tall fescue
<i>Schisandra coccinea (SE)</i>	Bay star vine, wild sasparilla, schisandra
<i>Schizachyrium littorale</i>	Shore little bluestem
<i>Schizachyrium maritimum</i>	
<i>Schizachyrium scoparium</i>	Little bluestem
<i>Schoenoplectus americanus</i>	Chairmaker's bulrush
<i>Schoenoplectus deltarum</i>	Delta bulrush
<i>Schoenoplectus robustus</i>	Sturdy bulrush
<i>Scirpus americanus</i>	Bulrush
<i>Scirpus californicus</i>	Bulrush
<i>Scirpus cyperinus</i>	Wool-grass
<i>Scirpus divaricatus</i>	Spreading bulrush
<i>Scirpus pungens</i>	Three-square
<i>Scirpus robustus</i>	Saltmarsh bulrush
<i>Scirpus validus</i>	Great bulrush
<i>Scleria ciliata</i>	Nutrush
<i>Scleria ciliata var. glabra</i>	Nutrush
<i>Scleria georgiana</i>	Nutrush
<i>Scleria hirtella</i>	Nutrush
<i>Scleria oligantha</i>	Littlehead nutrush
<i>Scleria pauciflora</i>	Nutrush
<i>Scleria reticularis</i>	Nutrush
<i>Scleria reticularis var. pubescens</i>	Nutrush
<i>Scleria triglomerata</i>	Nutrush
<i>Scleria verticillata</i>	Nutrush
<i>Scoparia dulcis</i>	Sweet broom
<i>Scoparia montevidensis</i>	
<i>Scrophularia marilandica</i>	Figwort
<i>Scutellaria floridana (FT,SE)</i>	Florida skullcap, helmet flowers
<i>Scutellaria integrifolia</i>	Skullcap
<i>Scutellaria lateriflora</i>	Blue skullcap
<i>Scutellaria lateriflora var. lateriflora</i>	Blue skullcap
<i>Sebastiania fruticosa</i>	Sebastian bush
<i>Secale cereale</i>	Cereal rye
<i>Selaginella apoda</i>	Meadow spikemoss

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<i>Selaginella arenicola</i>	Sand spikemoss
<i>Senecio aureus</i>	Golden ragwort
<i>Senecio glabellus</i>	Butterweed, golden ragwort
<i>Senna marilandica</i>	Maryland senna
<i>Senna obtusifolia</i>	Java-bean
<i>Serenoa repens</i>	Saw-palmetto
<i>Sesbania macrocarpa</i>	
<i>Sesbania punicea</i>	Purple sesban
<i>Sesbania vesicaria</i>	Bladderpod
<i>Sesuvium maritimum</i>	Sea purslane, slender seapurslane
<i>Sesuvium portulacastrum</i>	Sea purslane, shoreline seapurslane
<i>Setaria barbata</i>	East Indian bristlegrass
<i>Setaria corrugata</i>	Coastal bristlegrass
<i>Setaria geniculata</i>	Knotroot foxtail
<i>Setaria macrosperma</i>	Coral foxtail, coral bristlegrass
<i>Setaria magna</i>	Giant bristlegrass
<i>Setaria magna</i>	Giant bristlegrass
<i>Setaria viridis</i>	Green foxtail, green bristlegrass
<i>Setaria viridis</i> var. <i>viridis</i>	Green bristlegrass
<i>Seymeria cassioides</i>	Senna symeria, Black senna
<i>Sicyos angulatus</i>	Bur cucumber
<i>Sida acuta</i>	Broomweed
<i>Sida acuta</i>	Common wireweed
<i>Sida rhombifolia</i>	Indian hemp
<i>Sida spinosa</i>	Prickly mallow
<i>Sideroxylon thornei</i> (SE)	Thorne's buckthorn, Georgia bully
<i>Silene antirrhina</i>	Sleepy catchfly
<i>Silene polypetala</i> (FE)	Fringed campion, fringed catchfly, fringed pink, eastern fringed catchfly
<i>Silphium compositum</i> var. <i>ovatifolium</i>	
<i>Sisyrinchium atlanticum</i>	Blue-eyed grass
<i>Sisyrinchium nashii</i>	
<i>Sisyrinchium rosulatum</i>	Annual blue-eyed grass
<i>Sisyrinchium xerophyllum</i>	Scrub blue-eyed-grass
<i>Smilacina racemosa</i>	False solomon's-seal
<i>Smilax auriculata</i>	Greenbrier
<i>Smilax bona-nox</i>	Catbrier
<i>Smilax glauca</i>	Wild sarsaparilla
<i>Smilax laurifolia</i>	Bamboo-vine
<i>Smilax pumila</i>	Wild sarsaparilla
<i>Smilax rotundifolia</i>	Greenbrier
<i>Smilax smallii</i>	Jackson-brier
<i>Smilax tamnoides</i>	Hogbrier
<i>Smilax walteri</i>	Coral greenbrier
<i>Solanum americanum</i>	Nightshade
<i>Solanum capsicoides</i>	Cockroach berry
<i>Solanum carolinense</i>	Horse-nettle
<i>Solanum carolinense</i> var. <i>floridanum</i>	Horse-nettle
<i>Solanum lycopersicum</i>	Garden tomato
<i>Solanum lycopersicum</i> var. <i>lycopersicum</i>	Garden tomato
<i>Solanum nigrescens</i>	Black nightshade
<i>Solidago auriculata</i>	Eared goldenrod
<i>Solidago caesia</i>	Bluestem goldenrod



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<i>Solidago canadensis</i>	Goldenrod, tall goldenrod
<i>Solidago chapmanii</i>	Goldenrod, Chapman's goldenrod
<i>Solidago fistulosa</i>	Goldenrod
<i>Solidago odora</i>	Sweet goldenrod
<i>Solidago odora var. chapmanii</i>	Chapman's goldenrod
<i>Solidago sempervirens</i>	Seaside goldenrod
<i>Solidago sempervirens var. mexicana</i>	Seaside goldenrod
<i>Solidago stricta</i>	Wand goldenrod
<i>Sonchus asper</i>	Spiny-leaved sow thistle
<i>Sonchus oleraceus</i>	Common sow thistle
<i>Sorghastrum elliottii</i>	Slender indiagrass
<i>Sorghastrum nutans</i>	Wood grass
<i>Sorghastrum secundum</i>	Lopside indiagrass
<i>Sorghum halepense</i>	Johnsongrass
<i>Spartina alterniflora</i>	Smooth cordgrass, salt marsh cordgrass
<i>Spartina alterniflora var. glabra</i>	Saltmarsh cordgrass
<i>Spartina bakeri</i>	Sand cordgrass
<i>Spartina cynosuroides</i>	Big cordgrass
<i>Spartina patens</i>	Saltmeadow cordgrass, marshhay
<i>Spartina spartinae</i>	Gulf cordgrass
<i>Spermacoce prostrata</i>	
<i>Spermolepis divaricata</i>	Scale-seed
<i>Spermolepis echinata</i>	Scale-seed
<i>Sphenoclea zeylanica</i>	Gooseweed
<i>Sphenopholis nitida</i>	Shiny wedgescale
<i>Sphenopholis obtusata</i>	Prairie wedgescale
<i>Spilanthes americana</i>	
<i>Spiranthes cernua var. odorata</i>	Nodding ladies' tresses
<i>Spiranthes lacera</i>	Northern slender lady's tresses
<i>Spiranthes lacera var. gracilis</i>	Northern slender lady's tresses
<i>Spiranthes odorata</i>	Marsh lady's tresses
<i>Spiranthes ovalis (SE)</i>	Lesser ladies'-tresses, oval ladies' tresses, October ladies' tresses
<i>Spiranthes praecox</i>	Grass-leaved ladies'-tresses
<i>Spiranthes vernalis</i>	Spring ladies'-tresses
<i>Spirodela polyrrhiza</i>	Common duckmeat
<i>Spirodela punctata</i>	Duckmeat
<i>Sporobolus floridanus</i>	Florida dropseed
<i>Sporobolus indicus</i>	Smutgrass
<i>Sporobolus virginicus</i>	Virginia dropseed
<i>Stachydeoma graveolens (SE)</i>	Mock pennyroyal
<i>Stachys crenata (SE)</i>	Shade betony
<i>Staphylea trifolia (SE)</i>	Bladdernut, American bladdernut
<i>Stellaria media</i>	Common chickweed
<i>Stellaria prostrata</i>	Prostrate starwort
<i>Stellaria pubera</i>	
<i>Stenotaphrum secundatum</i>	St. Augustine grass
<i>Stewartia malachodendron (SE)</i>	Silky camellia
<i>Stillingia aquatica</i>	Corkwood
<i>Stipa avenacea</i>	Blackseed needlegrass
<i>Stipulicida setacea</i>	
<i>Strophostyles helvola</i>	Sand beans
<i>Strophostyles leiosperma</i>	Sand beans

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<i>Stuckenia pectinata</i>	Sago pondweed
<i>Stylisma humistrata</i>	
<i>Stylisma patens</i>	
<i>Stylosanthes biflora</i>	Pencil flower
<i>Styrax americana</i>	Storax
<i>Styrax americana</i> var. <i>pulverulenta</i>	Storax
<i>Styrax grandifolia</i>	Big-leaf snowbell
<i>Suaeda linearis</i>	Southern sea blite
<i>Symphotrichum bracei</i>	Brace's aster
<i>Symphotrichum elliotii</i>	Elliott's aster
<i>Symphotrichum lanceolatum</i>	White panicle aster
<i>Symphotrichum lanceolatum</i> ssp. <i>lanceolatum</i>	White panicle aster
<i>Symphotrichum lanceolatum</i> ssp. <i>lanceolatum</i> var. <i>latifolium</i>	White panicle aster
<i>Symphotrichum praealtum</i>	Willowleaf aster
<i>Symphotrichum praealtum</i> var. <i>praealtum</i>	Willowleaf aster
<i>Symphotrichum tenuifolium</i>	Perennial saltmarsh aster
<i>Symplocos tinctoria</i>	Horse sugar, sweetleaf
<i>Synedrella nodiflora</i>	Nodeweed
<i>Syngonanthus flavidulus</i>	Shoe buttons
<i>Syringodium filiforme</i>	Manatee-grass
<i>Tamarix parviflora</i>	Smallflower tamarisk
<i>Taxodium ascendens</i>	Pond cypress
<i>Taxodium distichum</i>	Bald cypress
<i>Taxus floridana</i> (SE)	Florida yew
<i>Tephrosia hispidula</i>	
<i>Teucrium canadense</i> var. <i>nashii</i>	Wood sage
<i>Thalassia testudinum</i>	Turtle grass
<i>Thalia geniculata</i>	Fireflag
<i>Thaspium trifoliatum</i>	Purple meadow parsnip
<i>Thelypteris dentata</i>	Downy shield fern
<i>Thelypteris hexagonoptera</i>	Beech fern
<i>Thelypteris interrupta</i>	Hottentot fern, willdenows fern
<i>Thelypteris kunthii</i>	Southern shield fern
<i>Thelypteris palustris</i>	Marsh fern
<i>Thelypteris quadrangularis</i> var. <i>versicolor</i>	Hairy maiden fern
<i>Tilia heterophylla</i>	Basswood
<i>Tillandsia bartramii</i>	Wild pine, air plant
<i>Tillandsia usneoides</i>	Spanish moss
<i>Torreya taxifolia</i> (FE)	Florida torreya, stinking cedar, gopherwood
<i>Toxicodendron radicans</i>	Poison ivy
<i>Toxicodendron toxicarium</i>	Eastern poison oak
<i>Trachospermum difforme</i>	Climbing dogbane
<i>Tradescantia fluminensis</i> (N)	Wandering jew
<i>Tradescantia hirsutiflora</i>	Spiderwort
<i>Tradescantia ohiensis</i>	Common spiderwort, bluejacket
<i>Tradescantia virginiana</i>	
<i>Tragia smallii</i>	
<i>Trepocarpus aethusae</i>	
<i>Triadenum tubulosum</i>	
<i>Triadenum virginicum</i>	Marsh St. John's wort
<i>Triadenum walteri</i>	Marsh St. John's wort

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<i>Trichostema dichotomum</i>	Blue curls, bastard pennyroyal
<i>Tridens ambiguus</i>	Pine barren tridens
<i>Tridens flavus</i>	Tall redtop
<i>Trifolium campestre</i>	Low hop clover
<i>Trifolium carolinianum</i>	Clover
<i>Trifolium dubium</i>	Clover
<i>Trifolium repens</i>	White clover
<i>Trifolium vesiculosum</i>	Arrowleaf clover
<i>Triglochin striata</i>	Arrowgrass
<i>Trillium lancifolium (SE)</i>	Wake-robins, lance-leaved wake-robin, narrow leaf trillium
<i>Triodanis biflora</i>	Clasping Venus' looking-glass
<i>Triodanus perfoliata</i>	Venus' looking-glass
<i>Triplasis americana</i>	Perennial sand grass
<i>Triplasis purpurea</i>	Purple sand grass
<i>Tripsacum dactyloides</i>	Eastern gamagrass
<i>Tritonia crocosmaeflora</i>	Montbretia
<i>Typha domingensis</i>	Southern cattail
<i>Typha latifolia</i>	Common cattail
<i>Ulmus alata</i>	Winged elm
<i>Ulmus americana</i>	American elm
<i>Ulmus rubra</i>	Slippery elm
<i>Uniola paniculata</i>	Sea oats
<i>Utricularia biflora</i>	Bladderwort
<i>Utricularia cornuta</i>	Horned bladderwort
<i>Utricularia floridana</i>	Florida yellow bladderwort
<i>Utricularia foliosa</i>	Leafy bladderwort
<i>Utricularia juncea</i>	Bladderwort
<i>Utricularia olivacea</i>	Piedmont bladderwort
<i>Utricularia purpurea</i>	Purple bladderwort
<i>Utricularia radiata</i>	Bladderwort
<i>Utricularia resupinata</i>	Small purple-bladderwort
<i>Utricularia subulata</i>	Bladderwort
<i>Uvularia floridana (SE)</i>	Bellwort, Florida bellwort, Florida merrybells
<i>Uvularia perfoliata</i>	Bellwort
<i>Uvularia sessilifolia</i>	Bellwort
<i>Vaccinium arboreum</i>	Sparkleberry
<i>Vaccinium corymbosum</i>	Highbush blueberry
<i>Vaccinium darrowii</i>	Blueberry
<i>Vaccinium myrsinites</i>	Shiny blueberry
<i>Vaccinium stamineum</i>	Deerberry
<i>Vallisneria americana</i>	Tapegrass (eelgrass), water celery
<i>Veratrum woodii (SE)</i>	False hellebore, Wood's false hellebore
<i>Verbascum blattaria</i>	Moth mullein
<i>Verbascum thapsus</i>	Wooly mullein
<i>Verbena bonariensis</i>	Vervain
<i>Verbena bracteata</i>	Bigbract verbena
<i>Verbena brasiliensis</i>	Vervain
<i>Verbena halei</i>	Texas vervain
<i>Verbena rigida</i>	Vervain
<i>Verbena utricifolia</i>	White vervain
<i>Verbesina alternifolia</i>	
<i>Verbesina chapmanii (ST)</i>	Chapman's crownbeard



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<i>Verbesina occidentalis</i>	
<i>Verbesina virginica</i>	Frost weed
<i>Vernicia fordii</i>	Tungoil tree
<i>Vernonia angustifolia</i> var. <i>mohrii</i>	Ironweed
<i>Vernonia gigantea</i>	Ironweed
<i>Veronica agrestis</i>	Green field speedwell
<i>Veronica arvensis</i>	Corn speedwell
<i>Veronica peregrina</i>	Neckweed
<i>Veronica peregrina</i> var. <i>xalapensis</i>	
<i>Viburnum dentatum</i>	Southern arrow-wood
<i>Viburnum dentatum</i> var. <i>scabrellum</i>	Southern arrow-wood
<i>Viburnum nudum</i>	Poosum haw
<i>Viburnum obovatum</i>	Small viburnum
<i>Viburnum rufidulum</i>	Rusty-haw
<i>Vicia acutifolia</i>	Sand vetch, fourleaf vetch
<i>Vicia floridana</i>	Florida vetch
<i>Vicia sativa</i>	Common vetch
<i>Vicia tetrasperma</i>	Lentil-tare
<i>Vicia villosa</i>	Winter vetch
<i>Vigna luteola</i>	Hairy-pod cowpea
<i>Viola affinis</i>	
<i>Viola hastata</i>	Halberd-leaved yellow violet
<i>Viola lanceolata</i>	Bog-white violet
<i>Viola primulifolia</i>	Primrose-leaved violet
<i>Viola septemloba</i>	
<i>Viola tricolor</i>	Johnny jumpup
<i>Vitex agnus-castus</i>	Lilac chastetree
<i>Vitis aestivalis</i>	Summer grape
<i>Vitis palmata</i>	Red grape
<i>Vitis rotundifolia</i>	Muscadine, scuppernong
<i>Vitis vulpina</i>	Frost grape
<i>Vulpia octoflora</i>	Common six-weeks grass
<i>Wahlenbergia marginata</i>	
<i>Warea sessilifolia</i>	
<i>Wisteria frutescens</i>	American wisteria
<i>Wisteria sinensis</i> (N)	Chinese wisteria
<i>Woodsia obtusa</i>	Cliff fern
<i>Woodwardia areolata</i>	Netted chain-fern
<i>Woodwardia virginica</i>	Virginia chain-fern
<i>Xanthium strumarium</i>	Cocklebur
<i>Xanthorhiza simplicissima</i> (SE)	Yellow-root, brook feather
<i>Xyris ambigua</i>	Yellow-eyed grass, coastalplain yellow-eyed grass
<i>Xyris brevifolia</i>	Yellow-eyed grass
<i>Xyris caroliniana</i>	Yellow-eyed grass
<i>Xyris drummondii</i>	Yellow-eyed grass
<i>Xyris elliottii</i>	Yellow-eyed grass
<i>Xyris flabelliformis</i>	Yellow-eyed grass
<i>Xyris iridifolia</i>	Yellow-eyed grass
<i>Xyris isoetifolia</i> (SE)	Yellow-eyed grass, quillwort yellow-eyed grass
<i>Xyris jupicai</i>	Common yellow-eyed grass
<i>Xyris longisepala</i> (SE)	Karst pond yellow-eyed grass, karst pond xyris, Kral's pond yellow-eyed grass
<i>Xyris scabrifolia</i> (ST)	Harper's yellow-eyed grass

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<i>Xyris stricta</i>	
<i>Yucca aloifolia</i>	Aloe yucca, Spanish bayonet
<i>Yucca flaccida</i>	Weak-leaf yucca
<i>Yucca gloriosa (SE)</i>	Moundlily yucca, Spanish dagger, Roman candle, palm lily
<i>Zannichellia spp.</i>	Horned pondweed
<i>Zannichellia palustris</i>	Horned pondweed
<i>Zanthoxylum americanum (SE)</i>	Toothache-tree, prickly ash
<i>Zanthoxylum clava-herculis</i>	Hercules'-club
<i>Zenobia pulverulenta</i>	Zenobia
<i>Zephyranthes candida</i>	Autumn zephyrlily
<i>Zephyranthes grandiflora</i>	Rosepink zephyrlily
<i>Zephyranthes treatiae (ST)</i>	Rain-lily, Treat's zephyr lily, easter lily, Treat's rain-lily
<i>Zigadenus densus</i>	Crow-poison
<i>Zigadenus glaberrimus</i>	
<i>Zizania aquatica</i>	Indian rice, annual wildrice
<i>Zizania aquatica var. aquatica</i>	Annual wildrice
<i>Zizaniopsis miliacea</i>	Water millet, Southern wild rice, Giant cutgrass
<i>Zizia aurea</i>	Golden alexander
<i>Zostera marina</i>	Salt water eel-grass

### COMMON AQUATIC INVERTEBRATES

#### Crustaceans

<i>Acetes americanus</i>	Aviu shrimp
<i>Alpheus armillatus</i>	Banded snapping shrimp
<i>Alpheus normanni</i>	Green snapping shrimp
<i>Ambidexter symmetricus</i>	Shrimp
<i>Calappa ocellata</i>	Flame crab
<i>Callinectes sapidus</i>	Common blue crab
<i>Callinectes similis</i>	Lesser blue crab
<i>Cambarus diogenes</i>	Devil crawfish
<i>Cambarus spp.</i>	Crawfish
<i>Cambarus striatus</i>	Hay crawfish
<i>Clibanarius vittatus</i>	Thinstripe hermit crab
<i>Dyspanopeus texana</i>	Gulf grassflat crab
<i>Farfantepenaeus aztecus</i>	Brown shrimp
<i>Farfantepenaeus duorarum</i>	Pink shrimp
<i>Faxonella clypeata</i>	Ditch fencing crawfish
<i>Hexapanopeus angustifrons</i>	Smooth mud crab
<i>Hippolyte pleuracanthus</i>	False zostera shrimp
<i>Hippolyte zostericola</i>	Zostera shrimp
<i>Latreutes parvulus</i>	Sargassum shrimp
<i>Leander tenuicornis</i>	Brown grass shrimp
<i>Libinia dubia</i>	Decorator crab
<i>Libinia emarginata</i>	Portly spider crab
<i>Litopenaeus setiferus</i>	White shrimp
<i>Menippe mercenaria</i>	Florida stone crab
<i>Metaporhaphis calcarata</i>	False arrow crab
<i>Neopanope packardii</i>	Florida grassflat crab
<i>Neopanope texana</i>	Mud crab
<i>Ovalipes floridanus</i>	Florida lady crab
<i>Pagurus annulipes</i>	Hermit crab
<i>Pagurus bonairensis</i>	Right handed hermit crab

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<i>Pagurus longicarpus</i>	Long-clawed hermit crab
<i>Pagurus maclaughlinae</i>	Right handed hermit crab
<i>Pagurus pollicaris</i>	Flatclaw hermit crab
<i>Pagurus spp.</i>	Right handed hermit crab
<i>Palaemon floridanus</i>	Florida grass shrimp
<i>Palaemonetes intermedius</i>	Brackish grass shrimp
<i>Palaemonetes pugio</i>	Daggerblade grass shrimp
<i>Palaemonetes vulgaris</i>	Common grass shrimp
<i>Periclimenes americanus</i>	American grass shrimp
<i>Periclimenes longicaudatus</i>	Longtail grass shrimp
<i>Persephona mediterranea</i>	Mottled purse crab
<i>Petrolisthes armatus</i>	Flat crab
<i>Petrolisthes armatus</i>	Green porcelain crab
<i>Portunus gibbesii</i>	Iridescent swimming crab
<i>Portunus spinimanus</i>	Blotched swimming crab
<i>Procambarus acutus</i>	White river crawfish
<i>Procambarus howellae</i>	Crawfish
<i>Procambarus paeninsulanus</i>	Crawfish
<i>Rhithropanopeus harrisi</i>	Estuarine mud crab
<i>Rimapenaeus constrictus</i>	Roughneck shrimp
<i>Rimapenaeus similis</i>	Roughback shrimp
<i>Rimapenaeus spp.</i>	Shrimp
<i>Sicyonia brevirostris</i>	Brown rock shrimp
<i>Sicyonia dorsalis</i>	Lesser rock shrimp
<i>Sicyonia laevigata</i>	Rock shrimp
<i>Sicyonia typica</i>	Kinglet rock shrimp
<i>Squilla empusa</i>	Mantis shrimp
<i>Tozeuma carolinense</i>	Arrow shrimp
<i>Xanthidae spp.</i>	Mud crabs
<i>Xiphopenaeus kroyeri</i>	Atlantic seabob

### Molluscs

<i>Amblema neislerii</i> (FE)	Fat threeridge mussel
<i>Brachidontes spp.</i>	Mussel
<i>Busycon contrarium</i>	Lightning whelk
<i>Busycon spiratus</i>	Pear whelk
<i>Corbicula manilensis</i> (N)	Asiatic clam
<i>Crassostrea virginica</i>	American oyster
<i>Elliptoideus sloatianus</i> (FT)	Purple bankclimber mussel
<i>Lolliguncula brevis</i>	Atlantic brief squid
<i>Martesia smithi</i>	Boring clam
<i>Melongena corona</i>	Crown conch
<i>Neritina reclivata</i>	Olive nerite
<i>Odostomia impressa</i>	Impressed odostome
<i>Ostrea equestris</i>	Crested oyster
<i>Polinices duplicatus</i>	Snail
<i>Rangia cuneata</i>	Atlantic rangia
<i>Thais haemastoma</i>	Southern oyster drill

### Echinoderms

<i>Astropecten articulatus</i>	Royal sea star
<i>Echinarachnius parma</i>	Sand dollar
<i>Echinaster sp.</i>	Sea star



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<i>Hemipholis elongata</i>	Sea star
<i>Luidia alternata</i>	Limp starfish
<i>Mellita quinquiesperforata</i>	Five-holed keyhole urchin
<i>Ophiothrix angulata</i>	Angular brittle star
<i>Ophioderma species</i>	Brittle star
<i>Luidia clathrata</i>	Lined sea star

### Miscellaneous

<i>Aurelia aurita</i>	Moon jellyfish
<i>Chrysaora quinquecirrha</i>	Sea nettle
<i>Cliona spp.</i>	Boring sponge
<i>Mnemiopsis mccradyi</i>	Comb jellyfish
<i>Polydora websteri</i>	Mud worm
<i>Renilla reniformis</i>	Sea pansy
<i>Stomolophus meleagris</i>	Cannonball jellyfish
<i>Stylochus frontalis</i>	Flatworm (oyster leech)

## AMPHIBIANS & REPTILES

### Amphibians

<i>Acris crepitans crepitans</i>	Northern cricket frog
<i>Acris gryllus dorsalis</i>	Florida cricket frog
<i>Acris gryllus gryllus</i>	Southern cricket frog
<i>Ambystoma bishopi (FT)</i>	Reticulated flatwoods salamander
<i>Ambystoma cingulatum (FE)</i>	Frosted flatwoods salamander
<i>Ambystoma opacum</i>	Marbled salamander
<i>Ambystoma talpoideum</i>	Mole salamander
<i>Ambystoma tigrinum tigrinum</i>	Eastern tiger salamander
<i>Amphiuma means</i>	Two-toed amphiuma
<i>Amphiuma pholeter</i>	One-toed ampiuma
<i>Bufo quercicus</i>	Oak toad
<i>Bufo terrestris</i>	Southern toad
<i>Desmognathus apalachicola</i>	Apalachicola dusky salamander
<i>Desmognathus auriculatus</i>	Southern dusky salamander
<i>Desmognathus fuscus conanti</i>	Spotted dusky salamander
<i>Eleutherodactylus planirostris (N)</i>	Greenhouse frog
<i>Eurycea cirrigera</i>	Southern two-lined salamander
<i>Eurycea guttolineata</i>	Three-lined salamander
<i>Eurycea quadridigitata</i>	Dwarf salamander
<i>Gastrophryne carolinensis</i>	Eastern narrowmouth toad
<i>Haideotriton wallacei (SSC)</i>	Georgia blind salamander
<i>Hemidactylium scutatum</i>	Four-toed salamander
<i>Hyla avivoca</i>	Bird-voiced treefrog
<i>Hyla chrysocelis</i>	Cope's gray treefrog
<i>Hyla cinerea</i>	Green treefrog
<i>Hyla femoralis</i>	Pinewoods treefrog
<i>Hyla gratiosa</i>	Barking treefrog
<i>Hyla squirella</i>	Squirrel treefrog
<i>Necturus alabamensis</i>	Alabama waterdog
<i>Notophthalmus perstriatus</i>	Striped newt
<i>Notophthalmus viridescens</i>	Eastern newt
<i>Plethodon grobmani</i>	Slimy salamander
<i>Pseudobranchius striatus</i>	Northern dwarf siren
<i>Pseudacris crucifer</i>	Spring peeper

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<i>Pseudacris feriarum</i>	Upland chorus frog
<i>Pseudacris nigrata</i>	Southern chorus frog
<i>Pseudacris ocularis</i>	Little grass frog
<i>Pseudacris ornata</i>	Ornate chorus frog
<i>Pseudotriton montanus</i>	Mud salamander
<i>Pseudotriton ruber</i>	Southern red salamander
<i>Rana capito</i> (SSC)	Gopher frog
<i>Rana catesbeiana</i>	Bullfrog
<i>Rana clamitans clamitans</i>	Bronze frog
<i>Rana grylio</i>	Pig frog
<i>Rana heckscheri</i>	River frog
<i>Rana pipiens</i>	Northern leopard frog
<i>Rana sphenocephala</i>	Southern leopard frog
<i>Scaphiopus holbrookii holbrookii</i>	Eastern spadefoot toad
<i>Siren intermedia intermedia</i>	Eastern lesser siren
<i>Siren lacertina</i>	Greater siren

### Reptiles

<i>Agkistrodon contortrix contortrix</i>	Southern copperhead
<i>Agkistrodon piscivorus conanti</i>	Florida cottonmouth
<i>Alligator mississippiensis</i> (SSC)	American alligator
<i>Anolis carolinensis</i>	Green anole
<i>Anolis sagrei</i> (N)	Cuban brown anole
<i>Apalone ferox</i>	Florida softshell
<i>Caretta caretta</i> (FT)	Loggerhead sea turtle
<i>Cemophora coccinea coccinea</i>	Scarlet snake
<i>Cemophora coccinea copei</i>	Northern scarlet snake
<i>Chelonia mydas</i> (FE)	Green turtle
<i>Chelydra serpentina serpentina</i>	Common snapping turtle
<i>Clemmys guttata</i>	Spotted turtle
<i>Cnemidophorus sexlineatus</i>	Six-lined racerunner
<i>Coluber constrictor helvigularis</i>	Brownchin racer
<i>Coluber constrictor priapus</i>	Southern black racer
<i>Crotalus adamanteus</i>	Eastern diamondback rattlesnake
<i>Deirochelys reticularia</i>	Chicken turtle
<i>Dermochelys coriacea</i> (FE)	Leatherback turtle
<i>Diadophis punctatus</i>	Ringneck snake
<i>Drymarchon couperi</i> (FT)	Eastern indigo snake
<i>Elaphe guttata guttata</i>	Corn snake
<i>Elaphe obsoleta spiloides</i>	Gray rat snake
<i>Eumeces anthracinus pluvialis</i>	Southern coal skink
<i>Eumeces fasciatus</i>	Five-lined skink
<i>Eumeces inexpectatus</i>	Southeastern five-lined skink
<i>Eumeces laticeps</i>	Broad-headed skink
<i>Eumerces egregius</i>	Mole skink
<i>Farancia abacura abacura</i>	Eastern mud snake
<i>Farancia erythrogramma</i>	Rainbow snake
<i>Gopherus polyphemus</i> (T)	Gopher tortoise
<i>Graptemys barbouri</i> (SSC)	Barbour's map turtle
<i>Heterodon platyrhinus</i>	Eastern hognose snake
<i>Heterodon simus</i>	Southern hognose snake
<i>Kinosternon subrubrum subrubrum</i>	Eastern mud turtle
<i>Lampropeltis calligaster rhombomaculata</i>	Mole kingsnake

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<i>Lampropeltis getulameansi</i>	Apalachicola kingsnake
<i>Lampropeltis getula</i>	Common kingsnake
<i>Lampropeltis triangulum elapsoides</i>	Scarlet kingsnake
<i>Lepidochelys kempii</i> (FE)	Kemp's ridley
<i>Macrochelys temminckii</i> (SSC)	Alligator snapping turtle
<i>Malaclemys terrapin</i>	Diamondback terrapin
<i>Masticophis flagellum flagellum</i>	Eastern coachwhip
<i>Micrurus fulvius fulvius</i>	Eastern coral snake
<i>Nerodia clarkii clarkii</i>	Gulf saltmarsh snake
<i>Nerodia cyclopion floridana</i>	Florida green watersnake
<i>Nerodia erythrogaster erythrogaster</i>	Redbelly watersnake
<i>Nerodia fasciata fasciata</i>	Banded watersnake
<i>Nerodia taxispilota</i>	Brown watersnake
<i>Ophiodrys aestivus</i>	Rough green snake
<i>Ophisaurus attenuatus longicaudus</i>	Eastern slender glass lizard
<i>Ophisaurus compressus</i>	Island glass lizard
<i>Ophisaurus ventralis</i>	Eastern glass lizard
<i>Pituophis melanoleucus mugitus</i> (FT)	Florida pine snake
<i>Pseudemys concinna suwanniensis</i> (SSC)	Suwannee cooter
<i>Pseudemys floridana floridana</i>	Florida cooter
<i>Pseudemys nelsoni</i>	Florida redbelly turtle
<i>Regina rigida</i>	Glossy water snake
<i>Regina septemvittata</i>	Queen snake
<i>Rhadinaea flavilata</i>	Pine woods snake
<i>Sceloporus undulatus undulatus</i>	Southern fence lizard
<i>Scincella lateralis</i>	Ground skink
<i>Seminatrix pygaea pygaea</i>	North florida swamp snake
<i>Sistrurus miliarius barbouri</i>	Dusky pigmy rattlesnake
<i>Sternotherus minor</i>	Loggerhead musk turtle
<i>Sternotherus odoratus</i>	Stinkpot
<i>Storeria dekayi wrightorum</i>	Midland brown snake
<i>Storeria occipitomaculata</i>	Redbelly snake
<i>Tantilla coronata</i>	Southeastern crowned snake
<i>Terrapene carolina major</i>	Gulf coast box turtle
<i>Thamnophis sauritus sauritus</i>	Eastern ribbon snake
<i>Thamnophis sirtalis sirtalis</i>	Eastern garter snake
<i>Trachemys scripta scripta</i>	Yellowbelly turtle
<i>Virginia striatula</i>	Rough earth snake
<i>Virginia valeriae valeriae</i>	Smooth earth snake

## FISHES

### Family: Achiridae

<i>Achirus lineatus</i>	Lined sole
<i>Trinectes maculatus</i>	Hogchoker

### Family: Acipenseridae

<i>Acipenser oxyrinchus desotoi</i> (FT)	Gulf sturgeon
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### Family: Amiidae

<i>Amia calva</i>	Bowfin
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### Family: Anguillidae

<i>Anguilla rostrata</i>	American eel
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### Family: Antennariidae

<i>Antennarius radiosus</i>	Singlespot frogfish
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### Family: Aphredoderidae



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<i>Aphredoderus sayanus</i>	Pirate perch
<b>Family: Ariidae</b>	
<i>Ariopsis felis</i>	Hardhead catfish
<i>Bagre marinus</i>	Gaftopsail catfish
<b>Family: Atherinopsidae</b>	
<i>Labidesthes sicculus</i>	Brook silverside
<i>Membras martinica</i>	Rough silverside
<i>Menidia</i> spp.	Silverside
<b>Family: Balistidae</b>	
<i>Aluterus schoepfi</i>	Orange filefish
<i>Aluterus scriptus</i>	Scrawled filefish
<i>Monocanthus ciliatus</i>	Fringed filefish
<i>Stephanolepis hispidus</i>	Planehead filefish
<b>Family: Batrachoididae</b>	
<i>Opsanus beta</i>	Gulf toadfish
<i>Porichthys plectrodon</i>	Atlantic midshipman
<b>Family: Belonidae</b>	
<i>Platybelone argalus</i>	Keeltail needlefish
<i>Strongylura marina</i>	Atlantic needlefish
<i>Strongylura notata</i>	Redfin needlefish
<i>Strongylura timucu</i>	Timucu
<i>Tylosurus crocodilus</i>	Houndfish
<b>Family: Blenniidae</b>	
<i>Chasmodes sabarrae</i>	Florida blenny
<i>Hypeurochilus multifilis</i>	Crested blenny
<i>Hypsoblennius hertz</i>	Feather blenny
<i>Hypsoblennius ionthas</i>	Freckled blenny
<i>Paraclinus</i> spp.	Blenny
<i>Parablennius marmoreus</i>	Seaweed blenny
<b>Family: Bothidae</b>	
<i>Ancylopsetta quadrocellata</i>	Ocellated flounder
<i>Citharichthys macrops</i>	Spotted whiff
<i>Citharichthys spilopterus</i>	Bay whiff
<i>Etropus crossotus</i>	Fringed flounder
<i>Etropus cyclosquamus</i>	Shelf flounder
<i>Paralichthys albigutta</i>	Gulf flounder
<i>Paralichthys lethostigma</i>	Southern flounder
<i>Paralichthys squamilentus</i>	Broad flounder
<b>Family: Carangidae</b>	
<i>Caranx hippos</i>	Crevalle jack
<i>Caranx latus</i>	Horse-eye jack
<i>Chloroscombrus chrysurus</i>	Atlantic bumper
<i>Hemicaranx amblyrhynchus</i>	Bluntnose jack
<i>Oligoplites saurus</i>	Leather jacket
<i>Selene setapinnis</i>	Atlantic moonfish
<i>Selene vomer</i>	Lookdown
<i>Trachinotus carolinus</i>	Florida pompano
<i>Trachinotus falcatus</i>	Permit
<b>Family: Carcharhinidae</b>	
<i>Carcharhinus isodon</i>	Finetooth shark
<i>Carcharhinus leucas</i>	Bull shark
<i>Carcharhinus limbatus</i>	Blacktip shark
<i>Rhizoprionodon terraenovae</i>	Atlantic sharpnose shark

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**Family: Catastomidae**

<i>Carpoides cyprinus</i>	Quillback
<i>Erimyzon sucetta</i>	Lake chubsucker
<i>Minytrema melanops</i>	Spotted sucker
<i>Moxostoma spp. (E)</i>	Grayfin redhorse

**Family: Centrarchidae**

<i>Ambloplites ariommus</i>	Shadow bass
<i>Centrarchus macropterus</i>	Flier
<i>Enneacanthus gloriosus</i>	Bluespotted sunfish
<i>Enneacanthus obesus</i>	Banded sunfish
<i>Lepomis auritus</i>	Redbreast sunfish
<i>Lepomis cyanellus (N)</i>	Green sunfish
<i>Lepomis gulosus</i>	Warmouth
<i>Lepomis humilus (N)</i>	Orange-spotted sunfish
<i>Lepomis macrochirus</i>	Bluegill
<i>Lepomis marginatus</i>	Dollar sunfish
<i>Lepomis microlophus</i>	Redear sunfish
<i>Lepomis punctatus</i>	Spotted sunfish
<i>Micropterus cataractae (E)</i>	Shoal bass
<i>Micropterus puntulatus (N)</i>	Spotted bass
<i>Micropterus salmoides</i>	Largemouth bass
<i>Pomoxis annularis (N)</i>	White crappie
<i>Pomoxis nigromaculatus</i>	Black crappie

**Family: Clupeidae**

<i>Alosa alabamae</i>	Alabama shad
<i>Alosa chrysochloris</i>	Skipjack herring
<i>Brevoortia spp.</i>	Gulf menhaden
<i>Dorosoma cepedianum</i>	Gizzard shad
<i>Dorosoma petenense</i>	Threadfin shad
<i>Harangula jaguana</i>	Scaled sardine
<i>Opisthonema oglinum</i>	Atlantic thread herring
<i>Sardinella aurita</i>	Spanish sardine

**Family: Cynoglossidae**

<i>Symphurus civitatum</i>	Offshore tonguefish
<i>Symphurus plagiusa</i>	Black cheeked tonguefish

**Family: Cyprinidae**

<i>Ctenopharyngodon idella (N)</i>	Grass carp
<i>Cyprinella (Notropis) venustus</i>	Blacktail shiner
<i>Cyprinella callitaenia (E)</i>	Bluestripe shiner
<i>Cyprinella leedsii</i>	Bannerfin shiner
<i>Cyprinus carpio (N)</i>	Common carp
<i>Ericymba (Notropis) buccatus</i>	Silverjaw minnow
<i>Hybopsis (Notropis) winchelli</i>	Clear chub
<i>Luxilus zonistius</i>	Bandfin shiner
<i>Notemigonus crysoleucas</i>	Golden shiner
<i>Notropis chalybaeus</i>	Ironcolor shiner
<i>Notropis cummingsae</i>	Dusky shiner
<i>Notropis harperi</i>	Redeye chub
<i>Notropis hypselopterus</i>	Sailfin shiner
<i>Notropis hysilepis</i>	Highscale shiner
<i>Notropis longirostris</i>	Longnose shiner
<i>Notropis maculatus</i>	Taillight shiner
<i>Notropis petersoni</i>	Coastal shiner

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<i>Notropis</i> spp.	Unidentified shiner
<i>Notropis texanus</i>	Weed shiner
<i>Notropis zonistius</i> (E)	Bandfin shiner
<i>Opsopoeodus (Notropis) emiliae</i>	Pugnose minnow
<i>Pteronotropis (Notropis) signipinnis</i>	Flagfin shiner
<i>Pteronotropis (Notropis) welaka</i> (SSC)	Bluenose shiner
<i>Pteronotropis grandipinnis</i>	Apalachee shiner
<i>Semotilus atromaculatus</i>	Creek chub
<i>Semotilus thoreauianus</i>	Dixie chub
<b>Family: Cyprinodontidae</b>	
<i>Adina xenica</i>	Diamond killifish
<i>Cyprinodon variegatus</i>	Sheepshead minnow
<b>Family: Dasyatidae</b>	
<i>Dasyatis americana</i>	Southern stingray
<i>Dasyatis sabina</i>	Atlantic stingray
<i>Dasyatis say</i>	Bluntnose stingray
<b>Family: Diodontidae</b>	
<i>Chilomycterus schoepfi</i>	Striped burrfish
<b>Family: Echeineidae</b>	
<i>Echeneis naucrates</i>	Sharksucker
<i>Echeneis neucratoides</i>	Whitefin sharksucker
<b>Family: Elasmomatidae</b>	
<i>Elassoma evergladei</i>	Everglades pygmy sunfish
<i>Elassoma okefenokee</i>	Okefenokee pygmy sunfish
<i>Elassoma zonatum</i>	Banded pygmy sunfish
<b>Family: Eleotridae</b>	
<i>Dormitator maculatus</i>	Fat sleeper
<i>Eleotris amblyopsis</i>	Large-scaled spinycheek sleeper
<i>Erotelis smaragdus</i>	Emerald sleeper
<b>Family: Elopidae</b>	
<i>Elops saurus</i>	Ladyfish
<i>Megalops atlanticus</i>	Tarpon
<b>Family: Engraulidae</b>	
<i>Anchoa cubana</i>	Cuban anchovy
<i>Anchoa hepsetus</i>	Bay anchovy
<i>Anchoa lyolepis</i>	Dusky anchovy
<i>Anchoa mitchilli</i>	Striped anchovy
<b>Family: Ephippidae</b>	
<i>Chaetodipterus faber</i>	Atlantic spadefish
<b>Family: Esocidae</b>	
<i>Esox americanus</i>	Redfin pickerel
<i>Esox niger</i>	Chain pickerel
<b>Family: Exocoetidae</b>	
<i>Hyporhamphus meeki</i>	American halfbeak
<b>Family: Fundulidae</b>	
<i>Fundulus chrysotus</i>	Golden topminnow
<i>Fundulus cingulatus</i>	Banded topminnow
<i>Fundulus confluentus</i>	Marsh killifish
<i>Fundulus disparottii</i>	Starhead topminnow
<i>Fundulus escambiae</i>	Russetfin topminnow
<i>Fundulus grandis</i>	Gulf killifish
<i>Fundulus lineolatus</i>	Lined topminnow
<i>Fundulus majalis</i>	Longnose killifish



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<i>Fundulus olivaceus</i>	Blackspotted topminnow
<i>Fundulus similis</i>	Longnose killifish
<i>Leptolucania ommata</i>	Pygmy killifish
<i>Lucania goodei</i>	Bluefin killifish
<i>Lucania parva</i>	Rainwater killifish
<b>Family: Gerreidae</b>	
<i>Eucinostomus argenteus</i>	Spotfin mojarra
<i>Eucinostomus gula</i>	Silver jenny
<i>Eucinostomus harengulus</i>	Spotfin mojarra
<b>Family: Gobiessocidae</b>	
<i>Gobiesox strumosus</i>	Skilletfish
<b>Family: Gobiidae</b>	
<i>Bathygobius soporator</i>	Frillfin goby
<i>Ctenogobius schufeldti</i>	Freshwater goby
<i>Ctenogobius boleosoma</i>	Darter goby
<i>Gobioides broussonetii</i>	Violet goby
<i>Gobionellus oceanicus</i>	Sharptail goby
<i>Gobiosoma bosc</i>	Naked goby
<i>Gobiosoma longipala</i>	Twoscale goby
<i>Gobiosoma robustum</i>	Code goby
<i>Microgobius gulosus</i>	Clown goby
<i>Microgobius thalasinus</i>	Green goby
<b>Family: Gymnuridae</b>	
<i>Gymnura micrura</i>	Smooth butterfly ray
<b>Family: Haemulidae</b>	
<i>Haemulon plumierii</i>	White grunt
<i>Orthopristis chrysoptera</i>	Pigfish
<b>Family: Ictaluridae</b>	
<i>Ameiurus bruneus</i>	Snail bullhead
<i>Ameiurus catus</i>	White catfish
<i>Ameiurus natalis</i>	Yellow bullhead
<i>Ameiurus nebulosus</i>	Brown bullhead
<i>Ameiurus serracanthus</i>	Spotted bullhead
<i>Ictalurus catus</i>	White catfish
<i>Ictalurus furcatus</i> (N)	Blue catfish
<i>Ictalurus punctatus</i>	Channel catfish
<i>Noturus funebris</i>	Black madtom
<i>Noturus gyrinus</i>	Tadpole madtom
<i>Noturus leptacanthus</i>	Speckled madtom
<i>Pylodictis olivaris</i> (N)	Flathead catfish
<b>Family: Labridae</b>	
<i>Halichoeres bivittatus</i>	Slippery dick
<i>Lachnolaimus maximus</i>	Hogfish
<i>Xyrichtys novacula</i>	Pearly razorfish
<b>Family: Lepisosteidae</b>	
<i>Lepisosteus oculatus</i>	Spotted gar
<i>Lepisosteus osseus</i>	Longnose gar
<i>Lepisosteus platyrhincus</i>	Florida gar
<b>Family: Lobotidae</b>	
<i>Lobotes surinamensis</i>	Tripletail
<b>Family: Lutjanidae</b>	
<i>Lutjanus campechanus</i>	Red snapper
<i>Lutjanus griseus</i>	Gray snapper

Scientific Name	Common Name
<i>Lutjanus synagris</i>	Lane snapper
<b>Family: Moronidae</b>	
<i>Morone chrysops</i> (N)	White bass
<i>Morone saxatilis</i>	Striped bass
<i>Morone saxatilis x chrysops</i>	Sunshine bass
<b>Family: Mugilidae</b>	
<i>Agonostomus monticola</i>	Mountain mullet
<i>Mugil cephalus</i>	Striped mullet
<i>Mugil curema</i>	White mullet
<b>Family: Myliobatidae</b>	
<i>Aetobatus narinari</i>	Spotted eagle ray
<i>Rhinoptera bonasus</i>	Cownosed ray
<b>Family: Narcinidae</b>	
<i>Narcine bancroftii</i>	Lesser electric ray
<b>Family: Orgocephalidae</b>	
<i>Ogcocephalus cubifrons</i>	Polka-dot batfish
<i>Ogcocephalus parvus</i>	Roughback batfish
<b>Family: Ophichthidae</b>	
<i>Myrophis punctatus</i>	Speckled worm eel
<i>Ophichthus gomesii</i>	Shrimp eel
<b>Family: Ophidiidae</b>	
<i>Ophidion holbrookii</i>	Bank cusk-eel
<i>Ophidion josephi</i>	Crested cusk-eel
<b>Family: Ostraciidae</b>	
<i>Acanthostracion quadricornis</i>	Scrawled cowfish
<i>Lactophrys quadricornis</i>	Scrawled cowfish
<i>Lactophrys trigonus</i>	Smooth trunkfish
<b>Family: Percidae</b>	
<i>Ammocrypta bifascia</i>	Florida sand darter
<i>Etheostoma edwini</i>	Brown darter
<i>Etheostoma fusiforme</i>	Swamp darter
<i>Etheostoma parvipinne</i>	Goldstripe darter
<i>Etheostoma swaini</i>	Gulf darter
<i>Perca flavescens</i> (N)	Yellow perch
<i>Percina nigrofasciata</i>	Black banded darter
<i>Sander canadense</i> (N)	Sauger
<b>Family: Petromyzontidae</b>	
<i>Ichthyomyzon gagei</i>	Southern brook lamprey
<b>Family: Phycidae</b>	
<i>Urophycis floridana</i>	Southern hake
<i>Urophycis regia</i>	Spotted hake
<b>Family: Poeciliidae</b>	
<i>Gambusia holbrooki</i>	Eastern mosquitofish
<i>Heterandria formosa</i>	Least killifish
<i>Poecilia latipinna</i>	Sailfin molly
<b>Family: Polyodontidae</b>	
<i>Polydon spathula</i> (N)	Paddlefish
<b>Family: Pomatomidae</b>	
<i>Pomatomus saltatrix</i>	Bluefish
<b>Family: Priacanthidae</b>	
<i>Priacanthus arenatus</i>	Bigeye
<b>Family: Rachycentridae</b>	
<i>Rachycentron canadum</i>	Cobia

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**Family: Rajidae**

*Raja eglanteria* Clearnose skate

**Family: Scaridae**

*Nicholsina usta* Emerald parrotfish

**Family: Sciaenidae**

*Bairdiella chrysoura* Silver perch

*Cynoscion arenarius* Sand seatrout

*Cynoscion nebulosus* Spotted seatrout

*Cynoscion nothus* Trout

*Larimus fasciatus* Banded drum

*Leiostomus xanthurus* Spot

*Menticirrhus americanus* Southern kingfish

*Menticirrhus littoralis* Gulf kingfish

*Menticirrhus saxatilis* Northern kingfish

*Micropogonias undulatus* Atlantic croaker

*Pogonias cromis* Black drum

*Sciaenops ocellatus* Red drum

*Stellifer lanceolatus* Star drum

**Family: Scombridae**

*Scomberomorus maculatus* Spanish mackerel

**Family: Scorpaenidae**

*Scorpaena brasiliensis* Barbfish

**Family: Serranidae**

*Centropristis philadelphica* Rock sea bass

*Centropristis striata* Black sea bass

*Diplectrum bivittatum* Dwarf sand perch

*Diplectrum formosum* Sand perch

*Epinephelus morio* Red grouper

*Mycteroperca microlepis* Gag grouper

*Serraniculus pumilio* Pygmy seabass

*Serranus subligarius* Belted sandfish

**Family: Sparidae**

*Archosargus probatocephalus* Sheepshead

*Calamus arctifrons* Grass porgy

*Diplodus holbrookii* Spottail pinfish

*Lagodon rhomboides* Pinfish

*Stenotomus caprinus* Longspine porgy

**Family: Sphyraenidae**

*Sphyraena barracuda* Great barracuda

*Sphyraena borealis* Northern sennet

*Sphyraena guachancho* Guachancho

**Family: Sphyrnidae**

*Sphyrna tiburo* Bonnethead shark

**Family: Stromateidae**

*Peprilus burti* Gulf butterfish

*Peprilus paru* Harvest fish

**Family: Syngnathidae**

*Anarchopterus criniger* Fringed pipefish

*Hippocampus erectus* Lined seahorse

*Hippocampus zosterae* Dwarf seahorse

*Syngnathus floridae* Dusky pipefish

*Syngnathus louisianae* Chain pipefish

*Syngnathus scovelli* Gulf pipefish



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**Family: Synodontidae**

<i>Synodus foetens</i>	Inshore lizardfish
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**Family: Tetradontidae**

<i>Sphoeroides nephelus</i>	Southern puffer
<i>Sphoeroides parvus</i>	Least puffer

**Family: Trichiuridae**

<i>Trichiurus lepturus</i>	Atlantic cutlassfish
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**Family: Triglidae**

<i>Prionotus longispinosus</i>	Bigeye searobin
<i>Prionotus rubio</i>	Blackwing searobin
<i>Prionotus scitulus</i>	Leopard searobin
<i>Prionotus tribulus</i>	Bighead searobin

**Family: Uranoscopidae**

<i>Astroscopus y-graecum</i>	Southern stargazer
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**BIRDS**

**Family: Accipitridae**

<i>Accipiter cooperii</i>	Cooper's hawk
<i>Accipiter striatus</i>	Sharp-shinned hawk
<i>Aquila chrysaetos (A)</i>	Golden eagle
<i>Buteo brachyurus (A)</i>	Short-tailed hawk
<i>Buteo jamaicensis</i>	Red-tailed hawk
<i>Buteo lagopus (A)</i>	Rough-legged hawk
<i>Buteo lineatus</i>	Red-shouldered hawk
<i>Buteo platypterus</i>	Broad-winged hawk
<i>Circus cyaneus</i>	Northern harrier
<i>Elanoides forficatus</i>	Swallow-tailed kite
<i>Falco columbarius</i>	Merlin
<i>Falco peregrinus</i>	Peregrine falcon
<i>Falco sparverius</i>	American kestrel
<i>Falco sparverius paulus (ST)</i>	Southeastern kestrel
<i>Haliaeetus leucocephalus</i>	Bald eagle
<i>Ictinia mississippiensis</i>	Mississippi kite
<i>Pandion haliaetus</i>	Osprey

**Family: Alcedinidae**

<i>Ceryle alcyon</i>	Belted kingfisher
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**Family: Anatidae**

<i>Aix sponsa</i>	Wood duck
<i>Anas acuta</i>	Northern pintail
<i>Anas americana</i>	American wigeon
<i>Anas clypeata</i>	Northern shoveler
<i>Anas crecca</i>	Green-winged teal
<i>Anas discors</i>	Blue-winged teal
<i>Anas fulvigula</i>	Mottled duck
<i>Anas platyrhynchos</i>	Mallard
<i>Anas rubripes</i>	American black duck
<i>Anas strepera</i>	Gadwall
<i>Aythya affinis</i>	Lesser scaup
<i>Aythya americana</i>	Redhead
<i>Aythya collaris</i>	Ring-necked duck
<i>Aythya marila</i>	Greater scaup
<i>Aythya valisineria</i>	Canvasback
<i>Branta canadensis</i>	Canada goose

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<i>Bucephala albeola</i>	Bufflehead
<i>Bucephala clangula</i>	Common goldeneye
<i>Chen caerulescens</i>	Snow goose
<i>Clangula hyemalis</i>	Long-tailed duck
<i>Dendrocygna bicolor</i>	Fulvous whistling-duck
<i>Lophodytes cucullatus</i>	Hooded merganser
<i>Melanitta fusca</i>	White-winged scoter
<i>Melanitta nigra</i>	Black scoter
<i>Melanitta perspicillata</i>	Surf scoter
<i>Mergus serrator</i>	Red-breasted merganser
<i>Oxyura jamaicensis</i>	Ruddy duck
<b>Family: Anhingidae</b>	
<i>Anhinga anhinga</i>	Anhinga
<b>Family: Apodidae</b>	
<i>Chaetura pelagica</i>	Chimmey swift
<i>Chaetura vauxi</i> (A)	Vaux's swift
<b>Family: Aramidae</b>	
<i>Aramus guarauna</i> (SSC)	Limpkin
<b>Family: Ardeidae</b>	
<i>Ardea alba</i>	Great egret
<i>Ardea herodias</i>	Great blue heron
<i>Botaurus lentiginosus</i>	American bittern
<i>Bubulcus ibis</i>	Cattle egret
<i>Butorides striatus</i>	Green-backed heron
<i>Egretta caerulea</i> (SSC)	Little blue heron
<i>Egretta rufescens</i> (SSC)	Reddish egret
<i>Egretta thula</i> (SSC)	Snowy egret
<i>Egretta tricolor</i> (SSC)	Tricolored heron
<i>Ixobrychus exilis</i>	Least bittern
<i>Nycticorax nycticorax</i>	Black-crowned night-heron
<i>Nycticorax violaceus</i>	Yellow-crowned night-heron
<b>Family: Bombycillidae</b>	
<i>Bombycilla cedrorum</i>	Cedar waxwing
<b>Family: Caprimulgidae</b>	
<i>Caprimulgus carolinensis</i>	Chuck-will's widow
<i>Caprimulgus vociferus</i>	Whip-poor-will
<i>Chordeiles acutipennis</i>	Lesser nighthawk
<i>Chordeiles minor</i>	Common nighthawk
<b>Family: Cardinalidae</b>	
<i>Cardinalis cardinalis</i>	Northern cardinal
<i>Guiraca caerulea</i>	Blue grosbeak
<i>Passerina ciris</i>	Painted bunting
<i>Passerina cyanea</i>	Indigo bunting
<i>Pheucticus ludovicianus</i>	Rose-breasted grosbeak
<i>Pheucticus melanocephalus</i> (A)	Black-headed grosbeak
<i>Spiza americana</i>	Dickcissel
<b>Family: Cathartidae</b>	
<i>Cathartes aura</i>	Turkey vulture
<i>Coragyps atratus</i>	Black vulture
<b>Family: Certhiidae</b>	
<i>Certhia americana</i>	Brown creeper
<b>Family: Charadriidae</b>	
<i>Charadrius a.tenuirostris</i> (ST)	Southeastern snowy plover

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<i>Charadrius alexandrinus</i> (ST)	Snowy plover
<i>Charadrius melodus</i> (FT)	Piping plover
<i>Charadrius semiplamatus</i>	Semipalmated plover
<i>Charadrius vociferus</i>	Killdeer
<i>Charadrius wilsonia</i>	Wilson's plover
<i>Pluvialis dominica</i>	American golden-plover
<i>Pluvialis squatarola</i>	Black-bellied plover
<b>Family: Ciconiidae</b>	
<i>Mycteria americana</i> (FE)	Wood stork
<b>Family: Columbidae</b>	
<i>Columbia livia</i> (N)	Rock pigeon
<i>Columbina passerina</i>	Common ground-dove
<i>Streptopelia decaocto</i> (N)	Eurasian collared-dove
<i>Zenaida asiatica</i>	White-winged dove
<i>Zenaida macroura</i>	Mourning dove
<b>Family: Corvidae</b>	
<i>Corvus brachyrhynchos</i>	American crow
<i>Corvus ossifragus</i>	Fish crow
<i>Cyanocitta cristata</i>	Blue jay
<b>Family: Cuculidae</b>	
<i>Coccyzus americanus</i>	Yellow-billed cuckoo
<i>Coccyzus erythrophthalmus</i>	Black-billed cuckoo
<i>Coccyzus minor</i> (A)	Mangrove cuckoo
<i>Crotophaga sulcirostris</i>	Groove-billed ani
<b>Family: Emberizidae</b>	
<i>Aimophila aestivalis</i>	Bachman's sparrow
<i>Ammodramus caudacutus</i>	Saltmarsh sharp-tailed sparrow
<i>Ammodramus henslowii</i>	Henslow's sparrow
<i>Ammodramus leconteii</i>	LeConte's sparrow
<i>Ammodramus m. junciolus</i> (SSC)	Wakulla seaside sparrow
<i>Ammodramus maritimus</i>	Seaside sparrow
<i>Ammodramus nelsoni</i>	Nelson's sharp-tailed sparrow
<i>Ammodramus savannarum</i>	Grasshopper sparrow
<i>Chondestes grammacus</i>	Lark sparrow
<i>Junco hyemalis</i>	Dark-eyed junco
<i>Melospiza georgiana</i>	Swamp sparrow
<i>Melospiza lincolni</i>	Lincoln's sparrow
<i>Melospiza melodia</i>	Song sparrow
<i>Passerculus sandwichensis</i>	Savannah sparrow
<i>Passerella iliaca</i>	Fox sparrow
<i>Pipilo erythrophthalmus</i>	Eastern towhee
<i>Plectrophenax nivalis</i> (A)	Snow bunting
<i>Poocetes gramineus</i>	Vesper sparrow
<i>Spizella pallida</i>	Clay-colored sparrow
<i>Spizella passerina</i>	Chipping sparrow
<i>Spizella pusilla</i>	Field sparrow
<i>Zonotrichia albicollis</i>	White-throated sparrow
<i>Zonotrichia leucophrys</i>	White-crowned sparrow
<b>Family: Fregatidae</b>	
<i>Fregata magnificens</i>	Magnificent frigatebird
<b>Family: Fringillidae</b>	
<i>Carduelis pinus</i>	Pine siskin
<i>Carduelis tristis</i>	American goldfinch



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<i>Carpodacus purpureus</i>	Purple finch
<i>Carpodacus purpureus (N)</i>	House finch
<b>Family: Gaviidae</b>	
<i>Gavia immer</i>	Common loon
<i>Gavia pacifica</i>	Pacific loon
<i>Gavia stellata</i>	Red-throated loon
<b>Family: Gruidae</b>	
<i>Grus canadensis (A)</i>	Sandhill crane
<i>Grus c. pratensis (ST; A)</i>	Florida sandhill crane
<b>Family: Haematopodidae</b>	
<i>Haematopus palliatus (SSC)</i>	American oystercatcher
<b>Family: Hirundinidae</b>	
<i>Hirundo rustica</i>	Barn swallow
<i>Petrochelidon fulva</i>	Cave swallow
<i>Petrochelidon pyrrhonota</i>	Cliff swallow
<i>Progne subis</i>	Purple martin
<i>Riparia riparia</i>	Bank swallow
<i>Stelgidopteryx serripennis</i>	Northern rough-winged swallow
<i>Tachycineta bicolor</i>	Tree swallow
<b>Family: Icteridae</b>	
<i>Agelaius phoeniceus</i>	Red-winged blackbird
<i>Dolichonyx oryzivorus</i>	Bobolink
<i>Euphagus carolinus</i>	Rusty blackbird
<i>Euphagus cyanocephalus</i>	Brewer's blackbird
<i>Icterus galbula</i>	Baltimore oriole
<i>Icterus spurius</i>	Orchard oriole
<i>Molothrus aeneus (A)</i>	Bronzed cowbird
<i>Molothrus ater</i>	Brown-headed cowbird
<i>Molothrus bonariensis (A)</i>	Shiny cowbird
<i>Quiscalus major</i>	Boat-tailed grackle
<i>Quiscalus quiscula</i>	Common grackle
<i>Sturnella magna</i>	Eastern meadowlark
<i>Xanthocephalus xanthocephalus</i>	Yellow-headed blackbird
<b>Family: Laniidae</b>	
<i>Lanius ludovicianus</i>	Loggerhead shrike
<b>Family: Laridae</b>	
<i>Chlidonias niger</i>	Black tern
<i>Gelochelidon nilotica</i>	Gull-billed tern
<i>Hydroprogne caspia</i>	Caspian tern
<i>Larus argentatus</i>	Herring gull
<i>Larus atricilla</i>	Laughing gull
<i>Larus delawarensis</i>	Ring-billed gull
<i>Larus fuscus</i>	Lesser black-backed gull
<i>Larus marinus</i>	Great black-backed gull
<i>Larus philadelphia</i>	Bonaparte's gull
<i>Larus pipixcan</i>	Franklin's gull
<i>Onychoprion fuscata</i>	Sooty tern
<i>Rynchops niger (SSC)</i>	Black skimmer
<i>Stercorarius parasiticus</i>	Parasitic jaeger
<i>Stercorarius pomarinus</i>	Pomarine jaeger
<i>Sterna antillarum (ST)</i>	Least tern
<i>Sterna forsteri</i>	Forster's tern
<i>Sterna hirundo</i>	Common tern

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<i>Sterna paradisaea</i> (A)	Arctic tern
<i>Thalasseus maxima</i>	Royal tern
<i>Thalasseus sandvicensis</i>	Sandwich tern
<b>Family: Mimidae</b>	
<i>Dumetella carolinensis</i>	Gray catbird
<i>Mimus polyglottos</i>	Northern mockingbird
<i>Toxostoma rufum</i>	Brown thrasher
<b>Family: Motacillidae</b>	
<i>Anthus spargueii</i>	Sprague's pipit
<i>Anthus spinoletta</i>	American pipit
<b>Family: Paridae</b>	
<i>Baeolophus bicolor</i>	Tufted titmouse
<i>Peocile carolinensis</i>	Carolina chickadee
<b>Family: Parulidae</b>	
<i>Dendroica caerulescens</i>	Black-throated blue warbler
<i>Dendroica castanea</i>	Bay-breasted warbler
<i>Dendroica cerulea</i>	Cerulean warbler
<i>Dendroica coronata</i>	Yellow-rumped warbler
<i>Dendroica d. stoddardi</i>	Stoddard's yellow-throated warbler
<i>Dendroica discolor</i>	Prairie warbler
<i>Dendroica dominica</i>	Yellow-throated warbler
<i>Dendroica fusca</i>	Blackburnian warbler
<i>Dendroica magnolia</i>	Magnolia warbler
<i>Dendroica palmarum</i>	Palm warbler
<i>Dendroica pensylvanica</i>	Chestnut-sided warbler
<i>Dendroica petechia</i>	Yellow warbler
<i>Dendroica pinus</i>	Pine warbler
<i>Dendroica striata</i>	Blackpoll warbler
<i>Dendroica tigrina</i>	Cape May warbler
<i>Dendroica virens</i>	Black-throated green warbler
<i>Geothlypis trichas</i>	Common yellowthroat
<i>Helmitheros vermivorus</i>	Worm-eating warbler
<i>Icteria virens</i>	Yellow-breasted chat
<i>Limnothlypis swainsonii</i>	Swainson's warbler
<i>Mniotilta varia</i>	Black-and-white warbler
<i>Oporornis agilis</i>	Connecticut warbler
<i>Oporornis formosus</i>	Kentucky warbler
<i>Parula americana</i>	Northern parula
<i>Protonotaria citrea</i>	Prothonotary warbler
<i>Seiurus aurocapillus</i>	Ovenbird
<i>Seiurus motacilla</i>	Louisiana waterthrush
<i>Seiurus noveboracensis</i>	Northern waterthrush
<i>Setophaga ruticilla</i>	American redstart
<i>Vermivora celata</i>	Orange-crowned warbler
<i>Vermivora chrysoptera</i>	Golden-winged warbler
<i>Vermivora peregrina</i>	Tennessee warbler
<i>Vermivora pinus</i>	Blue-winged warbler
<i>Vermivora ruficapilla</i>	Nashville warbler
<i>Wilsonia canadensis</i>	Canada warbler
<i>Wilsonia citrina</i>	Hooded warbler
<i>Wilsonia pusilla</i>	Wilson's warbler
<b>Family: Passeridae</b>	
<i>Passer domesticus</i>	House sparrow

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**Family: Pelecanidae**

<i>Pelecanus erythrorhynchos</i>	American white pelican
<i>Pelecanus occidentalis</i> (SSC)	Brown pelican

**Family: Phalacrocoracidae**

<i>Phalacrocorax auritus</i>	Double-crested cormorant
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**Family: Phasianidae**

<i>Colinus virginianus</i>	Northern bobwhite
<i>Meleagris gallopavo</i>	Wild turkey

**Family: Picidae**

<i>Colaptes auratus</i>	Northern flicker
<i>Dryocopus pileatus</i>	Pileated woodpecker
<i>Melanerpes carolinus</i>	Red-bellied woodpecker
<i>Melanerpes erythrocephalus</i>	Red-headed woodpecker
<i>Picoides borealis</i> (FE)	Red-cockaded woodpecker
<i>Picoides pubescens</i>	Downy woodpecker
<i>Picoides villosus</i>	Hairy woodpecker
<i>Sphyrapicus varius</i>	Yellow-bellied sapsucker

**Family: Podicipedidae**

<i>Podiceps auritus</i>	Horned grebe
<i>Podiceps nigricollis</i>	Eared grebe
<i>Podilymbus podiceps</i>	Pied-billed grebe

**Family: Rallidae**

<i>Coturnicops noveboracensis</i> (A)	Yellow rail
<i>Fulica americana</i>	American coot
<i>Gallinula chloropus</i>	Common moorhen
<i>Laterallus jamaicensis</i>	Black rail
<i>Porphyryla martinica</i>	Purple gallinule
<i>Porzana carolina</i>	Sora
<i>Rallus elegans</i>	King rail
<i>Rallus l. scotti</i>	Florida clapper rail
<i>Rallus limicola</i>	Virginia rail
<i>Rallus longirostris</i>	Clapper rail

**Family: Recurvirostridae**

<i>Himantopus mexicanus</i>	Black-necked stilt
<i>Recurvirostra americana</i>	American avocet

**Family: Regulidae**

<i>Regulus calendula</i>	Ruby-crowned kinglet
<i>Regulus satrapa</i>	Golden-crowned kinglet

**Family: Scolopacidae**

<i>Actitis macularia</i>	Spotted sandpiper
<i>Arenaria interpres</i>	Ruddy turnstone
<i>Bartramia longicauda</i>	Upland sandpiper
<i>Calidris alba</i>	Sanderling
<i>Calidris alpina</i>	Dunlin
<i>Calidris bairdii</i>	Baird's sandpiper
<i>Calidris canutus</i>	Red knot
<i>Calidris fuscicollis</i>	White-rumped sandpiper
<i>Calidris himantopus</i>	Stilt sandpiper
<i>Calidris mauri</i>	Western sandpiper
<i>Calidris melanotos</i>	Pectoral sandpiper
<i>Calidris minutilla</i>	Least sandpiper
<i>Calidris pusilla</i>	Semipalmated sandpiper
<i>Gallinago gallinago</i>	Common snipe



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<i>Limnodromus griseus</i>	Short-billed dowitcher
<i>Limnodromus scolopaceus</i>	Long-billed dowitcher
<i>Limosa fedoa</i>	Marbled godwit
<i>Numenius americanus</i>	Long-billed curlew
<i>Numenius phaeopus</i>	Whimbrel
<i>Phalaropus tricolor</i>	Wilson's phalarope
<i>Scolopax minor</i>	American woodcock
<i>Tringa flavipes</i>	Lesser yellowlegs
<i>Tringa melanoleuca</i>	Greater yellowlegs
<i>Tringa semipalmata</i>	Willet
<i>Tringa solitaria</i>	Solitary sandpiper
<i>Tryngites subruficollis</i>	Buff-breasted sandpiper
<b>Family: Sittidae</b>	
<i>Sitta canadensis</i>	Red-breasted nuthatch
<i>Sitta carolinensis</i>	White-breasted nuthatch
<i>Sitta pusilla</i>	Brown-headed nuthatch
<b>Family: Sturnidae</b>	
<i>Sturnus vulgaris</i> (N)	European starling
<b>Family: Sulidae</b>	
<i>Morus bassanus</i>	Northern gannet
<i>Sula leucogaster</i>	Brown booby
<b>Family: Sylviidae</b>	
<i>Polioptila caerulea</i>	Blue-gray gnatcatcher
<b>Family: Thraupidae</b>	
<i>Piranga ludoviciana</i>	Western tanager
<i>Piranga olivacea</i>	Scarlet tanager
<i>Piranga rubra</i>	Summer tanager
<b>Family: Threskiornithidae</b>	
<i>Ajaia ajaja</i>	Roseate spoonbill
<i>Eudocimus albus</i> (SSC)	White ibis
<i>Plegadis falcinellus</i>	Glossy ibis
<b>Family: Trochilidae</b>	
<i>Archilochus alexandri</i>	Black-chinned hummingbird
<i>Archilochus colubris</i>	Ruby-throated hummingbird
<i>Amazilia yucatanensis</i>	Buff-bellied hummingbird
<i>Selasphorus rufus</i>	Rufous hummingbird
<b>Family: Troglodytidae</b>	
<i>Cistothorus p. marianae</i> (SSC)	Marian's marsh wren
<i>Cistothorus palustris</i>	Marsh wren
<i>Cistothorus platensis</i>	Sedge wren
<i>Thryothorus ludovicianus</i>	Carolina wren
<i>Troglodytes aedon</i>	House wren
<i>Troglodytes troglodytes</i>	Winter wren
<b>Family: Turdidae</b>	
<i>Catharus fuscescens</i>	Veery
<i>Catharus guttatus</i>	Hermit thrush
<i>Catharus minimus</i>	Gray-cheeked thrush
<i>Catharus ustulatus</i>	Swainson's thrush
<i>Hylocichla mustelina</i>	Wood thrush
<i>Sialia sialis</i>	Eastern bluebird
<i>Turdus migratorius</i>	American robin
<b>Family: Tyrannidae</b>	
<i>Contopus virens</i>	Eastern wood-pewee

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<i>Empidonax flaviventris</i>	Yellow-bellied flycatcher
<i>Empidonax minimus</i>	Least flycatcher
<i>Empidonax traillii</i>	Willow flycatcher
<i>Empidonax virescens</i>	Acadian flycatcher
<i>Myiarchus cinerascens</i>	Ash-throated flycatcher
<i>Myiarchus crinitus</i>	Great crested flycatcher
<i>Pyrocephalus rubinus</i>	Vermilion flycatcher
<i>Sayornis phoebe</i>	Eastern phoebe
<i>Tyrannus dominicensis</i>	Gray kingbird
<i>Tyrannus forficatus</i>	Scissor-tailed flycatcher
<i>Tyrannus melancholicus</i> (A)	Tropical kingbird
<i>Tyrannus tyrannus</i>	Eastern kingbird
<i>Tyrannus verticalis</i>	Western kingbird

**Family: Tytonidae**

<i>Asio flammeus</i> (A)	Short-eared owl
<i>Bubo scandiaca</i> (A)	Snowy owl
<i>Bubo virginianus</i>	Great horned owl
<i>Otus asio</i>	Eastern screech-owl
<i>Strix varia</i>	Barred owl
<i>Tyto alba</i>	Barn-owl

**Family: Vireonidae**

<i>Vireo altiloquus</i>	Black-whiskered vireo
<i>Vireo bellii</i>	Bell's vireo
<i>Vireo flavifrons</i>	Yellow-throated vireo
<i>Vireo griseus</i>	White-eyed vireo
<i>Vireo olivaceus</i>	Red-eyed vireo
<i>Vireo philadelphicus</i>	Philadelphia vireo
<i>Vireo solitarius</i>	Blue-headed vireo

**MAMMALS**

<i>Blarina carolinensis</i>	Southern short-tailed shrew
<i>Canis latrans</i>	Coyote
<i>Canis rufus</i> (FE)	Red wolf
<i>Castor canadensis</i>	American beaver
<i>Cervus unicolor</i>	Sambar deer
<i>Cryptotis parva</i>	Least shrew
<i>Dasyopus novemcinctus</i> (N)	Nine-banded armadillo
<i>Didelphis virginiana</i>	Virginia opossum
<i>Eptesicus fuscus</i>	Big brown bat
<i>Felis catus</i> (N)	Feral cat
<i>Geomys pinetus</i>	Southeastern pocket gopher
<i>Glaucomys volans</i>	Southern flying squirrel
<i>Lasirus intermedius</i>	Yellow bat
<i>Lasiurus borealis</i>	Eastern red bat
<i>Lasiurus cinereus</i>	Hoary bat
<i>Lasiurus seminolus</i>	Seminole bat
<i>Lontra canadensis</i>	Northern river otter
<i>Lynx rufus</i>	Bobcat
<i>Mephitis mephitis</i>	Striped skunk
<i>Microtus pinetorum</i>	Woodland pine vole
<i>Mus musculus</i>	House mouse
<i>Mustela frenata</i>	Long-tailed weasel
<i>Mustela vison</i>	Mink

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<i>Myotis grisescens</i> (FE)	Gray bat
<i>Myotis sodalis</i> (FE)	Indiana bat
<i>Myotis austroriparius</i>	Southern bat myotis
<i>Myotis keeni</i>	Keen's myotis
<i>Neofiber alleni</i>	Round-tailed muskrat
<i>Neotoma floridana</i>	Florida woodrat
<i>Nycticeius humeralis</i>	Evening bat
<i>Ochrotomys nuttalli</i>	Golden mouse
<i>Odocoileus virginianus</i>	White-tailed deer
<i>Oryzomys palustris</i>	Marsh rice rat
<i>Peromyscus gossypinus</i>	Cotton mouse
<i>Peromyscus polionotus</i>	Oldfield mouse
<i>Pipistrellus subflavus</i>	Eastern pipistrelle
<i>Plecotus rafinesquii</i>	Rafinesque's big-eared bat
<i>Podomys floridanus</i> (SSC)	Florida mouse
<i>Procyon lotor</i>	Raccoon
<i>Rattus norvegicus</i> (N)	Brown Norway rat
<i>Rattus rattus</i> (N)	Black rat
<i>Reithrodontomys humulis</i>	Eastern harvest mouse
<i>Scalopus aquaticus</i>	Eastern shrew
<i>Sciurus carolinensis</i>	Gray squirrel
<i>Sciurus niger</i>	Fox squirrel
<i>Sigmodon hispidus</i>	Hispid cotton rat
<i>Sorex longirostris</i>	Southeastern shrew
<i>Spilogale putorius</i>	Eastern spotted skunk
<i>Sus scrofa</i> (N)	Feral pig
<i>Sylvilagus floridanus</i>	Eastern cottontail
<i>Sylvilagus palustris</i>	Marsh rabbit
<i>Tadarida brasiliensis</i> (N)	Mexican-Brazilian free-tailed bat
<i>Trichechus manatus latirostris</i> (FE)	West Indian manatee
<i>Tursiops truncatus</i>	Bottlenose dolphin
<i>Urocyon cinereoargenteus</i>	Gray fox
<i>Ursus americanus floridanu</i>	Black bear
<i>Vulpes vulpes</i>	Red fox

#### B.4.2 / Listed Species

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<b>PLANTS</b>		
<i>Actaea pachypoda</i>	Baneberry	SE
<i>Andropogon arctatus</i>	Chapman pinewoods bluestem, pinewoods bluestem	ST
<i>Aquilegia canadensis</i>	Columbine	SE
<i>Arabis canadensis</i>	Sickelpod	SE
<i>Aristolochia tomentosa</i>	Pipevine, woolly dutchman's pipe	SE
<i>Arnica acaulis</i>	Leopard's-bane	SE
<i>Arnoglossum diversifolium</i>	Indian plantain, variable leaved indian plantain	ST
<i>Asclepias viridiflora</i>	Milkweed, green-flowered milkweed, green milkweed	SE
<i>Asclepias viridula</i>	Southern milkweed, green milkweed	ST
<i>Aster spinulosus</i>	Pinewoods aster, Apalachicola aster	SE
<i>Baptisia megacarpa</i>	Apalachicola wild indigo	SE
<i>Baptisia simplicifolia</i>	Scare-weed	ST



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<i>Calamintha dentata</i>	Florida calamint, toothed savory	ST
<i>Callirhoe papaver</i>	Poppy mallow, woodland poppy mallow	SE
<i>Calopogon multiflorus</i>	Many-flowered grass pink	ST
<i>Calycanthus floridus</i>	Sweet-shrub, Carolina-allspice, bubbly-shrub	SE
<i>Carex baltzellii</i>	Baltzell's sedge	ST
<i>Cleistes divaricata</i>	Rosebud orchid, spreading pogonia, lady's ettercap, rose orchid	SE
<i>Conradia glabra</i>	Apalachicola rosemary, Apalachicola false rosemary	FE
<i>Cornus alterniflora</i>	Pagoda dogwood, alternate-leaf dogwood, pagoda cornel, umbrella cornel	SE
<i>Croomia pauciflora</i>	Few-flowered croomia, croomia	SE
<i>Cryptotaenia canadensis</i>	Honewort, wild chervil, Canadian honewort	SE
<i>Cuphea aspera</i>	Florida waxweed, tropical waxweed, Chapman's waxweed	SE
<i>Cynoglossum virginianum</i>	Wild comfrey	SE
<i>Delphinium carolinianum</i>	Larkspur, Carolina larkspur	SE
<i>Drosera intermedia</i>	Spoon-leaved sundew, water sundew, narrowleaf sundew	ST
<i>Echinacea purpurea</i>	Purple coneflower	SE
<i>Epigaea repens</i>	Trailing arbutus	SE
<i>Erythronium umbilicatum</i>	Dogtooth-violet, dimpled dogtooth-violet, trout lily, amberbell, dimpled trout lily	SE
<i>Euonymus atropurpureus</i>	Burningbush, wahoo, spindle tree, strawberry bush, arrow wood, eastern wahoo	SE
<i>Euphorbia telephioides</i>	Telephus spurge	SE/FT
<i>Gentiana pennelliana</i>	Wiregrass gentian	SE
<i>Goodyera pubescens</i>	Downy rattlesnake plantain, downy rattlesnake orchid	SE
<i>Harperocallis flava</i>	Harper's beauty	FE
<i>Hepatica nobilis</i>	Liverleaf, round-lobed liverleaf	SE
<i>Hexastylis arifolia</i>	Wild ginger, heartleaf, heartleaf wild ginger, little-brown-jug	ST
<i>Hybanthus concolor</i>	Green violet	SE
<i>Hydrangea arborescens</i>	Smooth hydrangea, wild hydrangea, mountain hydrangea, seven-bark, American hydrangea	SE
<i>Hymenocallis henryae</i>	Panhandle spiderlily, Mrs. Henry's spiderlily, green pine lily, green spiderlily	SE
<i>Hypericum lissophloeus</i>	Smooth-barked St. John's-wort, water-cedar	SE
<i>Isopyrum biternatum</i>	False rue-anemone	SE
<i>Justicia crassifolia</i>	Thick-leaved water willow	SE
<i>Kalmia latifolia</i>	Mountain laurel, ivybush, calico bush, spoon wood	ST
<i>Leitneria floridana</i>	Florida corkwood, corkwood	ST
<i>Liatris provincialis</i>	Godfrey's blazing star, Godfrey's gayfeather	SE
<i>Lilium catesbaei</i>	Pine lily, Catesby lily, leopard lily, southern red lily	ST
<i>Lilium michauxii</i>	Carolina lily, turk's cap lily	SE
<i>Linum westii</i>	Orange-flowered flax, West's flax	SE
<i>Lobelia cardinalis</i>	Cardinal flower	ST
<i>Lupinus westianus</i>	Sanddune lupine, Gulf coast lupine	ST
<i>Lythrum curtissii</i>	Loosestrife, Curtiss' loosestrife, Curtiss' lythrum	SE
<i>Macbridea alba</i>	White birds-in-a-nest	SE/FT
<i>Macranthera flammea</i>	Hummingbird flower, flameflower	SE
<i>Magnolia ashei</i>	Ashe's magnolia	SE
<i>Magnolia pyramidata</i>	Pyramid magnolia, cucumber tree, wood-oread	SE
<i>Malaxis unifolia</i>	Green adder's-mouth, green adder's-mouth orchid	SE
<i>Malus angustifolia</i>	Crabapple, flowering crabapple, southern crabapple	ST
<i>Matelea alabamensis</i>	Alabama spiny-pod, Alabama milkvine	SE
<i>Matelea baldwyniana</i>	Baldwin's spiny-pod, Baldwin's milkvine	SE
<i>Matelea flavidula</i>	Yellow-flowered spiny-pod, yellow Carolina milkvine	SE
<i>Matelea floridana</i>	Florida milkweed, Florida spiny-pod, Florida milkvine	SE

Scientific Name	Common Name	Status
<b>Legend:</b> FE = Federally-designated Endangered • FT = Federally-designated Threatened • FT(S/A) = Federally-designated Threatened species due to similarity of appearance • ST = State-designated Threatened • SSC = State Species of Special Concern		
<i>Matelea gonocarpa</i>	Angle pod	ST
<i>Medeola virginiana</i>	Indian cucumber-root, cushat lily	SE
<i>Nolina atopocarpa</i>	Florida beargrass	ST
<i>Opuntia stricta</i>	Prickly pear, shell mound prickly pear, erect prickly pear, common prickly pear	ST
<i>Oxypolis greenmanii</i>	Giant water-dropwort, giant water cowbane	SE
<i>Parnassia caroliniana</i>	Carolina grass-of-parnassus, coastal grass-of-parnassus, brook parnassia	SE
<i>Parnassia grandifolia</i>	Large-leaf grass-of-parnassus, undine	SE
<i>Phoebanthus tenuifolia</i>	Narrow leaved phoebanthus, pineland false sunflower	ST
<i>Physostegia godfreyi</i>	Obedient plant, Apalachicola dragonhead, Apalachicola obedience plant, Godfrey's dragonhead	ST
<i>Pinckneya bracteata</i>	Fever-tree, maiden's blushes, Georgia bark	ST
<i>Pinguicula ionantha</i>	Panhandle butterwort, Godfrey's butterwort, violet butterwort	SE/FT
<i>Pinguicula lutea</i>	Yellow-flowered butterwort	ST
<i>Pinguicula planifolia</i>	Swamp butterwort, Chapman's butterwort, flatleaf butterwort	ST
<i>Pityopsis flexuosa</i>	Florida golden-aster, zigzag silkgrass, bent golden-aster	SE
<i>Platanthera blephariglottis</i>	White-fringed orchid, plume of Navarre, large white-fringed orchid	ST
<i>Platanthera cristata</i>	Crested fringed orchid	ST
<i>Platanthera flava</i>	Southern rein-orchid, Southern tubercled orchid, Gypsy-spikes, palegreen orchid	ST
<i>Platanthera integra</i>	Orange rein-orchid, Southern yellow fringeless orchid, frog arrow	SE
<i>Platanthera nivea</i>	Snowy orchid, bog orchid, frog spear, white rein orchid	ST
<i>Pogonia ophioglossoides</i>	Rose pogonia, ettercap, crested ettercap, rose crested orchid	ST
<i>Polygonella macrophylla</i>	Large-leaved jointweed	ST
<i>Rhexia parviflora</i>	Apalachicola meadow-beauty, small-flowered meadow-beauty	SE
<i>Rhexia salicifolia</i>	Panhandle meadow-beauty	ST
<i>Rhododendron austrinum</i>	Florida flame azalea, orange azalea	SE
<i>Rhododendron chapmanii</i>	Chapman's rhododendron, rose-bay	FE
<i>Ruellia noctiflora</i>	Night-flowering ruellia, night-flowering petunia	SE
<i>Sarracenia leucophylla</i>	White-top pitcher-plant	SE
<i>Sarracenia psittacina</i>	Parrot pitcher-plant	ST
<i>Schisandra coccinea</i>	Bay star vine, wild sasparilla, schisandra	SE
<i>Scutellaria floridana</i>	Florida skullcap, helmet flowers	SE/FT
<i>Sideroxylon thornei</i>	Thorne's buckthorn, Georgia bully	SE
<i>Silene polypetala</i>	Fringed campion, fringed catchfly, fringed pink, eastern fringed catchfly	FE
<i>Spiranthes ovalis</i>	Lesser ladies'-tresses, oval ladies' tresses, October ladies' tresses	SE
<i>Stachydeoma graveolens</i>	Mock pennyroyal	SE
<i>Stachys crenata</i>	Shade betony	SE
<i>Staphylea trifolia</i>	Bladdernut, American bladdernut	SE
<i>Stewartia malachodendron</i>	Silky camellia	SE
<i>Taxus floridana</i>	Florida yew	SE
<i>Torreya taxifolia</i>	Florida torreya, stinking cedar, gopherwood	FE
<i>Trillium lancifolium</i>	Wake-robin, lance-leaved wake-robin, narrow leaf trillium	SE
<i>Uvularia floridana</i>	Bellwort, Florida bellwort, Florida merrybells	SE
<i>Veratrum woodii</i>	False hellebore, Wood's false hellebore	SE
<i>Verbesina chapmanii</i>	Chapman's crownbeard	ST
<i>Xanthorhiza simplicissima</i>	Yellow-root, brook feather	SE
<i>Xyris isoetifolia</i>	Yellow-eyed grass, quillwort yellow-eyed grass	SE
<i>Xyris longisepala</i>	Karst pond yellow-eyed grass, karst pond xyris, Kral's pond yellow-eyed grass	SE
<i>Xyris scabrifolia</i>	Harper's yellow-eyed grass	ST
<i>Yucca gloriosa</i>	Moundlily yucca, Spanish dagger, Roman candle, palm lily	SE

Scientific Name	Common Name	Status
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<i>Zanthoxylum americanum</i>	Toothache-tree, prickly ash	SE
<i>Zephyranthes treatiae</i>	Rain-lily, Treat's zephyr-lily, easter lily, Treat's rain-lily	ST
<b>MOLLUSKS &amp; CRUSTACEANS</b>		
<i>Amblema neislerii</i>	Fat threeridge mussel	FE
<i>Elliptoideus sloatianus</i>	Purple bankclimber mussel	FT
<b>AMPHIBIANS</b>		
<i>Ambystoma bishopi</i>	Reticulated flatwoods salamander	FE
<i>Ambystoma cingulatum</i>	Frosted flatwoods salamander	FT
<i>Haideotriton wallacei</i>	Georgia blind salamander	SSC
<i>Rana capito</i>	Gopher frog	SSC
<b>REPTILES</b>		
<i>Alligator mississippiensis</i>	American alligator	FT(S/A)
<i>Caretta caretta</i>	Loggerhead sea turtle	FT
<i>Chelonia mydas</i>	Green turtle	FE
<i>Dermochelys coriacea</i>	Leatherback turtle	FE
<i>Drymarchon corais couperi</i>	Eastern indigo snake	FT
<i>Gopherus polyphemus</i>	Gopher tortoise	ST
<i>Graptemys barbouri</i>	Barbour's map turtle	SSC
<i>Lepidochelys kempii</i>	Kemp's ridley	FE
<i>Macrochelys temminckii</i>	Alligator snapping turtle	SSC
<i>Pituophis melanoleucus mugitus</i>	Florida pine snake	SSC
<i>Pseudemys concinna suwanniensis</i>	Suwannee cooter	SSC
<b>FISHES</b>		
<i>Acipenser oxyrinchus desotoi</i>	Gulf sturgeon	FT
<i>Pteronotropis (Notropis) welaka</i>	Bluenose shiner	SSC
<b>BIRDS</b>		
<i>Ammodramus maritimus junciola</i>	Wakulla seaside sparrow	SSC
<i>Aramus guarana</i>	Limpkin	SSC
<i>Charadrius alexandrinus</i>	Snowy plover	ST
<i>Charadrius melodus</i>	Piping plover	FT
<i>Cistothorus palustris marianae</i>	Marian's marsh wren	SSC
<i>Egretta caerulea</i>	Little blue heron	SSC
<i>Egretta rufescens</i>	Reddish egret	SSC
<i>Egretta thula</i>	Snowy egret	SSC
<i>Egretta tricolor</i>	Tricolored heron	SSC
<i>Eudocimus albus</i>	White ibis	SSC
<i>Falco sparverius paulus</i>	Southeastern American kestrel	ST
<i>Grus canadensis pratensis</i>	Florida sandhill crane	ST
<i>Haematopus palliatus</i>	American oystercatcher	SSC
<i>Mycteria americana</i>	Wood stork	FE
<i>Pelecanus occidentalis</i>	Brown pelican	SSC
<i>Picoides borealis</i>	Red-cockaded woodpecker	FE
<i>Rynchops niger</i>	Black skimmer	SSC
<i>Sterna antillarum</i>	Least tern	ST
<b>MAMMALS</b>		
<i>Canis rufus</i>	Red wolf	FE
<i>Myotis grisescens</i>	Gray bat	FE
<i>Myotis sodalis</i>	Indiana bat	FE
<i>Podomys floridanus</i>	Florida mouse	SSC
<i>Trichechus manatus latirostris</i>	Florida manatee	FE



### B.4.3 / Non-native Species

Scientific Name	Common Name
<b>PLANTS</b>	
<i>Albizia julibrissin</i>	Mimosa, silktree
<i>Alternanthera philoxeroides</i>	Alligator-weed
<i>Ardisia crenata</i>	Coral ardisia, hen's eyes
<i>Arundo donax</i>	Giant reed
<i>Cannabis sativa</i>	Marijuana
<i>Chenopodium ambrosioides</i>	Mexican tea
<i>Chenopodium ambrosioides var. ambrosioides</i>	Mexican tea
<i>Cinnamomum camphora</i>	Camphor tree
<i>Colocasia esculenta</i>	Wild taro
<i>Cynodon dactylon</i>	Bermuda grass
<i>Dioscorea bulbifera</i>	Air yam
<i>Hydrilla verticillata</i>	Hydrilla, waterthyme
<i>Imperata cylindrica</i>	Cogongrass
<i>Lantana camara</i>	Shrub verbena, lantana
<i>Ligustrum japonicum</i>	Japanese privet
<i>Ligustrum lucidum</i>	Wax-leaf privet
<i>Lonicera japonica</i>	Japanese honeysuckle
<i>Lygodium japonicum</i>	Japanese climbing fern
<i>Melia azedarach</i>	Chinaberry
<i>Myriophyllum aquaticum</i>	Parrot feather watermilfoil
<i>Myriophyllum spicatum</i>	Water milfoil
<i>Nandina domestica</i>	Heavenly bamboo, nandina, sacred bamboo
<i>Panicum repens</i>	Torpedo grass
<i>Paspalum notatum</i>	Bahiagrass
<i>Phragmites australis</i>	Common reed
<i>Pueraria montana</i>	Kudzu
<i>Pueraria montana var. lobata</i>	Kudzu
<i>Sapium sebiferum</i>	Chinese tallow
<i>Tradescantia fluminensis</i>	Wandering jew
<i>Wisteria sinensis</i>	Chinese wisteria
<b>MOLLUSKS</b>	
<i>Corbicula manilensis</i>	Asiatic clam
<b>AMPHIBIANS</b>	
<i>Eleutherodactylus planirostris</i>	Greenhouse frog
<b>REPTILES</b>	
<i>Anolis sagrei</i>	Cuban brown anole
<b>FISHES</b>	
<i>Lepomis cyanellus</i>	Green sunfish
<i>Lepomis humilis</i>	Orange-spotted sunfish
<i>Micropterus punctulatus</i>	Spotted bass
<i>Pomoxis annularis</i>	White crappie
<i>Ctenopharyngodon idella</i>	Grass carp
<i>Cyprinus carpio</i>	Common carp
<i>Ictalurus furcatus</i>	Blue catfish
<i>Pylodictis olivaris</i>	Flathead catfish
<i>Morone chrysops</i>	White bass
<i>Perca flavescens</i>	Yellow perch
<i>Sander canadense</i>	Sauger
<b>BIRDS</b>	
<i>Columbia livia</i>	Rock pigeon
<i>Streptopelia decaocto</i>	Eurasian collared-dove
<i>Carpodacus purpureus</i>	House finch
<i>Sturnus vulgaris</i>	European starling
<b>MAMMALS</b>	
<i>Dasypus novemcinctus</i>	Nine-banded armadillo
<i>Felis catus</i>	Feral cat
<i>Rattus norvegicus</i>	Brown Norway rat
<i>Rattus rattus</i>	Black rat
<i>Sus scrufa</i>	Feral hog
<i>Tadarida brasiliensis</i>	Mexican-Brazilian free-tailed bat

B.5 / Monitoring Data

Data collected to-date			
	Data QAQC'd	QAQC Methods	Forms of data in database
<b>Water Quality</b>			
Cat Point, May 1992 to present	ANERR: January 1995- December 2001; CDMO: January 2002- December 2008; 2009 and 2010 are submitted and available as provisional from ANERR.	QAQC methods for Cat, Dry, and East Bay sites per NERR/CDMO SOPs and macros. Sondes and sensors are maintained per manufacturer and NERR/CDMO SOPs. New staff trained by experienced staff. New staff attend annual NERR/CDMO sponsored training.	All Sites: yearly, monthly, daily average Excel files. Numerous graphs for all sites.
Dry Bar, May 1992 to present	Dry Bar, January 1, 2002 to December 31, 2008. 2009 and 2010 are submitted and available as provisional from ANERR.		
East Bay surface, April 1995 to present	East Bay surface, April 17, 1995 to December 31, 2008. 2009 and 2010 are submitted and available as provisional from ANERR.		
East Bay bottom, January 1993 to present	East Bay bottom, May 1, 1995 to December 31, 2008. 2009 and 2010 are submitted and available as provisional from ANERR.		
Channel bottom, May 1992 to June 1994 (not continuous)			
<b>Meteorological</b>			
East Bay marsh site, January 2001 to present	Final QAQC - East Bay marsh site: 2001 - 2008. Submitted 2009 and 2010. Provisional data from ANERR	QAQC methods per NERR/CDMO SOPs and macros. Sensors maintained per manufacturer SOPs. New staff trained by experienced staff. New staff attend annual NERR/CDMO sponsored.	East Bay marsh site: PAR, temp, RH, Baro Press, rainfall, wind dir, wind spd (telemetry as of June 2006). Excel format.
<b>Nutrients</b>			
ANERR 11 stations, April 2002 to May 2008.	Final QAQC: ANERR April 2002 to December 2008. Provisional data for 2009 and 2010.	QAQC methods per NERR/CDMO SOPs and macros. Samples analyzed by NELAC approved laboratory. New staff trained by experienced staff. New staff attend annual NERR/CDMO sponsored training.	ANERR nutrient data: NO <sub>2</sub> , NO <sub>3</sub> , NH <sub>4</sub> , PO <sub>4</sub> , CHLA (Pheophytin added 2006) (TDN, TDP added March 2007). All data in Excel. Graphs and stats using Excel and Primer.
ANERR 13 stations, June 2008 to October 2009 (2 stations added as of June 2008)			
<b>Trawling</b>			
Data collected, July 2000 to present	Data QAQC'd, July 2000 to July 2010. Provisional data through March 2011.	QAQC methods include internal review of data entry, taxonomic keys and reference collection.	Access database – species, number caught, length of the 1st 20 individuals. Phys/chem. data including surface and bottom measurements of temperature, salinity, percent saturation of oxygen, D.O., turbidity, and pH. Depth and secchi also measured.

Data collected to-date			
	Data QAQC'd	QAQC Methods	Forms of data in database
<b>Birds</b>			
Causeway site, June 1985 to present	All data entered has undergone QAQC	Data is QAQC'd when entered; methods include review of entered data by ANERR staff, review of taxonomic keys, and consulting with staff experienced in bird identification.	Excel/yearly graphs
Bird Island site, June 1995 to present			Cape St. George Island "Status and Distribution of the Snowy Plover in Florida" July 2001 – June 2003 USFWS/FWC Excel
Eastpoint Breakwater surveys 1998 & 2000			Excel
Cape St. George Island surveys 1996-1997			Excel
Snowy plover survey 2006 (Cape St. George)	Surveys completed by FWC staff		Excel
<b>Turtles</b>			
Cape St. George Island, May 1990 to present; includes nesting data, false crawls, stranding reports	1990 through 2010	QAQC methods: data is reviewed as entered and again when compiled for annual submission to FWC. New staff are trained by staff experienced in sea turtle ID and nesting. New staff attend annual Sea Turtle Permit Holder's workshop when possible.	Excel/ yearly graphs/ nesting vs. water; Final FWC reports in Excel, 2008-09 are PDF documents.
St. George Island, May 1990 to present; includes nesting data, false crawls, stranding reports, disorientation reports			Excel/ yearly graphs
Carrabelle Beach 2006	Note absence of other years of data from Carrabelle Beach indicated there was no turtle nesting on Carrabelle Beach.		Excel
Mainland, May 1990 to present			
Dog Island. 1995-1999			
<b>SAV</b>			
East Bay and Apalachicola River transect monitoring, April 21, 2003 to June 2009	2003-2009	QAQC Methods: Representative samples are compared with taxonomic keys as collected. Selected samples are preserved for reference collection.	Hard copy field logs, digital photos, digital summary reports, GIS spatial coverage data.
<b>Erosion Profiles</b>			
December 1995 to present	1995-2010	QAQC Methods: Position and bearing are verified for each site prior to readings. Data are reviewed as entered into Excel. Excel graphs serve as additional data verification.	Hard copy field logs. Excel database and graphs.
<b>Oyster Growth</b>			
June 2004 to October 2009	2004-2009	Hard copy field logs are reviewed as digital entries are made. Previous month's readings are referenced in the field as current readings are taken.	Excel database: growth and spatfall



## B.6 / Summary of Florida Natural Areas Inventory Descriptions

Eighty-one natural communities are classified by the Florida Natural Areas Inventory (FNAI). A natural community is defined as a distinct and reoccurring assemblage of populations of plants, animals, fungi and microorganisms naturally associated with each other and their physical environment. The levels of this classification become increasingly more complex and finely subdivided. At all levels, however, there are overlaps between types because of overlapping species distributions and intergrading physical conditions.

At the broadest level, the natural communities are grouped into seven natural community categories based on hydrology and vegetation. A second level of the hierarchy splits the natural community categories into natural community groups. The third level of the classification, natural community types, is the level at which natural communities are named and described. Natural communities are characterized and defined by a combination of physiognomy, vegetation structure and composition, topography, land form, substrate, soil moisture condition, climate and fire. They are named for their most characteristic biological or physical feature.

### Levels of Natural Communities

- **CATEGORIES** - based on hydrology and vegetation
- **Groups** - defined by landform, substrate and vegetation
- **Types** - characterized and defined by a combination of physiognomy, vegetation structure and composition, topography, land form, substrate, soil moisture condition, climate and fire

### Natural Community Categories

1. Terrestrial Natural Communities - upland habitats dominated by plants which are not adapted to anaerobic soil conditions imposed by saturation or inundation for more than 10% of the growing season.
2. Palustrine Natural Communities - freshwater wetlands dominated by plants adapted to anaerobic substrate conditions imposed by substrate saturation or inundation during 10% or more of the growing season.
3. Lacustrine Natural Communities - non-flowing wetlands of natural depressions lacking persistent emergent vegetation except around the perimeter.
4. Riverine Natural Communities - natural, flowing waters from their source to the downstream limits of tidal influence and bounded by channel banks.
5. Subterranean Natural Communities - occur below ground surface.
6. Estuarine Natural Communities - subtidal, intertidal and supratidal zones of coastal water bodies, usually partially enclosed by land but with a connection to the open sea, within which seawater is significantly diluted with freshwater inflow from the land.
7. Marine Natural Communities - occur in subtidal, intertidal and supratidal zones of the sea, landward to the point at which seawater becomes significantly diluted with freshwater inflow from the land.

### Descriptions of the Natural Community Types found in Apalachicola National Estuarine Research Reserve

#### TERRESTRIAL

**Xeric Uplands** - very dry, deep, well-drained hills of sand with xeric-adapted vegetation.

**Scrub** - characterized as a closed to open canopy forest of sand pines with dense clumps or vast thickets of scrub oaks and other shrubs dominating the understory.

**Coastal Uplands** - substrate and vegetation influenced primarily by such coastal (maritime) processes as erosion, deposition, salt spray, and storms.

**Beach Dune** - characterized as a wind-deposited, foredune and wave-deposited upper beach that are sparsely to densely vegetated with pioneer species, especially sea oats.

**Coastal Grassland** - characterized as a treeless flat land or gently undulating land with barren sand or a sparse to dense ground cover of grasses, prostrate vines, and other herbaceous or suffrutescent species that are adapted to harsh maritime conditions.

**Shell Mound** - characterized as an elevated mound of mollusk shells and aboriginal garbage on which a hardwood, closed canopy forest develops.

**Mesic Flatlands** - flat, moderately well-drained sandy substrates with a mixture of organic material, often with a hard pan.

**Mesic Flatwoods** - characterized as an open canopy forest of widely spaced pine trees with little or no understory but a dense ground cover of herbs and shrubs.

**Scrubby Flatwoods** - characterized as an open canopy forest of widely scattered pine trees with a sparse shrubby understory and numerous areas of barren white sand.

## PALUSTRINE

**Wet Flatlands** - flat, poorly drained sand, marl or limestone substrates.

**Wet Flatwoods** - characterized as relatively open canopy forests of scattered pine trees or cabbage palms with either thick shrubby understory and very sparse ground cover, or a sparse understory and a dense ground cover of hydrophytic herbs and shrubs.

**Seepage Wetlands** - sloped or flat sands or peat with high moisture levels maintained by downslope seepage.

**Floodplain Marsh** - wetlands of herbaceous vegetation and low shrubs that occur in river floodplains, mainly in central Florida and along the St. Johns, Kissimmee and Myakka rivers, on sandy alluvial soils with considerable peat accumulation.

**Floodplain Swamp** - occur on flooded soils along stream channels and in low spots and oxbows within river floodplains.

**Strand Swamp** - shallow, forested, usually elongated depressions or channels dominated by bald cypress. They are generally situated in troughs in a flat limestone plain.

**Basin Wetlands** - shallow, closed basin with outlet usually only in time of high water; peat or sand substrate, usually inundated; wetland woody and/or herbaceous vegetation.

**Coastal Interdunal Swale** - associated with the large barrier islands on the Florida coasts, most commonly in the panhandle. They appear as a mix of grasslands, small ponds, and depression marshes.

**Depression Marsh** - characterized as a shallow, usually rounded depression in sand substrate with herbaceous vegetation often in concentric bands. Depression marshes are similar in vegetation and physical features to, but are generally smaller than, basin marshes.

## RIVERINE

**Alluvial Stream** - characterized as perennial or intermittent seasonal watercourses originating in high uplands that are primarily composed of sandy clays and clayey-silty sands. Because clay is a substantial component of these soils, surface runoff generally predominates over subsurface drainage. Thus, alluvial stream waters are typically turbid due to a high content of suspended particulates, including clays, silts, and sands, as well as detritus and other organic debris.

**Blackwater Stream** - characterized as perennial or intermittent seasonal watercourses originating deep in sandy lowlands where extensive wetlands with organic soils function as reservoirs, collecting rainfall and discharging it slowly to the stream. The tea-colored waters are laden with tannins, particulates, and dissolved organic matter and iron derived from drainage through swamps and marshes. They generally are acidic (pH = 4.0 - 6.0), but may become circumneutral or slightly alkaline during low-flow stages when influenced by alkaline groundwater.

## MARINE AND ESTUARINE

**Mineral Based** - communities which occur in subtidal, intertidal and supratidal zones.

**Unconsolidated Substrate** - characterized as expansive, relatively open areas of subtidal, intertidal, and supratidal zones which lack dense populations of sessile plant and animal species. Unconsolidated substrates are unconsolidated material and include corallgal, marl, mud, mud/sand, sand or shell. This community may support a large population of infaunal organisms as well as a variety of transient planktonic and pelagic organisms.

**Faunal Based** - communities which occur in subtidal zones.

**Mollusk Reef** - characterized as expansive concentrations of sessile mollusks occurring in intertidal and subtidal zones to a depth of 40 feet. In Florida, the most developed mollusk reefs are generally restricted to estuarine areas and are dominated by the American oyster.

**Floral Based** - communities which occur in intertidal and supratidal zones.

**Seagrass Bed** - characterized as expansive stands of vascular plants. This community occurs in subtidal (rarely intertidal) zones, in clear, coastal waters where wave energy is moderate. Seagrasses are not true grasses.

**Salt Marsh** - characterized as expanses of grasses, rushes and sedges along coastlines of low wave energy and river mouths. They are most abundant and most extensive in Florida north of the normal freeze line, being largely displaced by and interspersed among tidal swamps below this line.

## Composite Substrate

**Composite Substrate** - consist of a combination of natural communities such as "beds" of algae and seagrasses or areas with small patches of consolidated and unconsolidated bottom with or without sessile floral and faunal populations. Composite substrates may be dominated by any combination of marine and estuarine sessile flora or fauna, or mineral substrate type. Typical combinations of plants, animals and substrates representing composite substrates include soft and stony corals with sponges on a hard bottom such as a limerock outcrop; psammophytic algae and seagrasses scattered over a sand bottom; and patch reefs throughout a corallgal bottom.

## FNAI Natural Communities Rankings

Below are the relative ranks of the natural communities. FNAI uses several criteria to determine the relative rarity and threat to each community type; these are translated or summarized into a global and a state rank, the G and S ranks, respectively. Most G ranks for natural communities are temporary pending comparison and coordination with other states using this methodology to classify and rank vegetation types (contact FNAI for the most recent natural community ranks). A few natural communities and several plant communities occur only or mostly in Florida and can be considered endemic to Florida (Muller, Hardin, Jackson, Gatewood & Caire, 1989). The only opportunity for protection of these communities is in Florida and they should be given special consideration in Florida's protection efforts.

### TERRESTRIAL

#### Xeric Uplands

G3 S2 Sandhill  
G2 S2 Scrub  
G3 S3 Xeric Hammock  
G4 S4 Floodplain Swamp

#### Coastal Uplands

G3 S2 Beach Dune  
G3 S2 Coastal Berm  
G3 S2 Coastal Grasslands  
G1 S1 Coastal Rock Barren  
G3 S2 Coastal Strand  
G3 S2 Maritime Hammock  
G2 S2 Shell Mound

#### Mesic Uplands

G3 S2 Slope Forest  
G1 S1 Upland Glade  
G5 S3 Upland Hardwood Forest  
G4 S4 Upland Mixed Forest  
G3 S3 Upland Pine Forest

#### Rocklands

G1 S1 Pine Rocklands  
G2 S2 Rockland Hammock  
G2 S2 Sinkhole

#### Mesic Flatlands

G2 S2 Dry Prairie  
G4 S4 Mesic Flatwoods  
G3 S3 Prairie Hammock  
G3 S3 Scrubby Flatwoods

### PALUSTRINE

#### Wet Flatlands

G4 S4 Hydric Hammock  
G3 S3 Marl Prairie  
G4 S4 Wet Flatwoods  
G3 S2 Wet Prairie

#### Seepage Wetlands

G4 S4 Baygall  
G3 S2 Seepage Slope

#### Floodplain Wetlands

G4 S3 Bottomland Forest  
G4 S3 Alluvial Forest  
G3 S2 Floodplain Marsh  
G3 S3 Freshwater Tidal Swamp  
G3 S3 Slough  
G4 S4 Strand Swamp  
G4 S3 Swale

#### Basin Wetlands

G4 S4 Basin Marsh  
G4 S3 Basin Swamp  
G2 S1 Shrub Bog  
G4 S4 Depression Marsh\*

### LACUSTRINE

G3 S2 Clastic Upland Lake  
G2 S1 Coastal Dune Lake  
G2 S1 Coastal Rockland Lake  
G4 S3 Flatwoods/Prairie Lake  
G4 S4 Marsh Lake  
G4 S2 River Floodplain Lake  
G3 S2 Sandhill Upland Lake  
G3 S3 Sinkhole Lake  
G4 S3 Swamp Lake

### RIVERINE

G4 S2 Alluvial Stream  
G4 S2 Blackwater Stream  
G3 S2 Seepage Stream  
G2 S2 Spring-run Stream

### SUBTERRANEAN

G3 S2 Aquatic Cave  
G3 S2 Terrestrial Cave

### MARINE AND ESTUARINE

#### Mineral Based

G3 S3 Consolidated Substrate  
G5 S5 Unconsolidated Substrate

#### Faunal Based

G2 S1 Coral Reef  
G3 S3 Mollusk Reef  
G2 S1 Octocoral Bed  
G2 S2 Sponge Bed  
G1 S1 Worm Reef

#### Floral Based

G3 S2 Algal Bed  
G2 S2 Seagrass Bed  
G4 S4 Tidal Marsh  
G3 S3 Tidal Swamp

#### Composite Substrate

G3 S3 Composite Substrate  
\*G3 S2 Coastal Interdunal Swale  
\*G3 S3 Mesic Hammock

### Definition of Global (G) element ranks:

**G1** = Critically imperiled globally because of extreme rarity (5 or fewer occurrences or very little remaining area, e.g., less than 2,000 acres) or because of some factor(s) making it especially vulnerable to extinction;

**G2** = Imperiled globally because of rarity (6-20 occurrences or very little remaining area, e.g., less than 10,000 acres) or because of some factor(s) making it very vulnerable to extinction throughout its range;

**G3** = Either very rare and local throughout its range or found locally (even abundantly at some of its locations) in a restricted range or because of other factor(s) making it vulnerable to extinction throughout its range, 21-100 occurrences;

**G4** = Apparently secure globally, though it may be quite rare in parts of its range, especially at the periphery;

**G5** = Demonstrably secure globally, though it may be quite rare in parts of its range, especially at the periphery;

**G?** = uncertain Global rank.



**Definition of State (S) element ranks:**

**S1** = Critically imperiled in state because of extreme rarity (5 or fewer occurrences or very little remaining area) or because of some factor(s) making it especially vulnerable to extinction;

**S2** = Imperiled in state because of rarity (6-20 occurrences or little remaining area) or because of some factor(s) making it very vulnerable to extinction throughout its range;

**S3** = Rare or uncommon in state (on the order of 21-100 occurrences);

**S4** = Apparently secure in state, although it may be rare in some parts of its state range;

**S5** = Demonstrably secure in state and essentially ineradicable under present conditions;

**S?** = uncertain State rank.

***B.7 / Summary of Apalachicola National Estuarine Research Reserve Policies***

ANERR is developing facility use policies for the Visitor Center and ANERR's two dorm facilities.

## Public Involvement

### C.1 / *Apalachicola National Estuarine Research Reserve Advisory Council*

The following appendices contain information about who serves on the Apalachicola National Estuarine Research Reserve Advisory Council, when meetings were held, copies of the public advertisements for those meetings, and summaries of each meeting (as required by §259.032(10), Florida Statutes [F.S.]).

#### C.1.1 / *List of members and their affiliations*

ANERR Management Plan Advisory Group. Meetings were held December 5, 2007 and December 16, 2011.

Name	Affiliation
Mikel Clark	Franklin County Schools
Anita Grove	Apalachicola Bay Chamber of Commerce
Monica Harris	U.S. Fish and Wildlife Service
Steve Herrington	The Nature Conservancy
Graham Lewis	Northwest Florida Water Management District
Phil Manor	Florida Fish and Wildlife Conservation Commission
Ethan Montgomery	Recreational Guide
Joseph Parrish	Franklin County Board of County Commissioners
Helen Spohrer	Forgotten Coast TV / Prudential Resort Realty
Tony Tindell	Florida Park Service
Tommy Ward	Thirteen Mile Oyster Co.

Persons who require accommodations under the Americans with Disabilities Act or persons who require translations services (free of charge) should contact: Mr. Bill Henderson, District Planning and Environmental Manager, Lake City District Office at 1(800)749-2967 at least ten (10) days in advance of the public hearings.

The Florida **Department of Transportation**, District Seven announces a hearing to which all persons are invited.

DATE AND TIME: Tuesday, December 4, 2007, 5:00 p.m. – 7:00 p.m.

PLACE: Pasco County Government Center, Board of County Commission Chambers, 7530 Little Road, New Port Richey, Florida

DATE AND TIME: Thursday, December 6, 2007, 5:00 p.m. – 7:00 p.m.

PLACE: Tampa Bay Regional Planning Council, 4000 Gateway Centre Blvd., Suite 100, Pinellas Park, Florida

GENERAL SUBJECT MATTER TO BE CONSIDERED: The Florida Department of Transportation, District Seven, invites you to attend the District Seven and Turnpike Enterprise Five-Year Tentative Work Program Public Hearings for Fiscal Years July 1, 2008 through June 30, 2013. The Department's Tentative Work Program lists projects funded over the next five years and includes preliminary engineering, right-of-way acquisition, construction, public transportation and Florida Turnpike Enterprise projects for Citrus, Hernando, Hillsborough, Pasco, and Pinellas counties. The Department will receive verbal and written comments at the public hearings. Written comments not received at the hearings must be postmarked by December 17, 2007 to become part of the official public hearing transcript. Written comments should be addressed to: Donald J. Skelton, P.E., District Secretary, Florida Department of Transportation, District Seven, 11201 N. McKinley Drive, MS 7-100, Tampa, Florida 33612.

A copy of the agenda may be obtained by contacting: Ms. Lee Royal, Community Liaison Administrator at (813)975-6427 or 1(800)226-7220.

Persons who require accommodations under the Americans with Disabilities Act or persons who require translation services (free of charge) should contact Ms. Royal at least seven days prior to the hearing(s).

#### **BOARD OF TRUSTEES OF THE INTERNAL IMPROVEMENT TRUST FUND**

Notices for the Board of Trustees of the Internal Improvement Trust Fund between December 28, 2001 and June 30, 2006, go to <http://www.dep.state.fl.us/> under the link or button titled "Official Notices."

The **Department of Environmental Protection**, Office of Coastal and Aquatic Managed Areas, acting as staff to the **Board of Trustees of the Internal Improvement Trust Fund** announces a public meeting to which all persons are invited.

DATE AND TIME: Wednesday, December 5, 2007, 2:00 p.m.

PLACE: The Apalachicola National Estuarine Research Reserve's Nature Center, 261 7th St., Apalachicola, FL 32320

GENERAL SUBJECT MATTER TO BE CONSIDERED: The purpose is for the members of the Reserve Advisory Council to discuss the revision of the Apalachicola National Estuarine Research Reserve Management Plan.

A copy of the agenda may be obtained by contacting Reserve Manager, Seth Blitch at (850)653-8063.

Pursuant to the provisions of the Americans with Disabilities Act, any person requiring special accommodations to participate in this workshop/meeting is asked to advise the agency at least 5 days before the workshop/meeting by contacting Reserve Manager, Seth Blitch at (850)653-8063. If you are hearing or speech impaired, please contact the agency using the Florida Relay Service, 1(800)955-8771 (TDD) or 1(800)955-8770 (Voice).

#### **FLORIDA PAROLE COMMISSION**

The **Florida Parole Commission** announces a public meeting to which all persons are invited.

DATE AND TIME: Wednesday, November 28, 2007, 9:00 a.m.

PLACE: Florida Parole Commission, 2601 Blair Stone Road, Bldg. C, Tallahassee, Florida 32399-2450

GENERAL SUBJECT MATTER TO BE CONSIDERED: Regularly scheduled meeting for all Parole, Conditional Release, Conditional Medical Release, Addiction Recovery and Control Release matters as well as other Commission business.

A copy of the agenda may be obtained by contacting: Florida Parole Commission, 2601 Blair Stone Road, Bldg. C, Tallahassee, Florida 32399-2450.

Pursuant to the provisions of the Americans with Disabilities Act, any person requiring special accommodations to participate in this workshop/meeting is asked to advise the agency at least Five days before the workshop/meeting by contacting: Florida Parole Commission, 2601 Blair Stone Road, Bldg. C, Tallahassee, Florida 32399-2450. If you are hearing or speech impaired, please contact the agency using the Florida Relay Service, 1(800)955-8771 (TDD) or 1(800)955-8770 (Voice).

If any person decides to appeal any decision made by the Board with respect to any matter considered at this meeting or hearing, he/she will need to ensure that a verbatim record of the proceeding is made, which record includes the testimony and evidence from which the appeal is to be issued.



GENERAL SUBJECT MATTER TO BE CONSIDERED: Semi-annual FPAN Board of Director's meeting to discuss FPAN matters.

A copy of the agenda may be obtained by contacting: Cheryl Phelps, (850)595-0050 or email: cphelps@uwf.edu.

Pursuant to the provisions of the Americans with Disabilities Act, any person requiring special accommodations to participate in this workshop/meeting is asked to advise the agency at least 48 hours before the workshop/meeting by contacting: Cheryl Phelps, (850)595-0050. If you are hearing or speech impaired, please contact the agency using the Florida Relay Service, 1(800)955-8771 (TDD) or 1(800)955-8770 (Voice).

For more information, you may contact: Cheryl Phelps, (850)595-0050 or email: cphelps@uwf.edu.

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#### **BOARD OF TRUSTEES OF INTERNAL IMPROVEMENT TRUST FUND**

The Florida **Department of Environmental Protection**, Office of Coastal and Aquatic Managed Areas announces a public meeting to which all persons are invited.

DATE AND TIME: Friday, December 16, 2011, 10:00 a.m. – 4:00 p.m.

PLACE: Apalachicola National Estuarine Research Reserve Center, 108 Island Drive, Eastpoint, FL 32328

GENERAL SUBJECT MATTER TO BE CONSIDERED: The purpose is for the members of the Advisory Council to discuss the revision of the Apalachicola National Estuarine Research Reserve Management Plan.

A copy of the agenda may be obtained by contacting: Jenna Wanat by e-mail: Jenna.Wanat@dep.state.fl.us, by phone: (850)670-7716 or by mail: 108 Island Drive, Eastpoint, FL 32328.

Pursuant to the provisions of the Americans with Disabilities Act, any person requiring special accommodations to participate in this workshop/meeting is asked to advise the agency at least 5 days before the workshop/meeting by contacting: Jenna Wanat at (850)670-7716. If you are hearing or speech impaired, please contact the agency using the Florida Relay Service, 1(800)955-8771 (TDD) or 1(800)955-8770 (Voice).

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The Florida **Department of Environmental Protection**, Office of Coastal and Aquatic Managed Areas announces a public meeting to which all persons are invited.

DATE AND TIME: Wednesday, December 21, 2011, 6:00 p.m. – 8:00 p.m.

PLACE: Guana Tolomato Matanzas National Estuarine Research Reserve (GTMNERR), Environmental Education Center, 505 Guana River Road, Ponte Vedra Beach, FL 32082

GENERAL SUBJECT MATTER TO BE CONSIDERED: The Management Advisory Group for the GTMNERR is holding a meeting to provide advisory input for the management of GTMNERR.

A copy of the agenda may be obtained by contacting: Janet Zimmerman by email: Janet.Zimmerman@dep.state.fl.us, by phone: (904)823-4500 or by mail: 505 Guana River Road, Ponte Vedra Beach, Florida 32082.

Pursuant to the provisions of the Americans with Disabilities Act, any person requiring special accommodations to participate in this workshop/meeting is asked to advise the agency at least 5 days before the workshop/meeting by contacting: Janet Zimmerman at (904)823-4500. If you are hearing or speech impaired, please contact the agency using the Florida Relay Service, 1(800)955-8771 (TDD) or 1(800)955-8770 (Voice).

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#### **PUBLIC SERVICE COMMISSION**

The Florida **Public Service Commission** announces its regularly scheduled conference to which all interested persons are invited.

DATE AND TIME: December 20, 2011, 9:30 a.m.

PLACE: Betty Easley Conference Center, Joseph P. Cresse Hearing Room 148, 4075 Esplanade Way, Tallahassee, Florida

GENERAL SUBJECT MATTER TO BE CONSIDERED: To consider those matters ready for decision.

LEGAL AUTHORITY AND JURISDICTION: Chapters 120, 350, 364, 366 and 367, F.S.

Persons who may be affected by Commission action on certain items on the conference agenda may be allowed to address the Commission, either informally or by oral argument, when those items are taken up for discussion at the conference, pursuant to Rules 25-22.0021 and 25-22.0022, F.A.C.

The agenda and recommendations are accessible on the PSC Website: <http://www.floridapsc.com>, at no charge or can be purchased by contacting: Florida Public Service Commission, Office of Commission Clerk, 2540 Shumard Oak Boulevard, Tallahassee, Florida 32399 0850, (850)413-6770, at a cost of 15 cents per single sided page or 20 cents per duplexed page.

Persons deciding to appeal any decisions made by the Commission with respect to any matter considered at this conference will need to ensure that a verbatim record of the proceedings is made, which record includes the testimony and evidence upon which appeal is based.

In accordance with the Americans with Disabilities Act, persons needing a special accommodation at this conference should contact: Office of Commission Clerk no later than 48 hours prior to the conference at (850)413-6770 or via 1(800)955-8770 (Voice) or 1(800)955-8771 (TDD) Florida

**Florida Department of Environmental Protection Office of  
Coastal and Aquatic Managed Areas Apalachicola National Estuarine Research Reserve (NERR)**

**Advisory Council Meeting December 5, 2007, 2pm**

**Introduction:** Seth Blich, NERR Manager, opened the meeting by giving a brief explanation of the site and how it is managed by the Department of Environmental Protection's Office of Coastal and Aquatic Managed Areas (CAMA), with funding from the National Oceanic and Atmospheric Association (NOAA), and without the authority to enforce or regulate specific rules or statutes.

**Mikel:** spoke in support of the "quiet persistence" the staff has had in the community.

**Anita:** emphasized that education and communication is what it is about.

**Seth:** explained the requirements of the NERR to have an Advisory Group and what their overall roll would be. He then went on to explain that their first task would be to assist in the revision of the existing Apalachicola NERR management plan.

The floor was opened to the Council to identify the things they felt needed to be covered in the management plan:

**Mikel:** maintain, or if possible expand, the current educational programs.

**Phil:** the long-range monitoring efforts have been great and they should continue.

Council asked if the Buffer Preserve would be included in the plan.

**Roy:** we are leaning in that direction; there are future desired additions/acquisitions to link that property to the current boundary of the Reserve.

**Seth:** explained that the Buffer Preserve is a 7,000 acre property currently managed by the staff near St. Joe bay. They will continue to link it physically to the NERR over time through property acquisition.

**Phil:** need to identify the "ideal boundaries" for management of the site. This would include a more long term approach or plan for identifying potential acquisition opportunities and locations.

**Graham:** are there any intentions or efforts to expand the water components of the site?

**Seth:** explained that bringing in areas managed by other entities does not help increase NERR funding. The Buffer Preserve being included will help by making current Apalachicola NERR funds available for the management of these lands, something they are already doing, but cannot currently apply NOAA funds to these management efforts. The Advisory Council can recommend future boundary changes, but should keep in mind NOAA's expressed desire to maintain consistency in management practices on all lands within the bounds of the Reserve while working under "fixed" (although currently shrinking) federal funding.

**Joseph:** the fishermen and recreationalists are beginning to see the value of what the NERR is giving the community, so you want to be careful not to show a perception of taking over more land/getting bigger.

**Seth:** yes, that perception could be bad. However, the reality is that only those areas managed directly by the Reserve could see changes. The Reserve does not have the authority to control access or mandate management practices on lands within the boundary of the NERR because much of those lands are directly managed by other agencies.

**Graham & Joseph:** the Reserve needs to present, or make available, the scientific data and other information collected to the County Commissioners for future decisions. This could also help with educating the public since many things would be aired over Public Television (all meetings of the Franklin Co. Board of County Commissioners are recorded and aired on a local television station).

Someone also mentioned approaching the city council in the same way as the county commissioners. Anita?

**Helen:** the Reserve should also approach the City Commissions with this information.

**Anita:** the public face of the Reserve has always been a shortfall so anything that is brought before the Commissions could help with advertisement. Advisory council meetings should be noticed in the local paper as well as any other noteworthy Reserve activities.

**Mikel:** everyone needs to keep in mind the current demands on the Reserve staff and be realistic in our expectations

**Graham:** are there any expansions being made on the education front for the Reserve? Do we have enough ties with schools and the community?

**Mikel:** the School system is interested in maintaining and expanding their ties with the Reserve. When the new consolidated school building is completed they would like to expand their marine science curriculum.

**Tony:** Reserve staff is providing educational opportunities at the park quite often. They would like to expand what is offered, but it takes money that they do not currently have.

**Graham:** if we are interested in the conditions at the bottom of the watershed, then we need to bring in/provide educational opportunities for all the counties in the watershed & north, all the way to Atlanta.

**Eric:** the majority of the school programs are currently provided to the schools in Gulf & Franklin Counties (then Bay & Leon).

**Rosalyn:** more interest for decision-maker educational opportunities comes from outside the watershed than inside. Lee: part of the reason so many of the school programs are provided to schools in Franklin County is because the Reserve's Friends Group pays for the busses to bring the kids to the Reserve.

**Eric:** some Reserves have a County paid employee on staff full-time at their Reserve.

**Phil:** need to identify the goals and objectives for the natural communities within the Reserve and state ideal conditions for them.

**Tony:** need to address endangered species monitoring. It needs to be continued. How will it be handled?

**Graham:** it would be helpful if we could have something to go off of (e.g. a draft of the plan from the staff) instead of working cold. It would help the advisory council by understanding what the Reserve views as issues for the management plan revision, then the council could check their own ideas and experience against that to embellish and refine what is offered, and generate new ideas.

**Phil:** need to survey the monitoring and control of exotics. Also need to provided education about control strategies and how to safely apply herbicides.

**Joseph:** science is fine, but we must present information to the local community in a way that they can understand & believe it.



## C.2 / Public Scoping Meeting(s)

The following appendices contain information about the public scoping meeting held December 5, 2007, in order to obtain input from the public as to what they thought the issues in Apalachicola National Estuarine Research Reserve were.

### C.2.1 / Florida Administrative Weekly Posting(s)

*Florida Administrative Weekly*

*Volume 33, Number 43, October 26, 2007*

The proposed improvements have been developed in accordance with the Civil Rights Act of 1964, and the Civil Rights Act of 1968. Under Title VI and Title VIII of the Civil Rights Act and person(s) or beneficiary who believes they have been subjected to discrimination because of race, color, sex, age, national origin, disability or income status may file a written complaint to the Department of Transportation's Equal Opportunity Office in Tallahassee or contact the District Title VI and Title VIII Coordinator in Lake City.

Central Office: Florida Department of Transportation, Equal Opportunity Office, 605 Suwannee Street, MS 65, Tallahassee, Florida 32399-0450.

District Office: Florida Department of Transportation, District Two, Title VI & Title VIII Coordinator, 1109 South Marion Avenue, MS 2016, Lake City, Florida 32025-8574.

Written comments from the Commissions and other interested parties will be received by the Department at the Public Hearings and through December 21, 2007. Comments should be addressed to: Mr. Charles W. Baldwin, P.E., District Secretary, Florida Department of Transportation, District Two, 1109 South Marion Avenue, Lake City, Florida 32025-5874, 1(800)749-2967.

Assistance for disabled persons may be arranged by contacting Mr. Bill Henderson, District Planning and Environmental Manager, Lake City District Office, 1(800)749-2967 at least ten (10) days in advance of the public hearings.

#### **BOARD OF TRUSTEES OF THE INTERNAL IMPROVEMENT TRUST FUND**

Notices for the Board of Trustees of the Internal Improvement Trust Fund between December 28, 2001 and June 30, 2006, go to <http://www.dep.state.fl.us/> under the link or button titled "Official Notices."

The **Department of Environmental Protection**, Office of Coastal and Aquatic Managed Areas, acting as staff to the **Board of Trustees of the Internal Improvement Trust Fund** announces a public meeting to which all persons are invited.

DATE AND TIME: Wednesday, December 5, 2007, 6:00 p.m.

PLACE: The Apalachicola National Estuarine Research Reserve's Nature Center, 261 7th St., Apalachicola, FL 32320

GENERAL SUBJECT MATTER TO BE CONSIDERED: The purpose is to inform the public on the management plan review process and to solicit input on issues they are interested in seeing addressed in the Apalachicola National Estuarine Research Reserve (ANERR) Management Plan. The ANERR Reserve Advisory Council will be participating.

A copy of the agenda may be obtained by contacting the Reserve Manager, Seth Blitch at (850)653-8063.

Pursuant to the provisions of the Americans with Disabilities Act, any person requiring special accommodations to participate in this workshop/meeting is asked to advise the

agency at least 5 days before the workshop/meeting by contacting the Reserve Manager, Seth Blitch at (850)653-8063. If you are hearing or speech impaired, please contact the agency using the Florida Relay Service, 1(800)955-8771 (TDD) or 1(800)955-8770 (Voice).

#### **FLORIDA PAROLE COMMISSION**

The **Florida Parole Commission** announces a public meeting to which all persons are invited.

DATE AND TIME: Wednesday, November 14, 2007, 9:00 a.m.

PLACE: Florida Parole Commission, 2601 Blair Stone Road, Bldg. C, Tallahassee, Florida 32399-2450

GENERAL SUBJECT MATTER TO BE CONSIDERED: Regularly scheduled meeting for all Parole, Conditional Release, Conditional Medical Release, Addiction Recovery and Control Release matters as well as other Commission business.

A copy of the agenda may be obtained by contacting: Florida Parole Commission, 2601 Blair Stone Road, Bldg. C, Tallahassee, Florida 32399-2450.

Pursuant to the provisions of the Americans with Disabilities Act, any person requiring special accommodations to participate in this workshop/meeting is asked to advise the agency at least five days before the workshop/meeting by contacting: Florida Parole Commission, 2601 Blair Stone Road, Bldg. C, Tallahassee, Florida 32399-2450, (850)488-3417. If you are hearing or speech impaired, please contact the agency using the Florida Relay Service, 1(800)955-8771 (TDD) or 1(800)955-8770 (Voice).

If any person decides to appeal any decision made by the Board with respect to any matter considered at this meeting or hearing, he/she will need to ensure that a verbatim record of the proceeding is made, which record includes the testimony and evidence from which the appeal is to be issued.

For more information, you may contact: Florida Parole Commission, 2601 Blair Stone Road., Bldg. C, Tallahassee, Florida 32399-2450.

#### **PUBLIC SERVICE COMMISSION**

The Florida **Public Service Commission** announces a public meeting to which all persons are invited.

PREHEARING CONFERENCE

DATE AND TIME: Monday, December 3, 2007, 3:00 p.m.

HEARING

DATES AND TIME: Monday through Thursday, December 10-13, 2007, 9:30 a.m.

PLACE: Room 148, Betty Easley Conference Center, 4075 Esplanade Way, Tallahassee, Florida

Florida Department of Environmental Protection • Office of Coastal & Aquatic Managed Areas



Apalachicola National Estuarine  
Research Reserve (ANERR)

# Public Meeting

Wednesday, December 5, 2007, 6:00 pm

Apalachicola National Estuarine  
Research Reserve's Nature Center  
261 7th Street, Apalachicola, FL 32320

The Florida Department of Environmental Protection's Office of Coastal and Aquatic Managed Areas (CAMA) is responsible for the management of Florida's forty-one Aquatic Preserves, three National Estuarine Research Reserves, one National Marine Sanctuary, and the Coral Reef Conservation Program. These protected areas comprise more than four million acres of the most valuable submerged lands and select coastal uplands in Florida. CAMA is updating these management plans, and is currently working on the ANERR plan. This site will hold a public meeting to receive input on a revision of the existing plan.

The objective of this meeting is to solicit public input regarding issues and opportunities that should be addressed in the management plan. The information from the meeting will be compiled and presented to CAMA by ANERR staff and a facilitator.

*For more information, please contact Reserve Manager, Seth Blich (850) 653-8063 | [seth.blich@dep.state.fl.us](mailto:seth.blich@dep.state.fl.us) or visit our website at [www.dep.state.fl.us/coastal](http://www.dep.state.fl.us/coastal). Written comments are welcome and can be submitted via fax: (850) 245-2110, Attn: ANERR; or email [Apalachicola.Reserve@dep.state.fl.us](mailto:Apalachicola.Reserve@dep.state.fl.us)*

Pursuant to the provisions of the Americans with Disabilities Act, any person requiring special accommodations to participate in this workshop/meeting is asked to advise the agency at least 5 days before the workshop/meeting by contacting Seth Blich (850) 653-8063. If you are hearing or speech impaired, please contact the agency using the Florida Relay Service, (800) 955-8771 (TDD) or (800) 955-8770 (Voice).

This publication funded in part through a grant agreement from the Florida Department of Environmental Protection, Florida Coastal Management Program by a grant provided by the Office of Ocean and Coastal Resource Management under the Coastal Zone Management Act of 1972, as amended, National Oceanic and Atmospheric Administration (NOAA) Award No. NA07NOS4190071-CZ823. The views, statements, finding, conclusions, and recommendations expressed herein are those of the author(s) and do not necessarily reflect the views of the State of Florida, NOAA, or any of its subagencies. October, 2007.



### C.2.3 / Summary of the Public Scoping Meeting(s)

#### Public Scoping Meeting Attendees / December 5, 2007 (6:00 p.m.)

Name	Affiliation	Advisory Council Member
Charles Brannen	Franklin County Dog Hunters Association	No
Nancy Burke	Carrabelle citizen	No
Pat Burke	Carrabelle citizen	No
Lesley Cox	Carrabelle Waterfront Partnership	No
Todd Engstrom	FSU Coastal and Marine Lab	No
Larry Hale	Boy Scout Troop 22	No
Patricia Hale	Boy Scout Troop 22	No
Dennis Hardin	Florida Division of Forestry	No
Mel Kelly	Carrabelle Waterfront Partnership	No
Katie Lewis	Florida Division of Forestry	No
Jason Love	Florida Division of Forestry	No
Phil Manor	Florida Fish and Wildlife Conservation Commission	Yes
Ben Ralys	DEP / Water Resource Management	No
Ted Ruffner	Eastpoint citizen	No
Joe Shields	FDACS – Aquaculture	No
Wendell Thompson	Carrabelle citizen	No
Erin Wilcox	DEP / Water Resource Management	No

#### Florida Department of Environmental Protection Coastal and Aquatic Managed Areas (CAMA)

#### Apalachicola National Estuarine Research Reserve / Public Scoping Meeting December 5, 2007 Apalachicola National Estuarine Research Reserve's Nature Center

##### Meeting Summary

This report funded in part through a grant agreement from the Florida Department of Environmental Protection, Florida Coastal Management Program, by a grant provided by the Office of Ocean and Coastal Resource Management under the Coastal Zone Management Act of 1972, as amended, National Oceanic and Atmospheric Administration Award No. NA07NOS4190071CZ823. The views, statements, findings, conclusions and recommendations expressed herein are those of the author(s) and do not necessarily reflect the views of the State of Florida, NOAA or any of its subagencies. December 2007.

##### Introduction

On December 5, 2007 the Apalachicola National Estuarine Research Reserve conducted a public meeting to:

1. Review purpose of and process for revising the Site Management Plan
2. Receive feedback from stakeholders on perceived issues that should be addressed by the revision of the Site Management Plan

The meeting followed the following agenda:

- Official Welcome and introduction to meeting
- Overview Presentation: Presentation that described the management area's boundaries, available management resources, current projects, and management actions.
- Public Comment and Stakeholder Feedback: Opportunity for public to provide written and verbal input to the management area staff by visiting a "kiosks."
- Public Comment: Full group discussion on issues and ideas for consideration in the management plan revision.
- Kiosk Reports: Staff provided a verbal summary of the comments they received at their kiosk.

The workshop was designed to encourage dialogue between the public and Reserve staff on specific issues as well as provide a forum for general comments and observations.



## Coastal and Aquatic Managed Areas Background

The Florida Department of Environmental Protection's Office of Coastal and Aquatic Managed Areas (CAMA) is responsible for the management of Florida's 41 Aquatic Preserves, 3 National Estuarine Research Reserves (NERR), 1 National Marine Sanctuary, and the Coral Reef Conservation Program. These protected areas comprise more than 4 million acres of the most valuable submerged lands and coastal uplands in Florida. CAMA is currently in the process of revising its site management plans, including the plan at the Apalachicola National Estuarine Research Reserve. These plans will provide a management framework for the sites, setting priorities and guiding implementation for the next five years.

### This document

This document includes both comments received at the meeting and by email/fax during the public comment period.

### Summary of verbal comments received by the public at the meeting

Below is an overall summary of the comments received by Reserve staff during the public meeting process:

- Need to restore coastal forest environments to their natural conditions vs. the existing pine trees. Restore crabtrees, oaks, etc. so that the bears are not forced into the residential areas. The Reserve also needs to make a statement towards restoration of natural communities when possible.
- Need better public outreach to allow the community to understand the science and what the staff is doing for the community.
- Do we have valid, up-to-date statistics on the area and its importance to the residents, etc.
- How can we better communicate to the public when meetings are happening (possibly more advance notice/ earlier adds on Oyster Radio).
- Managing agencies in the Apalachicola area (not under management by ANERR) need to provide more advanced notice when doing prescribed burns.
- Seek funding and the needed Federal Regulations/Authority to remove derelict vessels (add to the OFW Law)
- Can you provide a system within the plan where staff can document infractions and report the to the other agencies/divisions that have authority and then follow up/document their action or inaction
- There needs to be long-range planning for recreational use in the plan.
- Need to increase the regulation of river camps (enforcement up river).
- We need more trash receptacles (with city/county pick-up) and more education regarding the effects of litter.
- Can we receive notification of when the County will mow certain areas so that groups can do clean-up day in advance in an effort to reduce the amount of trash that is shredded and is then dispersed into the bay via the wind?
- The past management plan should be evaluated as to what was and wasn't accomplished, what worked and what didn't (e.g. goals, objectives, actions, etc.) and this information should be included in the revised management plan.

### Written comments received on comment cards at the meeting

Keep doing good work, continue LIFE program, continue FMNP, continue Coastal Training Programs, continue Habitat Series Program, continue GIS Training *Comment provided by anonymous*

Need more public notice more notice on Burns *Comment provided Charles Brannen, President of Franklin Co. Dog Hunter Assoc.*

Continue collecting and publishing data on the system. Expand the boundary to Alligator Point to include entire St. George Sound and Alligator Harbor. *Comment provided by anonymous*

Expand boundary to include all of St. George Sound and Alligator Harbor. *Comment provided by anonymous*

Continue more and better please! Expand East to include CBLE Prov. Bay. *Comment provided by Mel Kelly*

Work needs to be done to extend Sikes Cut Rocks further into the bay to help protect little St. George Island from further erosion. Picnic shelters on LSGI. No Wednesday night meetings- interfere with church. *Comment provided by anonymous*

Continue public use on ANERR managed lands and waters. *Comment provided by anonymous*

Please look into long range planning for rec. use. ie: camping, birding trails, kayak beach, public dock with day use area, other. On Little St. George Island. *Comment provided by Ted Ruffner, 670-8870, 246 Grammercy Plantation, East Point, 32328.*

Regulation of River Camps. Please insure that rules and regulations on River Camps are completed with and violations reported and enforcement authority required to respond and explain. *Comment provided by Ted Ruffner, 670-8870, 246 Grammercy Plantation, East Point, 32328.*

Exert strong legislative and funding for removal derelict vessels and greater-state-wide law outstanding for waters. *Comment provided by anonymous.*

**Written comments submitted during comment period.** These are written comments received within the comment period, which ended December 12, 2007.

From: Florida Department of Agriculture and Consumer Services; Division of Aquaculture

FDEP – OFFICE OF COASTAL & AQUATIC MANAGED AREAS MEETING: 12/05; 6PM

The Florida Department of Agriculture and Consumer Services; Division of Aquaculture, has the same interests and responsibilities of the Aquatic Preserve. We would like to suggest the recognition of our programs in your draft plan, as it may be beneficial to both entities.

As you know, most of our shellfish harvesting areas are in Aquatic Preserves. This is usually the case because Aquatic Preserves are where the best water quality and resources are located. Actions to maintain shellfish harvesting areas will also result in protection of the Aquatic Preserve. Since we are no longer in DEP, the CAMA Aquatic Preserve Program may be our best DEP - internal advocate for protection of shellfish harvesting areas.

In the past, we have collaborated with Aquatic Preserve staff to meet both of our needs.

- (1) Provided language for the DEP private single family dock rule
- (2) Sited hard clam High Density Aquaculture Lease areas
- (3) Developed the Apalachicola Bay Oyster Harvesting License Educational Seminar.

**Bureau of Aquaculture Environmental Services** The Division monitors coastal water quality to manage the harvest of wholesome Molluscan shellfish for human consumption. We consider the maintenance or improvement of coastal water quality as being critical to continued shellfish harvest or culture.

**Bureau of Aquaculture Development** This is the first point of contact for individuals interested in leasing sovereign submerged land or water column for aquacultural purposes. We assess candidate lease sites and consult with effected state agencies, present the lease application before the Board of Trustees of the Internal Improvement Trust Fund (Governor and Cabinet) and monitor aquaculture-lease holders for compliance with the lease agreement and our Aquaculture BMP's. Additionally, this Bureau is responsible for designing and constructing oyster reefs which are compatible with specific estuarine systems; will promote oyster production; will support self-sustaining reefal communities; and will perform ecological services which contribute to fisheries habitat, ecosystem stability, nutrient cycling, and improved water quality.

In order to assist Aquatic Preserve Staff in their educational endeavors we can provide the following information:

- our shellfish harvesting area maps and legal descriptions
- our shellfish regulations
- The NSSP Model Ordinance Requirements
- Guidance developed by the Gulf and South Atlantic States Shellfish Conference (GSASSC)
- Guidance developed by the Bureau at the request of the Cedar Key Aquaculture Association
- Shellfish industry associations and
- Individual shellfish members

In return for the aforementioned information we would like CAMA to input the following into its NERR plan for Apalachicola Bay:

Page ??? : *Regulatory Assistance*: Please add the FDACS to the agencies listed.

Page ??? : *Integrated Strategies / Ecosystem Science*: The Division models and monitors for the presence of fecal coliforms.

Page ??? : *Integrated Strategies / Partnering*: Please add The Division to the list of agencies as we assess potential aquaculture lease sites for submerged aquatic vegetation and other marine resources and consult with Aquatic Preserve staff.

Page ??? : *Integrated Strategies / Partnering*: Coordinate with the DACS; Division of Aquaculture to assist in maintaining any existing Approved, Conditionally Approved, Restricted or Conditionally Restricted Shellfish harvesting Areas. Assist local government decision making regarding land use, planning and zoning, and comprehensive planning entities to address pollution source prevention and rehabilitation; Major pollution sources related to SHA's include: domestic sewage treatment and collection systems, onsite sewage disposal systems, marinas and docking facilities, domestic animals, wildlife and wastes generated by industries.



### C.3 / Formal Public Meeting(s)

The following Appendices contain information about the Formal Public Meeting(s) which was held in order to obtain input from the public about the Apalachicola National Estuarine Research Reserve Draft Management Plan. There are copies of the public advertisements for those meetings, a list of attendees, a summary of the meeting(s) (as required by §259.032(10), F.S.), and a copy of the written comments received.

#### C.3.1 / Florida Administrative Weekly Posting(s)

*Florida Administrative Weekly*

*Volume 37, Number 40, October 7, 2011*

PLACE: Florida Transportation Commission, 605 Suwannee Street, Room 176, Tallahassee, Florida 32399

GENERAL SUBJECT MATTER TO BE CONSIDERED: \*This notices amends the notice published in Issue 37/38.\* FTC Executive Team Meeting.

Note: Teleconference(s) may be cancelled without prior notice depending upon unanticipated scheduling conflicts.

A copy of the agenda may be obtained by contacting: Lisa O. Stone at (850)414-4316.

Pursuant to the provisions of the Americans with Disabilities Act, any person requiring special accommodations to participate in this workshop/meeting is asked to advise the agency at least 48 hours before the workshop/meeting by contacting: Lisa O. Stone at (850)414-4316. If you are hearing or speech impaired, please contact the agency using the Florida Relay Service, 1(800)955-8771 (TDD) or 1(800)955-8770 (Voice).

For more information, you may contact: Florida Transportation Commission, 605 Suwannee Street, MS #9, Tallahassee, Florida 32399, (850)414-4105.

The **Florida Seaport Transportation & Economic Development Council** announces a telephone conference call to which all persons are invited.

DATE AND TIME: Friday, October 21, 2011, 10:00 a.m.

PLACE: Conference Call: (270)400-2000, Participant Access Code: 9348585

GENERAL SUBJECT MATTER TO BE CONSIDERED: General Business.

A copy of the agenda may be obtained by contacting: Nancy Leikauf, The Florida Ports Council offices at (850)222-8028.

Pursuant to the provisions of the Americans with Disabilities Act, any person requiring special accommodations to participate in this workshop/meeting is asked to advise the agency at least 48 hours before the workshop/meeting by contacting: Nancy Leikauf, The Florida Ports Council offices at (850)222-8028. If you are hearing or speech impaired, please contact the agency using the Florida Relay Service, 1(800)955-8771 (TDD) or 1(800)955-8770 (Voice).

If any person decides to appeal any decision made by the Board with respect to any matter considered at this meeting or hearing, he/she will need to ensure that a verbatim record of the proceeding is made, which record includes the testimony and evidence from which the appeal is to be issued.

For more information, you may contact: Nancy Leikauf, The Florida Ports Council offices at (850)222-8028.

#### **BOARD OF TRUSTEES OF THE INTERNAL IMPROVEMENT TRUST FUND**

The Florida **Department of Environmental Protection**, Office of Coastal and Aquatic Managed Areas announces a public meeting to which all persons are invited.

DATE AND TIME: Monday, November 14, 2011, 6:00 p.m. – 8:00 p.m.

PLACE: Apalachicola National Estuarine Research Reserve Center, 108 Island Drive, Eastpoint, FL 32328

GENERAL SUBJECT MATTER TO BE CONSIDERED: The purpose of this meeting is to allow public review and comment on the draft management plan for the Apalachicola National Estuarine Research Reserve (ANERR).

A copy of the draft plan will be available for viewing starting October 7, 2011, at [www.dep.state.fl.us/coastal](http://www.dep.state.fl.us/coastal). The ANERR Advisory Council will be participating.

A copy of the agenda may be obtained by contacting: Reserve Manager, Lee Edmiston by e-mail: [Lee.Edmiston@dep.state.fl.us](mailto:Lee.Edmiston@dep.state.fl.us), by phone: (850)670-7721 or by mail: 108 Island Drive, Eastpoint, FL 32328.

Pursuant to the provisions of the Americans with Disabilities Act, any person requiring special accommodations to participate in this workshop/meeting is asked to advise the agency at least 5 days before the workshop/meeting by contacting: Reserve Manager, Lee Edmiston at (850)670-7721. If you are hearing or speech impaired, please contact the agency using the Florida Relay Service, 1(800)955-8771 (TDD) or 1(800)955-8770 (Voice).

#### **STATE BOARD OF ADMINISTRATION**

The **Florida Hurricane Catastrophe Fund** announces a public meeting to which all persons are invited.

DATE AND TIME: October 18, 2011, 9:00 a.m. (ET)

PLACE: Cabinet Meeting Room, Lower Level, The Capitol, Tallahassee, Florida

GENERAL SUBJECT MATTER TO BE CONSIDERED: This is a meeting of the Trustees of the State Board of Administration to authorize the Florida Hurricane Catastrophe Fund (the Fund) to file a Notice of Proposed Rule for Rule 19-8.010, F.A.C., Reimbursement Contract, and to file this rule for adoption if no member of the public timely requests a rule hearing. The rule and incorporated form reflecting the proposed amendments are available on the Fund's website: [www.sbafla.com/fhcf](http://www.sbafla.com/fhcf). In addition, the Trustees are meeting to appoint person(s) to serve on the Florida Hurricane Catastrophe Fund Advisory Council pursuant to Section 215.555(8), F.S. The Trustees may also address other general business.

Pursuant to the provisions of the Americans with Disabilities Act, any person requiring special accommodations to participate in this workshop/meeting is asked to advise the agency at least 7 days before the workshop/meeting by contacting: Tracy Allen, (850)413-1341, email: [tracy.allen@](mailto:tracy.allen@)



Florida Department of Environmental Protection • Office of Coastal & Aquatic Managed Areas



## Apalachicola National Estuarine Research Reserve Management Planning

# Public Meeting

Monday, November 14, 2011, 6:00 pm

Apalachicola National Estuarine Research Reserve Center  
108 Island Drive  
Eastpoint, FL 32328

The Florida Department of Environmental Protection's Office of Coastal and Aquatic Managed Areas (CAMA) is responsible for the management of Florida's 41 aquatic preserves, 3 National Estuarine Research Reserves (NERRs), a National Marine Sanctuary, and the Coral Reef Conservation Program. These protected areas comprise more than 4 million acres of the most valuable submerged lands and select coastal uplands in Florida. CAMA is updating these management plans, and is currently seeking input on the draft Apalachicola National Estuarine Research Reserve plan. Meeting objectives:

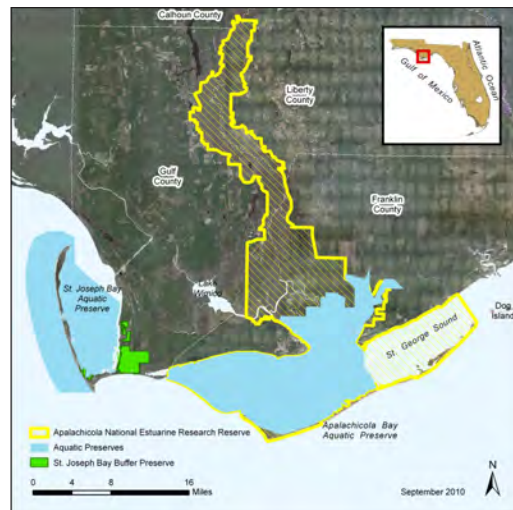
1. Review purpose and process for revising the Apalachicola National Estuarine Research Reserve management plan.
2. Present current draft plan with a focus on issues, goals, objectives and strategies.
3. Receive input on the draft management plan.

The information from the meeting will be compiled and used by CAMA in the revision of the draft management plan.

*For more information, please contact Lee Edmiston, (850) 670-7721 / [Lee.Edmiston@dep.state.fl.us](mailto:Lee.Edmiston@dep.state.fl.us) or visit our website at [www.dep.state.fl.us/coastal/sites/apalachicola/plan/](http://www.dep.state.fl.us/coastal/sites/apalachicola/plan/). Written comments are welcome and can be submitted by fax: (850) 245-2110, Attn: Apalachicola Bay; or email [Apalachicola.Reserve@dep.state.fl.us](mailto:Apalachicola.Reserve@dep.state.fl.us) on or before November 28, 2011.*

Pursuant to the provisions of the Americans with Disabilities Act, any person requiring special accommodations to participate in this workshop/meeting is asked to advise the agency at least 5 days before the workshop/meeting by contacting Lee Edmiston at (850) 670-7721 or [Lee.Edmiston@dep.state.fl.us](mailto:Lee.Edmiston@dep.state.fl.us). If you are hearing or speech impaired, please contact the agency using the Florida Relay Service, (800) 955-8771 (TDD) or (800) 955-8770 (Voice).

This publication funded in part through a grant agreement from the Florida Department of Environmental Protection, Florida Coastal Management Program by a grant provided by the Office of Ocean and Coastal Resource Management under the Coastal Zone Management Act of 1972, as amended, National Oceanic and Atmospheric Administration (NOAA) Award No. NA10NOS4190178-CM125, and NA11NOS4190073-CM227. The views, statements, finding, conclusions, and recommendations expressed herein are those of the author(s) and do not necessarily reflect the views of the State of Florida, NOAA, or any of its subagencies. October, 2011.



**Formal Public Meeting Attendees**

<b>Name</b>	<b>Organization</b>	<b>Advisory Council Member</b>
Bethany Blakely	Ohio Northern University	No
Julie Backus	Ohio Northern University	No
Emily Nebgen	Ohio Northern University	No
Brittany Bianco	Ohio Northern University	No
Nicole Howard	Ohio Northern University	No
Josh Ryan	Ohio Northern University	No
Kandai Doi	Ohio Northern University	No
Daun DeColibus	Ohio Northern University	No
Garett Fruchey	Ohio Northern University	No
Maggie Molnar	Ohio Northern University	No
Chad Carroll	Ohio Northern University	No
Brian Keas	Ohio Northern University	No
Phil Manor	FWC - ARWEA	Yes
Matthew Hortman	FWC - ARWEA	No
Joshua Hodson	DEP - St. George Island SP	Yes
Graham Lewis	NWFWMD	Yes
Jeanne Baker	DEP - CAMA - ANERR	No
Megan Lamb	DEP - CAMA - ANERR	No
Erik Lovestrand	DEP - CAMA - ANERR	No
Rosalyn Kilcollins	DEP - CAMA - ANERR	No
Jay Garwood	DEP - CAMA - ANERR	No
Jenna Wanat	DEP - CAMA - ANERR	No
Kim Wren	DEP - CAMA - ANERR	No
Pam Phillips	DEP - CAMA - central office	No
Penny Isom	DEP - CAMA - central office	No
Earl Pearson	DEP - CAMA - central office	No
Robin Vroegop	Citizen	No

**Florida Department of Environmental Protection Coastal and Aquatic Managed Areas (CAMA)**

**Apalachicola National Estuarine Research Reserve/ Public Scoping Meeting November 14<sup>th</sup>, 2011 Apalachicola National Estuarine Research Reserve's Nature Center**

**Meeting Summary**

This report funded in part through a grant agreement from the Florida Department of Environmental Protection, Florida Coastal Management program, by a grant provided by the Office of ocean and Coastal Resource management under the Coastal Zone management Act of 1972, as amended, National Oceanic and Atmospheric Administration Award No. NA07NOS4190071CZ823. The views, statements, findings, conclusions and recommendations expressed herein are those of the author(s) and do not necessarily reflect the views of the State of Florida, NOAA or any of its subagencies. November 2011.

**Introduction**

On November 14<sup>th</sup>, 2011 the Apalachicola National Estuarine Research Reserve conducted a public meeting to:

1. Review purpose of and process for revising the Site Management Plan.
2. Receive feedback from stakeholders regarding issues identified in the Site Management Plan.

**Agenda**

- Official Welcome and Introduction to meeting
- Overview and History of the Apalachicola Reserve and Management Plan
- Public Comment Period – participants were asked to visit “kiosks” around the conference room that each identified a management issue.
- Report Back to Group/ General Comment Period – each “kiosk” lead was asked to give a quick summary of comments and the audience was asked to provide additional questions/ comments.
- Next Steps in Management Plan Review Process



## Coastal and Aquatic Managed Areas Background

The Florida Department of Environmental Protection's Office of Coastal and Aquatic Managed Areas (CAMA) is responsible for the management of Florida's 41 Aquatic Preserves, 3 National Estuarine Research Reserves (NERR), 1 National Marine Sanctuary, and the Coral Reef Conservation Program. These protected areas comprise more than 4 million acres of the most valuable submerged lands and coastal uplands in Florida. CAMA is currently in the process of revising its site management plans, including the plan at the Apalachicola National Estuarine Research Reserve. These plans will provide a management frame work for these sites, setting priorities and guiding implementation for the next five years.

### This document

This document summarizes the comments made by the general public on the Issues identified in the draft Management Plan. Goals, objectives and strategies related to each of the issues were discussed as well. Following the meeting, it was decided that an Issue 6 should be included that encompassed the need for better public engagement and involvement in NERR activities.

### Issue 1: Public Use Comments

- Stewardship should coordinate with CTP to create workshops with a "Leave No Trace" message to educate the public. This should be an ongoing class offered to visitors/residents.

Included under strategy 1.1.1.g

- Establish more primitive camping along kayak trail especially on LSGI. Develop restrictive times if necessary (no camping during Dove hunting.)

Included strategy 1.2.1.e to maintain primitive camping sites

- Develop educational "service" type of outreach for students to get them out on managed lands. Some classes require students to do a certain number of community outreach hours. Students could assist with trail maintenance, clean up, etc.

Addressed under new Issue 6: Community involvement, engagement and support

- How can we measure these strategies that we have listed? It appears that the current strategies are simply things that we are already doing. We need to be more specific and list more specific things we'd like to accomplish in the near future. We should be illustrating what we want to accomplish. We can keep them simple enough so we don't list a bunch of stuff we won't be able to accomplish but give more detail towards are future plans. (Graham Lewis, Phil Manor, and Matt Hortman) Having more detailed information in writing also means that we are more likely to accomplish our goals and there may be increased funding opportunities if we can show that it is written as a strategy in our plan (Phil Manor).

Yes, some strategies should be more specific. Many strategies are focused on activities that are outlined in our Operation grant and performance measures are reported for these activities. Grant funding is not contingent on the other strategies identified (ie funding is not conditional on whether or not the strategy is identified in the management plan). RK: So did we add more specific strategies? RE funding, I think the point is that if it's in our plan, than it can be used in grant application language as to how the project /funding applied for will help us achieve or implement the strategy. DO we have a few specific ones we added or want to add? EL: Could make a note below that our plan needs to also include the things we are already doing, not just new things!

- Would be much easier to read and comment if Strategies were numbered. What are our performance measures?

Strategies are now lettered (do not want to prioritize with numbers). Performance measures are reported to Estuarine Reserves Division. Additional specific measures are not required in this management plan.

- We may want to look into the possibility of establishing a way to charge folks a fee to visit/camp at the Cape to help raise funds to support the Reserve. We may want to conduct paddling trips that we charge for folks for, etc.

We cannot charge for field trips and camps because we do not have spending authority for the monies that we would take in. We would also not want to conflict with local ecotourism businesses.

- Need to establish priority recreational opportunities on ANERR managed lands if we haven't already.

We don't feel like this is a priority for the Reserve and it wouldn't necessarily change the way that we manage our resources. Captured in Objective 1.2.1 and related strategies.

- Involve students more for summer internships/volunteers.

Addressed in new Issue 6.

- Concern over land acquisition methods and if conceptual plans are being developed properly to capture and consider public needs.

Addressed in Objective 3.3.2, particularly strategy 3.3.2.e.

- More ways to utilize the land- develop a summer camp for local students and specific volunteer opportunities/internships

We don't want to conflict with local businesses that are already providing summer camp opportunities. Specific opportunities and internships are addressed in new Issue 6.



## Issue 2: Habitat Change and Impacts to Species

- It was suggested that we make greater use of volunteers and interns for some of our projects.

Addressed in Issue 6

- Resource Library-a request for a photo database for known species within the Reserve. There was also a request to make the library more available to the public

Although the staff agrees that this would not be a priority, these resources could be made more available to the public via the new ANERR website. A field guide to ANERR could be something that a volunteer puts together.

- The GIS maps should be made more available to the public i.e., a better website with user friendly links to our GIS database

GIS datalayers for Reserve are available on DVD by contacting the Reserve. Many, if not all of these layers are available through DEP and FWC GIS databases. These links could be included on the new ANERR website.

- We should provide more education to the public regarding our prescribed burning programs. For example, we should make regular announcements when we will be burning ,or when we plan to be burning.

Addressed under 2.1.2.g

- Best Management Practices- We have provided a framework for how we will manage resources using BMPs, but we haven't developed a timeline in which they will be executed.

RK: Not sure what to say. Which objective(s) would this relate to? If our objectives have to be measurable, we need to put timeframes in, but don't think we do. EL: Can't really do this across the board for all cases where we need to change current management strategies to BMP's but it would be done on a case by case basis as feasible with available funding and staff.

- Our management approach to the Reserve should not just be characterized through just biodiversity alone. We should also considered species abundance and productivity

Yes, verbiage added to Goal 2.1.

- Objective 2.1.1, Strategy C- We should make the old building lab space and facilities available to students, classes, and visiting researchers

Since there is no on-site staff at the old facilities it is not encouraged. Visiting students and staff are encouraged to utilize the new building.

- Objective 2.1.2-we speak of "management", but technically what we are doing is "Monitoring". Also, we haven't done a good enough job establishing a connection between the uplands and the estuary.

Reworded 2.1.2 to say "work with researchers and decision-makers to better understand and address connections between land use change and ecosystem impacts."

- 2.1.3 – Again criticism with the use of the word "Manage". We should also give more detail on how we are going to deal with the anthropogenic impacts to the resources

To address the last two comments, yes there are management activities going on including prescribed burning, invasive species control and nuisance species removal to name a few. RK: Also Objective 3.1.1.e. and 3.3.1.b. - g. address management and information relating to anthropogenic impacts)

- We should develop a list of available restoration projects

Addressed in strategies under Objective 2.1.4.

## Issue 3: Changing land use patterns within the ACF watershed and the potential hydrologic changes within the system

- Consider expanding regular sampling to include contaminants such as heavy metals.

Changed 3.1.1 to include monitoring for contaminants in sediments (typically where heavy metals would be found).

- Outreach and education programs should be for all users, not just students and decision-makers

This is already pretty well covered in the strategies.

- Better website, more info and links, access to monitoring data – provide tools that allow monitoring data to be digested into a usable form by the public.

We will provide links to Centralized Data Management Organization (CDMO) on new ANERR Website

- Expand SWMP, such as increase number of water quality monitoring stations.

This is generally addressed in Strategy 3.1.1.f. The level of monitoring is directly linked to the amount of federal support for the work. We cannot guarantee an increase in monitoring effort with level or reduced funding.

- Expand outreach throughout the entire watershed and during "good" times.

Already doing this.

- How would the Reserve provide incentives for the public to use best management practices?

Addressed in Issue 6

- Make info about Best Management Practices more readily available, such as on the website or at CTP events.

Added to strategy 3.3.1.d and e.

- Need to capture local processes/changes beyond just land use

Already captured

- Look for alternative funding to acquire property – conservation easements

Captured in Issue 2

- Make sure that monitoring/sampling is at the appropriate scale to capture local impacts (land use or incidents in Apalachicola) or watershed/global processes.

Captured in Issue 5

- Look at additional partnerships to help do more

Already captured in 3.2.1.e.

#### **Issue 4: Loss of Cultural Resources within ANERR Boundary**

- Conduct evaluation to determine if we are reaching local residents with our messages or just out of town visitors.

Addressed in Issue 6

- Explore potential partnerships to develop Apalachicola River Cultural Heritage Trail (FPAN, local govts., tourist development groups).

Not necessarily a priority for the Reserve. Already being done by others.

- Develop training program for interpreters of well-known sites who can utilize these sites for education (utilize volunteers also).

Addressed in Issue 6

- Establish sustainable ecotourism opportunities for cultural resources.

The Reserve already allows sustainable ecotourism opportunities adjacent to cultural resources (Marshall House and Lighthouse Site).

- Develop more archaeological interpretation in nature center at Reserve headquarters.

Addressed in Strategy 4.1.2.d

- Work with local media to get information out regarding cultural resources (i.e. Debbie Beard radio spots).

Addressed in Strategy 4.1.1.e

- Ensure adequate fire-protection buffers and fuel reduction around cultural structures to protect them.

Already a Strategy (4.1.2.a)

- Incorporate more cultural topics into Estuaries Day and other events that Reserve does.

Already covered in strategy 4.2.1.c

- Reduce or control erosion of cultural sites where feasible (damage due to hogs, boat landing locations, etc.).

Addressed under Objective 4.1.3

- Maintain a data layer for all cultural sites, not just archaeological sites.

Pretty much done for the Reserve

- Maintain staff training program to mitigate loss of historic knowledge of local cultural sites when knowledgeable staff retire.

Addressed under Objective 4.1.3 by adding strategy d.

#### **Issue 5: Global Processes**

- When you say habitat, do you mean habitat or natural community?

We want to cover both, so we'll change the wording of Goal 5.1 to "resources."

- Many strategies are ongoing or long-term – how can you measure; adding timeframes would help

Strategies are meant to be worded as long-term actions, and also assume the 5-year timeframe of this plan.

Performance measures are reported to NOAA-ERD.

- Need to identify habitats that will be vulnerable to climate change first

Addressed by adding strategy 5.1.2.a

- Important to recognize need for community planning and resilience, especially regarding infrastructure

Addressed in Goal 5.4

- (Strategy 5.2.2?) – Explore opportunities to monitor

Addressed in Strategy 5.2.2.c



- Oil spills and other local (not global) impacts are not included- should they be here or in other issue/goals?

Objective 5.2.1 covers this

- Location of discrete sampling sites could (should?) be near critical area where impacts such as stormwater/ wastewater outfalls and other anthropogenic impacts occur

Long-term monitoring locations cannot be changed, but the Reserve can work with researchers to target other locations that may be more impacted.

- Look at alternative strategies for repetitive loss of shoreline areas due to erosion

Covered in 5.4.1.b

- Provide more environmentally friendly/innovative strategies for response to coastal hazards

Already covered in current trainings – adaptation planning, innovative floodplain strategies, etc.

- Educate public on impacts of actions on water quality (i.e. disposing of medicines) maybe put this in Issue 3? (suggestion: add medicine waste to Enviroscape demos)

Already addressed under Issue 3. Could also disperse information concerning the disposals of medicines.

- “It is relevant”

- How do you inform the public that doesn’t care about the environment? What ways can it be done?

Addressed in new Issue 6

- These strategies are long term goals, projects can take a long time – use university students to help/volunteer; consider options for “unpaid” internships; provide opportunities for interns and volunteers to assist with projects and monitoring activities with tight budgets, consider more volunteer opportunities

Addressed in new Issue 6

- Provide field experiences (summer or volunteer projects) for freshman/sophomore college students to get them interested, don’t wait until they are grad students

Addressed in new Issue 6

### General comments following *Issues* discussion

- Make weather data available real time on ANERR website

Possibly

- Establish a critter cam for one or more nesting sites

Probably not due to the remote nature and/or difficulty in positioning it.

- Move HABs from Issue 5 to Local Processes (which issue?)

Changed Issue 5 to Global and Regional Processes. HABs typically originate offshore and then move into the estuary. Not necessarily caused by conditions in the estuary.

- Management plan needs more on local processes. Should focus more on local issues (i.e. HAB impacts should be included here) High priority should be given to interacting more with local community. We currently don’t have strategies to accomplish this. If it wasn’t for the 10 University students attending the meeting, only a handful of folks would be there- only one resident attended. (Graham Lewis)

Addressed in new Issue 6

- How can we get the local community engaged? We should think about contacting local teachers and let them know when our work pertains to their class work and get more students involved. (Ohio student)

Addressed in new Issue 6

- Do we have a prescribed fire plan for Franklin county lands? If not, we need one. No one knows what are fire plan is or when we’ve burned, etc. What is our plan for Franklin county lands?(Josh Hodson)

We don’t have a plan for Franklin County. There is a plan for the Reserve and the lands that we manage. Do have cooperative agreement with FWC for some of the lands we manage, but that is not in the plan. Also need to include the fire history – parcels and burn dates. Also participate in ARSA and coordinate with members.

- Any interest in expanding the Reserve boundaries? This may be beneficial to the Reserve. We need to seriously look into this to determine if there is an advantage in trying to include other areas/property. It may be that someone else manages it but including it in the Reserve boundary may be beneficial. Are there issues with having to do an EIA to expand? (Graham Lewis)

- We should include in our strategies, under Public Use possibly, that we are exploring the feasibility of expanding the Reserve boundaries. We need to look into this option. (Graham Lewis)

Boundary expansion is being considered, but likely would not be in the main text of this management plan. It would most likely be in an amendment to this plan.





**FLORIDA DEPARTMENT OF  
ENVIRONMENTAL PROTECTION**

MARJORY STONEMAN DOUGLAS BUILDING  
3900 COMMONWEALTH BOULEVARD  
TALLAHASSEE, FLORIDA 32399-3000

RICK SCOTT  
GOVERNOR

HERSCHEL T. VINYARD JR.  
SECRETARY

August 22, 2013

Ms. Penny Isom  
Office of Coastal and Aquatic Managed Areas  
Department of Environmental Protection  
3900 Commonwealth Boulevard, MS 235  
Tallahassee, FL, 32399

**Re: Apalachicola National Estuarine Research Reserve (ANERR) – Lease # 3862**

Dear Ms. ~~Isom~~: *Penny*

The Division of State Lands, Office of Environmental Services, acting as agent for the Board of Trustees of the Internal Improvement Trust Fund, hereby approves the Apalachicola National Estuarine Research Reserve management plan. The next management plan update is due August 21, 2023.

Approval of this land management plan does not waive the authority or jurisdiction of any governmental entity that may have an interest in this project. Implementation of any upland activities proposed by this management plan may require a permit or other authorization from federal and state agencies having regulatory jurisdiction over those particular activities. Pursuant to the conditions of your lease, please forward copies of all permits to this office upon issuance.

Sincerely,

A handwritten signature in cursive script that reads "Marianne".

Marianne S. Gengenbach  
Office of Environmental Services  
Division of State Lands



United States Department of the Interior

U.S. GEOLOGICAL SURVEY  
Office of the Director  
Reston, Virginia 20192

March 4, 2014

In Reply Refer To:  
Mail Stop 423  
ER 14/060

Memorandum

To: Matt Chasse, Estuarine Reserves Division  
National Ocean Service, NOAA

From: James F. Devine, U.S. Geological Survey **Signed, James Devine**  
Senior Advisor for Science Applications

Subject: Apalachicola, Florida National Estuarine Research Reserve Management Plan  
Revisions (ER 14/0060)

As requested by the U.S. Department of the Interior, Office of Environmental Policy and Compliance, in their correspondence of February 5, 2014, the U.S. Geological Survey (USGS) has reviewed the subject management plan and offers the following comments.

**COMMENTS**

**General:** Adaptive Management is appropriately mentioned several times in Chapters 5 and 6 of *Part Two, Management Programs and Issues*, and a conceptual introduction to the topic is presented in an approachable way in Figure 3 (p. 90). We suggest that the prominence of this concept be elevated, as it is highly relevant to the entire Plan. We also suggest that the document include references to the Department of the Interior's Adaptive Management information portal (<http://www.doi.gov/initiatives/AdaptiveManagement/index.html>), and to the Adaptive Management Technical Guide, (<http://www.doi.gov/initiatives/AdaptiveManagement/TechGuide.pdf>), which, is readable and understandable to a general audience.

Thank you for the opportunity to review and comment on the DEIS. If you have any questions concerning our comments, please contact Gary LeCain, USGS Coordinator for Environmental Document Reviews, at (303) 236-1475 or at [gdlecain@usgs.gov](mailto:gdlecain@usgs.gov)

Copy to: Office of Environmental Policy and Compliance

Cc: Joseph Bunnell, Ecosystems  
EDR Review, MS 423

USGS:JBUNNELL:GLECAIN:x6832:2/10/14  
C:/worddocs/eiscomments/er14/060



6888

Federal Register / Vol. 79, No. 24 / Wednesday, February 5, 2014 / Notices

**DEPARTMENT OF COMMERCE****International Trade Administration****Application(s) for Duty-Free Entry of Scientific Instruments**

Pursuant to Section 6(c) of the Educational, Scientific and Cultural Materials Importation Act of 1966 (Pub. L. 89-651, as amended by Pub. L. 106-36; 80 Stat. 897; 15 CFR part 301), we invite comments on the question of whether instruments of equivalent scientific value, for the purposes for which the instruments shown below are intended to be used, are being manufactured in the United States.

Comments must comply with 15 CFR 301.5(a)(3) and (4) of the regulations and be postmarked on or before February 25, 2014. Address written comments to Statutory Import Programs Staff, Room 3720, U.S. Department of Commerce, Washington, DC 20230. Applications may be examined between 8:30 a.m. and 5:00 p.m. at the U.S. Department of Commerce in Room 3720.

*Docket Number:* 13-052. *Applicant:* The Association of Universities for Research in Astronomy, 950 N. Cherry Ave., Tucson, AZ 85719. *Instrument:* Enclosure control system for the Advanced Technology Solar Telescope. *Manufacturer:* AEC Engineering, part of the IDOM Group, Spain. *Intended Use:* The instrument will be used to understand the nature of transient solar events which affect life on Earth by employing techniques such as augmenting pointing control of the Telescope at the Sun and augmenting control over the thermal environment during operational use. During normal sun-tracking operations, the Enclosure accessory shall provide complete protection of the Telescope (except for the M1 Assembly) from incoming solar radiation (insolation), the Enclosure accessory shall provide an unobstructed optical path from the Sun to the M1 Assembly when the carousel and shutters are in any position within their allowable ranges of travel, and the Enclosure accessory skin shall be insulated to the extent required to ensure that the interior surface temperature can be maintained at +0° F/-3.5° relative to ambient temperature while the exterior skin temperature is at ambient minus 7.2° F in all operational conditions. *Justification for Duty-Free Entry:* There are no instruments of the same general category manufactured in the United States. *Application accepted by Commissioner of Customs:* January 23, 2014.

*Docket Number:* 13-054. *Applicant:* Regents of the University of Minnesota,

School of Physics and Astronomy, 116 Church Street SE., Minneapolis, MN 55455-0149. *Instrument:* Yanus IV Laser Scan Head. *Manufacturer:* Till Photonics, Germany. *Intended Use:* The instrument will be used to study the oligomeric state of EGFP tagged Retenoid X Receptor (RXR-EGFP) in the absence and presence of its ligand by PCH analysis, as well as follow its binding to DNA and other nuclear factors by conventional and scanning fluorescence correlation spectroscopy (FCS). The laser beam is continuously scanned in a circular fashion, which shows peaks and valleys which add contrast and give information about the scan radius, diffusion coefficient and particle concentrations that would be absent in conventional FCS.

Conventional scan heads for laser microscopy have a finite distance between their scan axes, which introduces aberrations and vignetting into the scan. These distortions in the point spread function prohibit the quantitative imaging experiments. The Yanus IV scan head has been engineered with an effective zero optical distance between the scan axes, which maintains diffraction-limited performance across the entire scan field. This is the only instrument with zero effective optical distance between the scan axes.

*Justification for Duty-Free Entry:* There are no instruments of the same general category manufactured in the United States. *Application accepted by Commissioner of Customs:* January 2, 2014.

Dated: January 28, 2014.

**Gregory W. Campbell,**  
*Director of Subsidies Enforcement,*  
*Enforcement and Compliance.*

[FR Doc. 2014-02465 Filed 2-4-14; 8:45 am]

**BILLING CODE 3510-DS-P**

**DEPARTMENT OF COMMERCE****National Oceanic and Atmospheric Administration****National Estuarine Research Reserve System**

**AGENCY:** Estuarine Reserves Division, Office of Ocean and Coastal Resource Management, National Ocean Service, National Oceanic and Atmospheric Administration, U.S. Department of Commerce.

**ACTION:** Notice of Public Comment Period for the Apalachicola, Florida National Estuarine Research Reserve Management Plan revisions.

**SUMMARY:** Notice is hereby given that the Estuarine Reserves Division, Office

of Ocean and Coastal Resource Management, National Ocean Service, National Oceanic and Atmospheric Administration, U.S. Department of Commerce is announcing a thirty day public comment period for the Apalachicola, Florida National Estuarine Research Reserve Management Plan revisions. Pursuant to 15 CFR 921.33(c), the revised plan will bring the reserve into compliance. The Apalachicola Reserve revised plan will replace the plan approved in 2003.

The revised management plan outlines the administrative structure; the research & monitoring, education, training, and stewardship goals of the reserve; and the plans for future land acquisition and facility development to support reserve operations.

The Apalachicola Reserve emphasizes a fully integrated approach that links ongoing research, education, training and stewardship programs together. This integrated approach, in coordination with strategic partnerships addresses high priority reserve issues including public use and access, changing land use patterns, the loss of cultural resources, impacts of global and regional processes on ecosystems and communities, engagement with local communities, and changes in reserve habitats. Since the last management plan, the reserve has expanded its monitoring and geographic information system programs; increased staff resources; completed a site profile, established a Coastal Training Program; expanded educational programs; and constructed a new nature center and headquarters complex in the town of Eastpoint that includes laboratories, offices, classrooms, interpretive areas, and are planning interpretive trails.

With the approval of this management plan, the Apalachicola Reserve will decrease their total acreage from 246,766 acres to 234,715. The change is attributable to accuracy adjustments based on improved geographic information for the site. The revised management plan will serve as the guiding document for the 234,715 acre Apalachicola Reserve for the next five years. View the Apalachicola, Florida Reserve Management Plan revision at (<http://www.dep.state.fl.us/coastal/sites/apalachicola/>) and provide comments to ([Lee.Edmiston@dep.state.fl.us](mailto:Lee.Edmiston@dep.state.fl.us)).

**FOR FURTHER INFORMATION CONTACT:** Matt Chasse at (301) 563-1198 or Erica Seiden at (301) 563-1172 of NOAA's National Ocean Service, Estuarine Reserves Division, 1305 East-West Highway, N/ORM5, 10th floor, Silver Spring, MD 20910.



Dated: January 29, 2014.

**Christopher C. Cartwright,**

Associate Assistant Administrator for  
Management and CFO/CAO, Ocean Services  
and Coastal Zone Management, National  
Oceanic and Atmospheric Administration.

[FR Doc. 2014-02392 Filed 2-4-14; 8:45 am]

**BILLING CODE 3510-08-P**

## DEPARTMENT OF COMMERCE

### National Oceanic and Atmospheric Administration

**RIN 0648-XA363**

#### Marine Mammals; File No. 14352

**AGENCY:** National Marine Fisheries  
Service (NMFS), National Oceanic and  
Atmospheric Administration (NOAA),  
Commerce.

**ACTION:** Notice; issuance of permit  
amendment.

**SUMMARY:** Notice is hereby given that Dr.  
Gregory D. Bossart, Georgia Aquarium,  
225 Baker Street NW., Atlanta, Georgia  
30313 has been issued a minor  
amendment to Scientific Research  
Permit No. 14352.

**ADDRESSES:** The amendment and related  
documents are available for review  
upon written request or by appointment  
in the following offices:

Permits and Conservation Division,  
Office of Protected Resources, NMFS,  
1315 East-West Highway, Room 13705,  
Silver Spring, MD 20910; phone (301)  
427-8401; fax (301) 713-0376; and  
Southeast Region, NMFS, 263 13th  
Avenue South, Saint Petersburg, FL  
33701; phone (727) 824-5312; fax (727)  
824-5309.

**FOR FURTHER INFORMATION CONTACT:**  
Kristy Beard or Amy Sloan, (301) 427-  
8401.

**SUPPLEMENTARY INFORMATION:** The  
requested amendment has been granted  
under the authority of the Marine  
Mammal Protection Act of 1972, as  
amended (16 U.S.C. 1361 *et seq.*) and  
the regulations governing the taking and  
importing of marine mammals (50 CFR  
part 216).

The original permit (No. 14352),  
issued on October 15, 2009, authorized  
health assessments of bottlenose  
dolphins (*Tursiops truncatus*) in  
Florida's Indian River Lagoon system by  
capturing, sampling, and releasing up to  
40 dolphins per year. Captured dolphins  
may receive a complete clinical workup  
and a roto tag. Up to ten animals per  
year may also receive a VHF tag.  
Samples may be analyzed to examine a  
variety of health topics. An additional  
400 dolphins per year may be harassed  
during pre- and post-capture surveys in

the Indian River Lagoon. The permit  
would also authorize two accidental  
mortalities over the five-year permit.  
The permit was amended on April 1,  
2011 (76 FR 20957) to authorize  
research in Charleston, South Carolina.  
Fifty bottlenose dolphins may be  
captured, sampled, and released in  
Charleston annually. Captured dolphins  
may receive a health assessment clinical  
workup and a roto tag. Up to ten  
animals per year may also receive a VHF  
tag. Samples may be analyzed to  
examine a variety of health topics such  
as: infectious diseases, immune status,  
contaminant exposure, antibiotic  
resistance, and genetics. Annually, 400  
dolphins may be harassed during pre-  
and post-capture surveys around  
Charleston. The permit was amended a  
second time on April 18, 2012, to allow  
an additional type of roto tag  
attachment. The original permit  
expiration date was October 31, 2014.  
The minor amendment (No. 14352-03)  
extends the duration of the permit  
through October 31, 2015, but does not  
change any other terms or conditions of  
the permit.

Dated: January 31, 2014.

**P. Michael Payne,**

Chief, Permits and Conservation Division,  
Office of Protected Resources, National  
Marine Fisheries Service.

[FR Doc. 2014-02397 Filed 2-4-14; 8:45 am]

**BILLING CODE 3510-22-P**

## DEPARTMENT OF EDUCATION

**[Docket No. ED-2013-ICCD-0132]**

### Agency Information Collection Activities; Submission to the Office of Management and Budget for Review and Approval; Comment Request; Evaluating the Retired Mentors for Teachers Program

**AGENCY:** Institute of Education Sciences/  
National Center for Education Statistics  
(IES), Department of Education (ED).

**ACTION:** Notice.

**SUMMARY:** In accordance with the  
Paperwork Reduction Act of 1995 (44  
U.S.C. chapter 3501 *et seq.*), ED is  
proposing a new information collection.

**DATES:** Interested persons are invited to  
submit comments on or before March 7,  
2014.

**ADDRESSES:** Comments submitted in  
response to this notice should be  
submitted electronically through the  
Federal eRulemaking Portal at <http://www.regulations.gov> by selecting  
Docket ID number.

ED-2013-ICCD-0132 or via postal  
mail, commercial delivery, or hand

delivery. *Please note that comments  
submitted by fax or email and those  
submitted after the comment period will  
not be accepted.* Written requests for  
information or comments submitted by  
postal mail or delivery should be  
addressed to the Director of the  
Information Collection Clearance  
Division, U.S. Department of Education,  
400 Maryland Avenue SW., LBJ,  
Mailstop L-OM-2-2E319, Room 2E105,  
Washington, DC 20202.

**FOR FURTHER INFORMATION CONTACT:** For  
questions related to collection activities  
or burden, please call Katrina Ingalls,  
703-620-3655 or electronically mail  
[ICDocketMgr@ed.gov](mailto:ICDocketMgr@ed.gov). Please do not  
send comments here. We will ONLY  
accept comments in this mailbox when  
the [regulations.gov](http://regulations.gov) site is not available  
to the public for any reason.

**SUPPLEMENTARY INFORMATION:** The  
Department of Education (ED), in  
accordance with the Paperwork  
Reduction Act of 1995 (PRA) (44 U.S.C.  
3506(c)(2)(A)), provides the general  
public and Federal agencies with an  
opportunity to comment on proposed,  
revised, and continuing collections of  
information. This helps the Department  
assess the impact of its information  
collection requirements and minimize  
the public's reporting burden. It also  
helps the public understand the  
Department's information collection  
requirements and provide the requested  
data in the desired format. ED is  
soliciting comments on the proposed  
information collection request (ICR) that  
is described below. The Department of  
Education is especially interested in  
public comment addressing the  
following issues: (1) Is this collection  
necessary to the proper functions of the  
Department; (2) will this information be  
processed and used in a timely manner;  
(3) is the estimate of burden accurate;  
(4) how might the Department enhance  
the quality, utility, and clarity of the  
information to be collected; and (5) how  
might the Department minimize the  
burden of this collection on the  
respondents, including through the use  
of information technology. Please note  
that written comments received in  
response to this notice will be  
considered public records.

*Title of Collection:* Evaluating the  
Retired Mentors for Teachers Program.  
*OMB Control Number:* 1850-NEW.

*Type of Review:* A new information  
collection.

*Respondents/Affected Public:*  
Individuals or households.

*Total Estimated Number of Annual  
Responses:* 148.

*Total Estimated Number of Annual  
Burden Hours:* 92.

## Goals, Objectives, and Strategies Table

### D.1 / Current Goals, Objectives and Strategies Table

The following table is a summary of the issues, goals, objectives and strategies identified in Chapter 6. The “Management Program” column identifies which Management Program each strategy falls within. The “Implementation Date” column identifies the fiscal year when the strategy was, or will be, initiated. The “Project Initiation” column indicates if this is an activity that is already underway, currently under initial development, or will occur in the future. The “Length of Initiative” column indicates how long it is expected to complete the strategy, and the “Estimated Yearly Cost” column identifies the anticipated expenses associated with the strategy.

Goals, Objectives & Integrated Strategies	Lead Program	Plan Year Initiated	Project Status	Type	Cost Est. per year	Est. FTE per year
<b>Legend:</b> EC = Education • CTP = Coastal Training • RC = Research • SC = Stewardship • MG = Manager/Admin I = initiated • N = not initiated • R = recurring • NR = not recurring						
<b>Issue 1: Public use of and access to Reserve-managed lands and waters.</b>						
<b>Goal 1.1: An informed public that is aware of environmental issues and has a sense of stewardship for resources within ANERR.</b>						
<b>Objective 1.1.1: Increase public awareness of opportunities to access and enjoy Reserve-managed lands and waters.</b>						
<b>Integrated Strategies:</b>						
a) Ensure that operations at the ANERR Nature Center address public demand during seasonal population fluctuations.	EC, CTP, MG	1	I	R	43510	1.52
b) Publicize resource-related recreational opportunities on ANERR-managed resources (land and waters), at the Reserve Nature Center, in ANERR newsletter and on Reserve websites.	EC,SC	1	I	R	17257	0.26
c) Install and maintain signage within areas that present opportunities for instruction and education about the resources and objectives of ANERR.	EC,SC	1	I	R	12234	0.25
d) Train staff and volunteers regarding recreational opportunities on ANERR lands and waters.	EC,SC	2	I	R	4181	0.125
e) Identify the Reserve on all interpretive and regulatory signage.	EC,SC	1	I	R	1728	0.025
f) Offer Coastal Training Programs including Master Naturalist Courses and Panhandle Habitat Series classes that highlight Reserve habitats and their management.	CTP	1	I	R	1517	0.04
g) Offer programs that encourage/highlight Leave No Trace™ principles.	CTP	1	I	R	1185	0.03
h) Maintain existing websites for the National Oceanic and Atmospheric Administration (NOAA) and the Florida Department of Environmental Protection (DEP), describing ecological, cultural and historical resources within ANERR.	All	1	I	R	7329	0.17
i) Host seminars at ANERR Nature Center showcasing the resources of ANERR as well as describing research and monitoring efforts to manage these resources.	All	1	I	R	7719	0.12
<b>Goal 1.2: Increase public access to Reserve-managed areas while minimizing impacts to natural and cultural resources and allowing for multiple uses.</b>						
<b>Objective 1.2.1: Create and maintain sustainable recreational opportunities on ANERR lands and waters.</b>						
<b>Integrated Strategies:</b>						
a) Designate areas for, and types of, public use that are compatible with the resource management goals of ANERR.	SC	1	I	R	5500	0.15
b) Develop and maintain parking areas, trailheads and trails.	EC,SC	1	I	R	11500	0.31

Goals, Objectives & Integrated Strategies	Lead Program	Plan Year Initiated	Project Status	Type	Cost Est. per year	Est. FTE per year
<b>Legend:</b> EC = Education • CTP = Coastal Training • RC = Research • SC = Stewardship • MG = Manager/Admin I = initiated • N = not initiated • R = recurring • NR = not recurring						
c) Complete Little St. George Island Government Dock.	MG	1	I	R	80000	1.7
d) Design and construct a new trail at ANERR Nature Center.	SC,EC	1	I	NR	54784	0.2
e) Maintain primitive camping sites.	SC	1	I	R	2200	0.05
f) Utilize Master Naturalist course student projects that support sustainable recreational opportunities.	CTP	1	I	R	495	0.01
g) Increase guided and self-guided field trips as well as other educational opportunities for the public at the ANERR Nature Center.	EC	1	I	R	22863	0.6
<b>Objective 1.2.2: Minimize impacts of public use on Reserve-managed lands.</b>						
<b>Integrated Strategies:</b>						
a) Install and maintain signage in high use areas that serves to minimize impacts to the resource.	SC	1	I	R	2440	0.015
b) Maintain effective relations with local, Florida Fish and Wildlife Conservation Commission (FWC) and DEP law enforcement personnel.	SC,MG	1	I	R	5250	0.065
c) Maintain gates and fences where access is not desired.	SC	1	I	R	1500	0.05
d) Promote best management practices that minimize impacts through Coastal Training Programs.	CTP	1	I	R	2160	0.06
<b>Objective 1.2.3: Allow sustainable hunting practices on designated ANERR managed lands.</b>						
<b>Integrated Strategies:</b>						
a) Allow for dove hunting on Little St. George Island consistent with and managed by FWC regulations and seasons.	SC	1	I	R	250	0.015
b) Allow for game hunting on the Lower River Marshes consistent with FWC regulations and seasons for the Apalachicola River Wildlife and Environmental Area.	SC	1	I	R	250	0.015
c) Notify the public of hunting regulations on Reserve lands through appropriate signage.	SC	2	N	NR	2300	0.015
<b>Total</b>					<b>288152</b>	<b>5.795</b>
<b>Issue 2: Habitat change and the resultant impacts to species within ANERR</b>						
<b>Goal 2.1: Maintain biodiversity, abundance and productivity within ANERR.</b>						
<b>Objective 2.1.1: Use monitoring data and peer-reviewed literature to support science-based decision-making and promote Best Management Practices (BMPs) within communities in the region.</b>						
<b>Integrated Strategies:</b>						
a) Maintain an easily accessible library of scientific materials relevant to the Apalachicola system as well as natural resource management issues.	RC	1	I	R	2830	0.05
b) Maintain a computerized database of pertinent information collected within and adjacent to ANERR for use in long-term interdisciplinary research and monitoring efforts.	RC	1	I	R	7320	0.2
c) Maintain field and laboratory facilities that provide a basic level of scientific and sampling equipment necessary to attract and support research and monitoring studies.	RC	1	I	R	6600	0.1
d) Provide scientific information necessary for sound natural resource management to federal, state, and local decision-makers that enables them to make informed planning decisions.	RC,CTP	1	I	R	6436	0.15



Goals, Objectives & Integrated Strategies	Lead Program	Plan Year Initiated	Project Status	Type	Cost Est. per year	Est. FTE per year
<b>Legend:</b> EC = Education • CTP = Coastal Training • RC = Research • SC = Stewardship • MG = Manager/Admin I = initiated • N = not initiated • R = recurring • NR = not recurring						
e) Offer best management practices training programs and technical assistance based on monitoring data and peer-reviewed literature.	CTP	1	I	R	3480	0.04
f) Maintain GIS and provide GIS-based products in support of decision-making.	SC,RC	1	I	R	24500	0.55
<b>Objective 2.1.2: Identify, monitor and manage upland natural communities within ANERR.</b>						
<b>Integrated Strategies:</b>						
a) Promote research and monitoring efforts within ANERR through the development of agreements with other entities within DEP, other research organizations and universities, and other state and federal agencies.	RC, MG	1	I	R	20980	0.35
b) Maintain a comprehensive monitoring program that enables ANERR to establish conditions and determine changes in the health and status of the lower Apalachicola River and Bay system.	RC	1	I	R	9320	0.2
c) Complete Phase III of the System-Wide Monitoring Program – habitat mapping using GIS and complete land use change analysis at regular intervals.	SC,RC	1	I	R	19320	0.3
d) Identify, monitor and reduce the distribution and abundance of invasive/exotic species.	SC	1	I	R	5000	0.05
e) Identify and resolve Urban/Conservation Lands interface conflicts.	SC	1	I	R	1500	0.05
f) Continue to offer training programs such as Florida Master Naturalist Program, Panhandle Habitat Series and Ecological Restoration classes that highlight the importance of conservation and management of upland habitats.	CTP	1	I	R	1517	0.04
g) Provide information/public education on the importance of upland management practices within the Reserve.	SC, MG	1	I	R	6500	0.1
<b>Objective 2.1.3: Identify, monitor and manage important submergent and emergent habitats within ANERR including oyster reefs, submerged aquatic vegetation, salt marsh, brackish marsh and freshwater marsh.</b>						
<b>Integrated Strategies:</b>						
a) Identify important submerged and emergent habitats within ANERR through remote sensing and physical groundtruthing.	RC,SC	1	I	N	5610	0.15
b) Construct and maintain habitat datalayers within the ANERR Geographic Information System (GIS) using the Florida Natural Areas Inventory (FNAI) and NERR classification systems.	SC,RC	1	I	R	5660	0.15
c) Characterize change over time in these areas through GIS change analysis.	SC,RC	3	N	R	5430	0.15
d) Identify the potential implications of sea level rise on these habitats through modeling and directed research and monitoring.	SC,RC	1	I	R	5,830	0.1
e) Provide opportunities to share scientific data and tools with decision-makers.	CTP, MG	1	I	R	7072	0.1
f) Continue to offer training programs such as the Florida Master Naturalist Program and Panhandle Habitat Series classes, that include the importance of conservation of submerged and emergent habitats.	CTP	1	I	R	1517	0.04
g) Provide training and technical assistance on techniques, funding sources and benefits of restoration of marsh and submerged vegetation through the Living Shorelines Initiative.	CTP	1	I	R	1530	0.02

Goals, Objectives & Integrated Strategies	Lead Program	Plan Year Initiated	Project Status	Type	Cost Est. per year	Est. FTE per year
<b>Legend:</b> EC = Education • CTP = Coastal Training • RC = Research • SC = Stewardship • MG = Manager/Admin I = initiated • N = not initiated • R = recurring • NR = not recurring						
h) Explore opportunities to engage local schools in restoration projects.	EC	2	N	R	1175	0.03
<b>Objective 2.1.4: Maintain and restore native habitat on lands managed by ANERR.</b>						
<b>Integrated Strategies:</b>						
a) Allow/facilitate the natural fire regime on AN-ERR-managed properties and facilitate prescribed burning where appropriate.	SC	1	I	R	2000	0.1
b) Identify and remove invasive/exotic species from ANERR-managed uplands.	SC	1	I	R	4000	0.1
c) Acquire alternative funding for restoration projects, especially those that deal with high priority management issues that are of critical interest to ANERR.	SC,CTP, MG	1	I	R	6220	0.085
d) Work with stakeholders to identify, promote and support restoration efforts for aquatic and upland habitats.	SC,CTP	1	I	R	2100	0.09
e) Provide training and technical assistance on techniques, funding sources and benefits of environmentally sensitive shoreline stabilization through the Living Shorelines Initiative.	CTP	1	I	R	1530	0.02
f) Explore opportunities to engage local schools in habitat restoration projects.	EC	2	N	R	1175	0.03
<b>Objective 2.1.5 Conserve and manage listed species through focused habitat management, education and training.</b>						
<b>Integrated Strategies:</b>						
a) Protect important habitats for listed species by posting clear signage and limiting access during nesting activities.	RC	1	I	R	1830	0.05
b) Limit predation of listed species on Reserve lands through nuisance species removal.	RC,SC	1	I	R	6330	0.065
c) Provide scientific information and recommendations on methods to reduce or eliminate threats to listed species.	RC	1	I	R	1830	0.05
d) Provide information and training on alternatives for local governments and developers to minimize impacts to habitats of listed species.	CTP	1	I	R	2700	0.03
e) Incorporate education themes into existing K-12 program venues that address conservation of listed species.	EC	1	I	R	11756	0.3
f) Continue to offer training programs such as the Florida Master Naturalist Program and Panhandle Habitat Series classes, that include the importance of conservation of listed species.	CTP	1	I	R	1517	0.04
<b>Total</b>					<b>192115</b>	<b>3.88</b>

**Issue 3: Changing land use patterns within the ACF watershed and potential hydrologic changes within the system**

**Goal 3.1: Quantify short-duration and long-term changes in water and sediment quality within the NERR and adjacent waters.**

**Objective 3.1.1: Monitor change by identifying the physical, chemical and biological characteristics of Apalachicola Bay through regular sampling.**

**Integrated Strategies:**

a) Continue long-term monitoring programs within and adjacent to the NERR to determine the current status of water quality parameters, potential threats to water quality, and impacts of water quality changes on resources.	RC	1	I	R	8320	0.2
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Goals, Objectives & Integrated Strategies	Lead Program	Plan Year Initiated	Project Status	Type	Cost Est. per year	Est. FTE per year
<b>Legend:</b> EC = Education • CTP = Coastal Training • RC = Research • SC = Stewardship • MG = Manager/Admin I = initiated • N = not initiated • R = recurring • NR = not recurring						
b) Monitor water parameters through use of YSI 6600 Dataloggers; measuring temperature, salinity, dissolved oxygen, turbidity and depth at four locations every 15 minutes.	RC	1	I	R	12320	0.2
c) Monitor nutrient availability in Apalachicola Bay by the collection of monthly discrete water samples identifying concentrations of total nitrogen, nitrate, nitrite, orthophosphate and Chlorophyll a.	RC	1	I	R	17320	0.2
d) Facilitate research within ANERR that addresses water and sediment quality changes and the resultant effects on the biota of the estuary.	RC	1	I	R	7320	0.2
e) Provide additional information to the public, managers, and decision-makers, especially local governments, about the importance of maintaining water quality, the detrimental effects of reduced water quality, and methods that can be used to minimize impacts to water quality.	CTP, MG	1	I	R	9950	0.13
f) Expand and improve the System-Wide Monitoring Program and its usefulness to resource managers.	RC,SC	3	N	R	13480	0.115
g) Develop outreach and educational programs for teachers to help educate students (the next generation) about the importance of maintaining water quality and the detrimental effects of reduced water quality.	EC	2	N	NR	14256	0.3
h) Work with federal and state regulators on Total Maximum Daily Load determinations and Impaired Waters status.	MG,RC	1	I	R	8660	0.15
<b>Objective 3.1.2: Identify and monitor potential point and nonpoint sources of surface water contaminants.</b>						
<b>Integrated Strategies</b>						
a) Use monitoring to determine primary pollution sources and concentrations within the NERR.	RC	1	I	R	12830	0.05
b) Facilitate research within ANERR that addresses water quality changes due to surface water contamination and the resultant effects on the biota of the estuary.	RC	1	I	R	1830	0.05
c) Use monitoring and scientific research results to inform decision-makers of point and nonpoint source impacts within the watershed.	CTP	1	I	R	3200	0.08
<b>Goal 3.2: Reduce impacts of modified hydrology in the Apalachicola-Chattahoochee-Flint watershed on the Apalachicola River and Bay System.</b>						
<b>Objective 3.2.1: Characterize and monitor the physical, chemical and biological characteristics of waters within the bay water as it relates to the flow regime of the Apalachicola River.</b>						
<b>Integrated Strategies:</b>						
a) Monitor water parameters through use of YSI 6600 Dataloggers; measuring temperature, salinity, dissolved oxygen, turbidity and depth at four locations every 15 minutes.	RC	1	I	R	12320	0.2
b) Monitor nutrient availability in Apalachicola Bay by the collection of monthly discrete water samples identifying concentrations of total nitrogen, nitrate, nitrite, orthophosphate and Chlorophyll a.	RC	1	I	R	13660	0.1
c) Facilitate research within ANERR that addresses water quantity changes and the resultant effects on the biota of the estuary.	RC	1	I	R	4660	0.1
d) Provide scientific information and recommendations to decision-makers on methods to lessen or eliminate threats associated with reduced water availability.	RC,CTP	1	N	R	10450	0.28



Goals, Objectives & Integrated Strategies	Lead Program	Plan Year Initiated	Project Status	Type	Cost Est. per year	Est. FTE per year
<b>Legend:</b> EC = Education • CTP = Coastal Training • RC = Research • SC = Stewardship • MG = Manager/Admin I = initiated • N = not initiated • R = recurring • NR = not recurring						
e) Develop partnerships with state and federal agencies, especially the Northwest Florida Water Management District and the U.S. Army Corps of Engineers, to help determine fresh water needs of habitats and species within the NERR.	MG,RC	1	I	R	12660	0.15
f) Facilitate research and monitoring programs that help identify natural variability (highs and lows) in flows and levels necessary to protect the natural resources of ANERR.	MG,RC	1	I	R	8660	0.15
g) Provide scientific information from research and monitoring programs to local, regional and state decision-makers that will assist in effective water management at all levels of water use, including private users.	CTP,MG,RC	1	I	R	6560	0.135
h) Develop outreach and educational programs for teachers to help educate students (the next generation) about the importance of maintaining water quantity and the detrimental effects of reduced water flows on the resources.	EC	2	N	NR	14256	0.3
<b>Goal 3.3: Facilitate the use of sustainable land use planning strategies and Best Management Practices for areas adjacent to ANERR.</b>						
<b>Objective 3.3.1: Provide information on best management practices (BMPs) to direct residential and commercial development projects in the watershed (increased density, development related to working waterfront – ports, marinas, boating, fisheries).</b>						
<b>Integrated Strategies:</b>						
a) Work with local, regional, state, and national organizations on rules, statutes and laws.	MG	1	I	R	5000	0.05
b) Assist local governments with appropriate input on comprehensive plan development, point and non-point source controls, setbacks, development issues, etc.	CTP, MG	1	I	R	6850	0.065
c) Provide reasonable alternatives to local governments and developers that help to minimize impacts from habitat and land use changes.	CTP	1	I	R	1850	0.05
d) Promote science-based strategies through training programs, technical assistance, demonstration sites, websites and public outreach, including the Green Industries Best Management Practices Training Program.	CTP	1	I	R	6400	0.1
e) Promote and support research of innovative, environmentally-sensitive development and land use practices through the Coastal Training Program.	CTP	1	I	R	1200	0.03
f) Incorporate education themes into K-12 program venues that address use of BMPs at home and school where teachers and students can be involved in protecting water quality. Use tools such as Enviroscape to demonstrate.	EC	2	N	NR	1175	0.03
g) Provide education materials for the public at the Visitor's center related to BMPs for homeowners to protect water quality.	EC,CTP	1	I	R	2468	0.021
<b>Objective 3.3.2: Address loss and fragmentation of habitats within ANERR.</b>						
<b>Integrated Strategies:</b>						
a) Identify property within and adjacent to ANERR sustaining high quality, undisturbed habitats. Look into attaining acreage through conservation easements	SC, MG	1	I	R	4000	0.065
b) Identify property that may have a direct impact on Reserve lands or that allows for better connectivity of important habitats within or adjacent to ANERR.	SC, MG	1	I	R	4000	0.065

Goals, Objectives & Integrated Strategies	Lead Program	Plan Year Initiated	Project Status	Type	Cost Est. per year	Est. FTE per year
<b>Legend:</b> EC = Education • CTP = Coastal Training • RC = Research • SC = Stewardship • MG = Manager/Admin I = initiated • N = not initiated • R = recurring • NR = not recurring						
c) Seek alternative funding to acquire property.	SC, MG	1	I	R	3500	0.04
d) Promote science-based strategies, including conservation subdivision planning and land owner incentives, through training programs, technical assistance, demonstration sites and public outreach.	CTP	1	I	R	1388	0.04
e) Ensure public input into potential boundary expansion and acquisition of priority land parcels.	MG,SC	2	N	R	2500	0.03
<b>Objective 3.3.3: Address impacts on ANERR resources related to increasing infrastructure demands such as road construction, power line installation, wastewater treatment and increased impervious surfaces.</b>						
<b>Integrated Strategies:</b>						
a) Utilize ANERR's GIS database to identify habitats susceptible to infrastructure demands.	SC,RC	2	N	R	2232	0.035
b) Educate local and state entities on best management practices to reduce the effects of infrastructure changes and expansion.	CTP	1	N	R	1110	0.03
c) Work with local and state entities to consider infrastructure impacts on ANERR ecosystems.	ALL	1	N	R	4530	0.085
d) Provide training and technical assistance relating to wastewater treatment including current scientific research, design and maintenance, treatment and disposal alternatives, and types of systems.	CTP	2	N	R	3000	0.02
<b>Total</b>					<b>243915</b>	<b>3.876</b>
<b>Issue 4: Loss of cultural resources within ANERR Boundary</b>						
<b>Goal 4.1: Protect cultural resource sites within the NERR.</b>						
<b>Objective 4.1.1: Increase awareness of the importance of archaeological sites and their legal protections.</b>						
<b>Integrated Strategies:</b>						
a) Provide educational information at public access points describing historical resources and their protections.	SC	2	N	NR	3500	0.015
b) Maintain working relationship with law enforcement entities regarding protection of sites.	SC,MG	2	N	R	2600	0.03
c) Host Archaeology Day events at Reserve.	EC	2	N	R	2395	0.04
d) Continue to offer training programs, such as Florida Master Naturalist Program and Panhandle Habitat Series classes, that include information on and the importance of conservation and protection of cultural resources.	CTP	1	I	R	1645	0.04
e) Work with partners to develop outreach to local community members about the importance of conserving and protecting cultural resources.	EC	2	N	R	2175	0.03
f) Develop additional interpretation of cultural resources in the Nature Center.	EC	2	N	NR	4175	0.03
<b>Objective 4.1.2: Protect historical structures and sites such as the St. George Island lighthouse and Marshall House.</b>						
<b>Integrated Strategies:</b>						
a) Maintain appropriate buffer around Marshall House to discourage fires.	SC,EC	1	I	R	8532	0.035
b) Maintain pump and water systems near Marshall House to facilitate fire suppression.	SC,EC	1	I	R	6730	0.14
c) Provide continued training for staff related to managing wildland fires.	SC,EC	1	I	R	2928	0.06
d) Interpret history of these sites in exhibits at visitor center and on location.	EC	1	N	NR	4175	0.03

Goals, Objectives & Integrated Strategies	Lead Program	Plan Year Initiated	Project Status	Type	Cost Est. per year	Est. FTE per year
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<b>Objective 4.1.3 : Monitor and maintain cultural resources on Reserve lands.</b>						
<b>Integrated Strategies:</b>						
a) Maintain a secure datalayer of archaeological sites within ANERR's GIS. (check to see if it is exempt from public record)	SC	1	I	R	1500	0.015
b) Monitor status of archaeological sites on AN-ERR-managed lands.	SC	2	N	R	3000	0.015
c) Implement appropriate management actions based on monitoring.	SC	3	N	R	3000	0.015
d) Maintain historical knowledge of staff and provide regular training on monitoring and managing cultural resources (Historical and Archaeological Resource Training).	All	1	I	R	4542	0.07
<b>Goal 4.2: Promote local cultural identity through programs, exhibits and partnerships.</b>						
<b>Objective 4.2.1: Interpret traditional uses of Apalachicola Bay and environment.</b>						
<b>Integrated Strategies:</b>						
a) Feature local human connections to the natural environment in visitor center exhibits.	EC	1	I	R	1478	0.01
b) Interpret traditional sustainable uses of natural resources in visitor center exhibits.	EC	1	I	R	1478	0.01
c) Feature human connections to the natural environment during special events at visitor center.	EC	1	I	R	5642	0.12
d) Continue to offer training programs, such as Florida Master Naturalist Program and Panhandle Habitat Series classes, that include information on and the importance of local history and cultural practices.	CTP	1	I	R	1645	0.04
e) Promote sustainable activities.	CTP	1	I	R	1050	0.01
				<b>Total</b>	<b>62190</b>	<b>0.755</b>
<b>Issue 5: Impacts of global and regional processes on ecosystems and communities within ANERR</b>						
<b>Goal 5.1: Identify potential effects of climate change (increased temperature, sea level rise, ocean acidification) on the resources of ANERR.</b>						
<b>Objective 5.1.1: Identify changes in water quality/quantity related to climate change effects through monitoring and research.</b>						
<b>Integrated Strategies:</b>						
a) Continue long-term monitoring programs within and adjacent to the NERRs to determine the current status of water quality parameters, potential threats to water quality, and impacts of water quality changes on resources.	RC	1	I	R	13660	0.1
b) Develop new research programs and partnerships to address estuarine water quality issues associated with potential climate impacts.	RC	1	I	R	7660	0.1
c) Monitor water parameters through use of YSI 6600 Dataloggers; measuring temperature, salinity, dissolved oxygen, turbidity and depth at four locations every 15 minutes.	RC	1	I	R	8320	0.2
d) Monitor nutrient availability in Apalachicola Bay by the collection of monthly discrete water samples identifying concentrations of total nitrogen, nitrate, nitrite, orthophosphate and Chlorophyll a.	RC	1	I	R	7320	0.2
e) Maintain weather station as a reference site.	RC	1	I	R	9320	0.2



Goals, Objectives & Integrated Strategies	Lead Program	Plan Year Initiated	Project Status	Type	Cost Est. per year	Est. FTE per year
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f) Facilitate coordination, communication and training programs relating to research and partnerships that address estuarine water quality issues associated with climate change impacts.	CTP	1	I	R	1200	0.03
<b>Objective 5.1.2: Identify the potential impacts of climate change on natural resources within ANERR through monitoring and research.</b>						
<b>Integrated Strategies:</b>						
a) Utilize vulnerability assessments to guide management actions for Reserve.	All	1	N	R	6060	0.035
b) Establish benchmarks within ANERR to serve as reference points for measuring the effects of sea level rise.	SC,RC	1	I	R	10660	0.115
c) Establish long term monitoring of morphometric changes (Surface Elevation Tables) and measure biological feedbacks (such as vegetation response) within important habitats of ANERR.	SC,RC	1	I	R	11660	0.2
d) Establish a vertical control network of all long-term monitoring sites within ANERR.	SC,RC	1	I	R	20660	0.15
e) Identify changes in species composition of habitats – migration, expansion and reduction	SC,RC	3	I	R	7660	0.2
<b>Objective 5.1.3: Improve understanding of impacts on ANERR resources related to coastal hazards.</b>						
<b>Integrated Strategies:</b>						
a) Facilitate coordination, communication and training programs relating to research addressing the impacts of coastal hazards and climate change on resources within ANERR.	CTP	1	I	R	1800	0.04
<b>Goal 5.2: Improve species/habitat resilience to storm events (wind damage, flooding and storm surge) and sea level rise.</b>						
<b>Objective 5.2.1: Assist landowners and land managers with planning and implementing adaptive measures.</b>						
<b>Integrated Strategies:</b>						
a) Provide training programs and technical assistance relating to coastal hazards, resilience, floodplain strategies and climate change; including planning, mapping and decision support tools.	CTP	1	I	R	5800	0.1
<b>Objective 5.2.2: Use appropriate measures to reduce shoreline erosion.</b>						
<b>Integrated Strategies:</b>						
a) Provide training and technical assistance on techniques, funding sources and benefits of habitat friendly shoreline stabilization through the Living Shorelines Initiative.	CTP	1	I	R	1530	0.02
b) Explore opportunities to engage local schools in habitat restoration projects, such as the Grasses in Classes Program.	EC	2	N	R	790	0.02
c) Provide assistance for monitoring of shoreline stabilization projects.	RC, SC, CTP	1	I	R	3700	0.075
<b>Objective 5.2.3: Acquire land to mitigate for storm damage and impacts of sea level rise</b>						
<b>Integrated Strategies:</b>						
a) Utilize the Florida Forever program and other land acquisition funding sources to purchase lands which would allow for the migration of important estuarine habitats.	MG,SC	1	I	R	2500	0.03

Goals, Objectives & Integrated Strategies	Lead Program	Plan Year Initiated	Project Status	Type	Cost Est. per year	Est. FTE per year
<b>Legend:</b> EC = Education • CTP = Coastal Training • RC = Research • SC = Stewardship • MG = Manager/Admin I = initiated • N = not initiated • R = recurring • NR = not recurring						
<b>Goal 5.3: Increase awareness and participation in research relating to Harmful Algal Blooms (HABs)</b>						
<b>Objective 5.3.1: Support monitoring of conditions and warning systems for HABs</b>						
<b>Integrated Strategies:</b>						
a) Continue the System-wide Monitoring Program particularly the description of water quality and nutrient parameters that may facilitate HAB formation.	RC	1	I	R	3830	0.05
b) Attract and support researchers addressing early detection of harmful algal blooms in Apalachicola Bay.	RC	1	I	R	1732	0.02
<b>Goal 5.4: Promote strategies for improving community resilience (physical and socio-economic processes) while maintaining environmental sensitivity.</b>						
<b>Objective 5.4.1: Improve awareness and implementation of community resilience practices through training programs, technical assistance and sharing resources</b>						
<b>Integrated Strategies:</b>						
a) Attract and support scientists conducting community resilience research in the Apalachicola-Chattahoochee-Flint Watershed. Encourage researchers to put emphasis on the science to management aspect of their work.	MG,RC	1	I	R	4830	0.065
b) Utilize community resilience research and Gulf of Mexico Alliance products including the Coastal Community Resilience Index, and planning, mapping and decision support tools; in training programs, technical assistance and public outreach relating to coastal hazards, resilience, floodplain strategies and climate change impacts.	CTP	1	I	R	3900	0.06
c) Assist communities with developing sea level rise adaptation plans.	CTP	1	I	R	1600	0.04
<b>Total</b>					<b>136192</b>	<b>2.05</b>
<b>Issue 6: Community Involvement, Engagement and Support</b>						
<b>Goal 6.1: Increase capacity and support for the Reserve through opportunities that engage community members and students directly in Reserve activities.</b>						
<b>Objective 6.1.1: Increase opportunities for students and volunteers to assist with monitoring, restoration, invasive species removal, native plantings, education and other programs.</b>						
<b>Integrated Strategies:</b>						
a) Develop a process for using interns and volunteers to assist with projects and management activities	All	1	N	R	3558	0.075
b) Identify and offer specific activities and opportunities for interns, spring break volunteers, students and community members.	All	1	N	R	15478	0.355
c) Provide field experiences (summer or volunteer projects) for high school and college students.	RC,EC	4	N	R	3907	0.05
<b>Objective 6.1.2: Build partnerships with volunteer organizations, researchers, stakeholders and others that ensure community involvement in accomplishing Reserve activities.</b>						
<b>Integrated Strategies:</b>						
a) Provide information on research, restoration and other project needs related to the issues and strategies in this plan.	RC,SC	2	N	R	1532	0.035
b) Encourage prospective researchers and other project leads to communicate with the Reserve sectors when developing proposals.	MG,RC	1	I	R	1032	0.02

Goals, Objectives & Integrated Strategies	Lead Program	Plan Year Initiated	Project Status	Type	Cost Est. per year	Est. FTE per year
<b>Legend:</b> EC = Education • CTP = Coastal Training • RC = Research • SC = Stewardship • MG = Manager/Admin I = initiated • N = not initiated • R = recurring • NR = not recurring						
c) Work with programs that encourage or support volunteers or interns (such as Americorps, Bright Futures Scholarships, etc.)	MG,EC	4	N	R	778	0.01
d) Share new information about funding sources and project needs with volunteer organizations, researchers and others.	EC,CTP	1	I	R	1228	0.03
<b>Goal 6.2: Increase awareness of the Apalachicola River and Bay system and priority issues among local volunteers, college students and community members.</b>						
<b>Objective 6.2.1: Increase public awareness of the Reserve's natural and cultural resources.</b>						
<b>Integrated Strategies:</b>						
a) Use social science techniques to identify community needs and strategies to engage non-traditional community members and develop appropriate targeted programs or activities.	EC,CTP	1	I	R	1078	0.02
b) Use a variety of media to provide accurate and current technical information about the importance of the Apalachicola River and Bay system and the threats that it faces.	EC,CTP	1	I	R	12179	0.15
<b>Objective 6.2.2: Increase residents, stakeholders, and decision-makers involvement in the support and conservation of the Apalachicola River and Bay system's resources.</b>						
<b>Integrated Strategies:</b>						
a) Highlight positive stewardship actions by local community members.	SC,CTP	1	N	R	2350	0.045
b) Promote Reserve programs to build public support and stewardship.	MG	1	I	R	5000	0.05
c) Promote more community involvement in Reserve programs and facilities by specifically targeting community organizations.	MG	1	I	R	5000	0.05
<b>Total</b>					<b>53120</b>	<b>0.89</b>



## D.2 / Budget Summary Table

The following table provides a cost estimate for conducting the management activities identified in this plan. The data is organized by Management Programs. Budget categories identified correlate with the CAMA Management Programs, and translate to those used by the Land Management Uniform Cost Accounting Council (pursuant to 259.037, Florida Statutes [F.S.]) in the following way:

Apalachicola National Estuarine Research Reserve		
Estimated Program Costs (for 1 year of operation)	(% of Budget)	Costs (dollars)
Public Use and Access	29.53%	\$288,152
Habitat and Species Management	19.69%	\$192,115
Land Use Changes	25.00%	\$243,915
Cultural Resource Management	6.37%	\$62,190
Global and Regional Processes	13.96%	\$136,192
Community Involvement, Engagement and Support	5.44%	\$53,120
	<b>100.00%</b>	<b>\$975,684</b>

Apalachicola National Estuarine Research Reserve		
Estimated Program Costs (for 5 years of operation)	(% of Budget)	Costs (dollars)
Public Use and Access	26.92%	\$1,196,540
Habitat and Species Management	22.21%	\$987,575
Land Use Changes	24.43%	\$1,086,030
Cultural Resource Management	5.85%	\$259,975
Global and Regional Processes	14.97%	\$665,670
Community Involvement, Engagement and Support	5.62%	\$249,830
	<b>100.00%</b>	<b>\$4,445,620</b>

Apalachicola National Estuarine Research Reserve		
Estimated Personnel (FTE and OPS) (for 1 year of operation)	Staff (%)	Staff (FTE & OPS)
Public Use and Access	33.57%	5.79
Habitat and Species Management	22.49%	3.88
Land Use Changes	22.49%	3.88
Cultural Resource Management	4.41%	0.76
Global and Regional Processes	11.88%	2.05
Community Involvement, Engagement and Support	5.16%	0.89
	<b>100.00%</b>	<b>17.25</b>

### ***D.3 / Major Accomplishments Since the Approval of the Previous Plan***

#### **Major Accomplishments – Administrative**

- Oversaw the design and completion of the new ANERR facility in Eastpoint.
- Increased state-funded staff in the Education and Research programs and began and staffed the Coastal Training Program.
- Acquired state funding for the operation of the new visitor center facility.
- Developed better tracking methods for budget and purchasing oversight.
- Worked with and provided input to state, federal, and outside investigators on ACF issues.

#### **Major Accomplishments – Research**

- Maintained and expanded the System-wide Monitoring Program to include 4 water quality dataloggers, 1 weather station and monthly nutrient sampling at 11 locations.
- Maintained listed species management
- Initiated trawling project
- Expanded the Reserve's Geographic Information System and established GIS capabilities for Franklin County.
- Partnered with USGS to accurately map the oyster reefs and bathymetric features of Apalachicola Bay.
- Provided data and expertise for the Apalachicola River water allocation negotiations.
- Resource characterization (Site profile) completed in 2008.

#### **Major Accomplishments - Education**

- Designed exhibits for and opened new public Nature Center in Eastpoint
- Implemented grade-specific annual activity plan for all Franklin County students.
  - Odd grades - activities with Reserve staff
  - Even grades - activities in a travelling trailer that resides at local schools
- Inaugural site for the Learning in Florida's Environment (LIFE) field ecology program
- Development of NERRS system-wide Estuaries 101 curricula
- Created annual Estuaries Day event for Franklin County

#### **Major Accomplishments - Stewardship**

- Preserved and protected cultural and historical resources (St. George Lighthouse Association)
- Developed and maintained trails, docks and facilities on ANERR managed lands (Nature walk at Scipio Creek, Unit 4, LSGI)
- Identified priority parcels in a land acquisition plan to protect water quality, wildlife habitat, rare species and aquatic resources.
- Maintained a prescribed fire management program to restore, maintain and promote natural diversity.
- Developed regional resource management partnerships:

Apalachicola Regional Stewardship Alliance (ARSA)

The Nature Conservancy (TNC)

#### **Major Accomplishments – Coastal Training Program**

- Hired full time coordinator and assistant.
- Completed required Needs Assessment, Market Analysis, Strategy Document and Updated Strategy Document, Marketing Plan and Advisory Committee document. This led to CTP successfully being in full implementation at ANERR.
- Created Panhandle Habitats Series of classes for decision-makers and have offered over 30 classes.
- Expanded CTP program to communities from Pensacola to Crystal River on a variety of topics including stormwater and floodplain best management practices, coastal hazards and community resilience, living shorelines, small docks and piers, GIS training and more.

#### **D.4 | Eliminated Goals, Objectives and Strategies from Previous Plan**

This appendix summarizes the eliminated goals and objectives from the previous management plan (1998-2003). Goals listed here were either achieved since the last plan or were eliminated because they no longer are priorities for ANERR.

##### **Eliminated Administrative Goals:**

Strategy 5: Establish an Advisory Board composed of representatives from entities involved in research, education, resource utilization and resource management within the Reserve.

##### **Eliminated Research Goals:**

None of the research goals, objectives and strategies have been eliminated from the last plan.

##### **Eliminated Education Goals:**

None of the education program goals, objectives and strategies have been eliminated from the last plan.

##### **Eliminated Resource Management Goals**

*Goal 1: Objective 3:* Acquire the second category of priority acquisition projects identified by the Reserve including lands within the Apalachicola River and Bay drainage basin that are environmentally sensitive or possess unique habitats. These lands include the Apalachicola River floodplain area encompasses approximately 45,000 acres, north of NFWMD lands and south of the Jim Woodruff Dam, additional M & K Ranch properties, and a narrow strip of St. Joe Paper Company property, south of US Highway 98, runs west from the city of Apalachicola to the Gulf County line

##### *Goal 7: Objective 1:*

Strategy 1: An assessment of and delineation of known/suspected sites will be undertaken to prioritize sites for survey/information recovery.

Strategy 2: Some sites have been or will be nominated to the *National Register of Historic Places*.

Strategy 3: Other sites need to have GIS locations documented and site file forms submitted to DHR.

Strategy 5: Techniques for halting or slowing bank/shore erosion will not normally be considered in natural coastal shoreline areas.

##### *Goal 8: Objective 1:*

Strategy 2: Use as an informal educational tool

Strategy 3: promote family values

Strategy 4: providing economic benefit to the local economy through ecotourism

##### *Goal 9: Objective 3:*

Strategy 1: an evaluation will be made to determine whether timber harvesting or stand density reduction is the preferred method of habitat recovery.

Strategy 2: Revegetation of beach dune is addressed under the discussion of that community type

Strategy 3: Areas to be evaluated for reforestation efforts are existing woods roads which are deemed unnecessary or detrimental to management of Reserve lands.

##### *Goal 10:*

##### *Objective 1: Wood or four-wheel drive roads removed.*

Strategy 1: Wood roads will be assessed for their disruption of natural hydrology. On a schedule prioritized by disruptive effect, roads considered unnecessary to reserve lands management will be abandoned and removed and either be replanted with native species or allowed to revegetate naturally. Roads left intact for management reasons may be retro-fitted with culverts or other flow restoring mechanism.

##### *Objective 2: Stabilized roads removed.*

Strategy 1: Stabilized roads, those with limestone or other compacted fill material as a road base will follow the same schedule for removal as woods roads. Fill removed may be used for other Reserve management purposes or sold to offset program costs.

##### *Objective 3: Foot paths removed.*

Strategy 1: Foot paths not incorporated into designated hiking trails will be closed through signage and fencing. In most cases, the degree of disturbance from footpaths allows the path to revegetate naturally. Cover vegetation may need to be planted to hide trail entrances.

##### *Objective 4: Man-made Ponds filled.*

Strategy 1: Ideally, man-made ponds would be filled and natural vegetation restored to the site. In some cases, disturbance to adjacent natural areas as a result of restoration efforts will be more detrimental than no restoration. This could be in the form of erosion and siltation of nearby wetlands or other impact. Further disturbance to the ponds may also increase the vector for exotic species infestation. In those instances, Reserve staff may determine that the ponds be managed as fresh water lakes.





*Objective 7:* Borrow pits filled.

Borrow pits are those areas excavated to provide fill or dumpsites in remote areas. Borrow pits used for dump areas may be particularly damaging to ground water quality. Borrow pits will be filled and either replanted with native species or allowed to revegetate naturally. Borrow pits on Unit 4 will be maintained intact for freshwater fishing. In all cases of hydrologic restoration involving further soil disturbance, follow-up monitoring to determine hydrologic effect, soil erosion, and possible exotic species infestation, will be a continuing effort. The extent of hydrologic disturbance on Reserve lands is undetermined.

*Goal 11:* Reduce the number of houseboats impacting reserve lands and water quality.

*Objective 1:* Reduction in the incidence of houseboat encroachment on Reserve-managed lands.

*Objective 2:* Reduction in the potential for pollutants entering the estuary system through houseboat sewage discharge.

*Strategy 1:* In order to develop consistent permitting or rules, a task force of land management agencies within Reserve boundaries will be initiated with law enforcement agency personnel as contributors to the discussion.

# Division of State Lands/Acquisition and Restoration Council Requirements

## E.1 / Acquisition and Restoration Council Management Plan Compliance Checklist

Management Plan Compliance Checklist - Conservation Lands	
Requirements	Page
<b>18-2.021 Acquisition and Restoration Council.</b>	
1. Executive Summary.	Exec Sum
<b>Management Plans. Plans submitted to the division for ARC review under the requirements of Section 253.034 F.S. should be in a form and manner prescribed by rule by the board and in accordance with the provisions of S. 259.032 and should contain where applicable to the management of resources the following:</b>	
2. The common name of the property.	Exec Sum
3. A map showing the location and boundaries of the property plus any structures or improvements to the property.	2 & 60
4. The legal description and acreage of the property.	Exec Sum
5. The degree of title interest held by the Board, including reservations and encumbrances such as leases.	Exec Sum
6. The land acquisition program, if any, under which the property was acquired.	Exec Sum
7. The designated single use or multiple use management for the property, including other managing agencies.	Exec Sum
8. Proximity of property to other significant State/local/federal land or water resources. (May be included in the map in item #2.)	52
9. A statement as to whether the property is within an Aquatic Preserve or a designated Area of Critical State Concern or an area under study for such designation. If yes, make sure appropriate managing agencies are notified of the plan.	Exec Sum
10. The location and description of known and reasonably identifiable renewable and non-renewable resources of the property including, but not limited to, the following:	
(A) Brief description of soil types, using U.S.D.A. maps when available;	21-22
(B) Archaeological and historical resources*;	47-51
(C) Water resources including the water quality classification for each water body and the identification of any such water body that is designated as an Outstanding Florida Waters;	22-24
(D) Fish and wildlife and their habitat;	27-47, 304-364
(E) State and federally listed endangered or threatened species and their habitat;	45-46 & 304-364
(F) Beaches and dunes;	27-46
(G) Swamps, marshes and other wetlands;	27-46
(H) Mineral resources, such as oil, gas and phosphate;	21
(I) Unique natural features, such as coral reefs, natural springs, caverns, large sinkholes, virgin timber stands, scenic vistas, and natural rivers and streams; and	Exec Sum & 40-45
(J) Outstanding native landscapes containing relatively unaltered flora, fauna, and geological conditions.	40-45
11. A description of actions the agency plans, to locate and identify unknown resources such as surveys of unknown archeological and historical resources.	49-50
12. The identification of resources on the property that are listed in the Florida Natural Areas Inventory. <i>Include letter from FNAI or consultant, where appropriate.</i>	27-40
13. A description of past uses, including any unauthorized uses of the property.	18
14. A detailed description of existing and planned use(s) of the property.	16-21

## Management Plan Compliance Checklist - Conservation Lands

Requirements	Page
15. A description of alternative or multiple uses of the property considered by the managing agency and an explanation of why such uses were not adopted.	84
16. A detailed assessment of the impact of planned uses on the renewable and non-renewable resources of the property and a detailed description of the specific actions that will be taken to protect, enhance and conserve these resources and to mitigate damage caused by such uses.	
17. A description of management needs and problems for the property.	Exec Sum
18. Identification of adjacent land uses that conflict with the planned use of the property, if any.	53
19. A description of legislative or executive directives that constrain the use of such property.	12-14
20. A finding regarding whether each planned use complies with the State Lands Management Plan adopted by the Trustees on March 17, 1981, and incorporated herein by reference, particularly whether such uses represent "balanced public utilization", specific agency statutory authority, and other legislative or executive constraints.	11
21. An assessment as to whether the property, or any portion, should be declared surplus.	107
22. Identification of other parcels of land within or immediately adjacent to the property that should be purchased because they are essential to management of the property. Clearly defined map of parcels can be used.	113-116
23. A description of the management responsibilities of each agency and how such responsibilities will be coordinated, including a provision that requires that the managing agency consult with the Division of Historical Resources before taking actions that may adversely affect archaeological or historic resources.	Exec Sum, 49-50, 181-283, 415-416
24. A statement concerning the extent of public involvement and local government participation in the development of the plan, if any, including a summary of comments and concerns expressed.	365-381
<b>Additional Requirements - Per Trustees</b>	
25. Letter of Compliance of the management plan with the Local Government Comprehensive Plan. Letter from local government saying that the plan is in compliance with local government's comprehensive plan.	403
<b>253.034 State-Owned Lands; Uses. Each entity managing conservation lands shall submit to the Division of State Lands a land management plan at least every 10 years in a form and manner prescribed by rule by the Board.</b>	
26. All management plans, whether for single-use or multiple-use properties, shall specifically describe how the managing entity plans to identify, locate, protect and preserve, or otherwise use fragile nonrenewable resources, such as archaeological and historic sites, as well as other fragile resources, including endangered plant and animal species.	45-50
27. The management plan shall provide for the conservation of soil and water resources and for the control and prevention of soil erosion.	22-24
28. Land management plans submitted by an entity shall include reference to appropriate statutory authority for such use or uses and shall conform to the appropriate policies and guidelines of the state land management plan.	10-11
29. All land management plans for parcels larger than 1,000 acres shall contain an analysis of the multiple-use potential of the parcel, which analysis shall include the potential of the parcel to generate revenues to enhance the management of the parcel.	47 & 84
30. Additionally, the land management plan shall contain an analysis of the potential use of private managers to facilitate the restoration or management of these lands.	84 & 416
31. A physical description of the land.	16
32. A desired outcome.	
33. A quantitative data description of the land which includes an inventory of forest and other natural resources; exotic and invasive plants; hydrological features; infrastructure, including recreational facilities; and other significant land, cultural, or historical features.	Exec Sum & 15-111



## Management Plan Compliance Checklist - Conservation Lands

Requirements	Page
<b>34.</b> A detailed description of each short-term and long-term land management goal, the associated measurable objectives, and the related activities that are to be performed to meet the land management objectives. Each land management objective must be addressed by the land management plan, and where practicable, no land management objective shall be performed to the detriment of the other land management activities.	89-100
<b>35.</b> A schedule of land management activities which contains short-term and long-term land management goals and the related measurable objectives and activities. The schedule shall include for each activity a timeline for completion, quantitative measures, and detailed expense and manpower budgets. The schedule shall provide a management tool that facilitates development of performance measures.	384-394
<b>36.</b> A summary budget for the scheduled land management activities of the land management plan. For state lands containing or anticipated to contain imperiled species habitat, the summary budget shall include any fees anticipated from public or private entities for projects to offset adverse impacts to imperiled species or such habitats, which fees shall be used solely to restore, manage, enhance, repopulate, or acquire imperiled species habitat. The summary budget shall be prepared in such a manner that it facilitates computing an aggregate of land management costs for all state-managed lands using the categories described in s. 259.037(3).	384-394
<b>37. Each management plan shall describe both short-term and long-term management goals, and include measurable objectives to achieve those goals. Short-term and long-term management goals shall include measurable objectives for the following, as appropriate:</b>	
(A) Habitat restoration and improvement;	92-94, 98-99
(B) Public access and recreational opportunities;	90-92
(C) Hydrological preservation and restoration;	94-96
(D) Sustainable forest management;	47
(E) Exotic and invasive species maintenance and control;	46-47, 92-94
(F) Capital facilities and infrastructure;	107-111
(G) Cultural and historical resources;	97
(H) Imperiled species habitat maintenance, enhancement, restoration, or population restoration	92-94 & 98
<b>253.036 Forest Management</b>	
<b>38.</b> For all land management plans for parcels larger than 1,000 acres, the lead agency shall prepare the analysis, which shall contain a component or section prepared by a qualified professional forester which assesses the feasibility of managing timber resources on the parcel for resource conservation and revenue generation purposes through a stewardship ethic that embraces sustainable forest management practices if the lead management agency determines that the timber resource management is not in conflict with the primary management objectives of the parcel.	47
<b>259.032 Conservation And Recreation Lands Trust Fund; Purpose</b>	
<b>(10)(a) State, regional or local governmental agencies or private entities designated to manage lands under this section shall develop and adopt, with the approval of the Board of Trustees, an individual management plan for each project designed to conserve and protect such lands and their associated natural resources. Private sector involvement in management plan development may be used to expedite the planning process.</b>	
<b>39.</b> Individual management plans required by s. 259.032(10)(b), for parcels over 160 acres, shall be developed with input from an advisory group - Management plan should list advisory group members and affiliations.	365
<b>40.</b> The advisory group shall conduct at least one public hearing in each county in which the parcel or project is located. Managing agency should provide DSL/OES with documentation showing date and location of public hearing.	370-381
<b>41.</b> Notice of such public hearing shall be posted on the parcel or project designated for management, advertised in a paper of general circulation, and announced at a scheduled meeting of the local governing body before the actual public hearing. Managing agency should provide DSL/OES with copy of notice.	375-376
<b>42.</b> The management prospectus required pursuant to 259.032 (9)(d) shall be available to the public for a period of 30 days prior to the public hearing.	404

## Management Plan Compliance Checklist - Conservation Lands

Requirements	Page
43. Summary of Advisory Group Meeting should be provided to DSL/OES.	368-369
44. Individual management plans shall conform to the appropriate policies and guidelines of the state land management plan and shall include, but not be limited to:	
(A) A statement of the purpose for which the lands were acquired, the projected use or uses as defined in s. 253.034, and the statutory authority for such use or uses.	9-14
(B) Key management activities necessary to achieve the desired outcomes, including, but not limited to, providing public access, preserving and protecting natural resources, protecting cultural and historical resources, restoring habitat, protecting threatened and endangered species, controlling the spread of nonnative plants and animals, performing prescribed fire activities, and other appropriate resource management activities.	89-100
(C) A specific description of how the managing agency plans to identify, locate, protect, and preserve, or otherwise use fragile, nonrenewable natural and cultural resources.	89-100
(D) A priority schedule for conducting management activities, based on the purposes for which the lands were acquired. The schedule must include a goal, an objective, and a time frame for completion.	384-394
(E) A cost estimate for conducting priority management activities, to include recommendations for cost-effective methods of accomplishing those activities. <i>Using categories as adopted pursuant to 259.037, F.S., is suggested. These are: (1) Resource Management; (2) Administration; (3) Support; (4) Capital Improvements; (5) Visitor Services/Recreation; and (6) Law Enforcement.</i>	384-394
(F) A cost estimate for conducting other management activities which would enhance the natural resource value or public recreation value for which the lands were acquired. The cost estimate shall include recommendations for cost-effective methods of accomplishing those activities. <i>Using categories as adopted pursuant to 259.037, F.S., is suggested. These are: (1) Resource Management; (2) Administration; (3) Support; (4) Capital Improvements; (5) Visitor Services/Recreation; and (6) Law Enforcement. <b>Include approximate monetary cost and cost effective methods. Can be placed in the appendix.</b></i>	384-394
45. A determination of the public uses and public access that would be consistent with the purposes for which the lands were acquired.	84
<b>259.036 Management Review Teams</b>	
46. The managing agency shall consider the findings and recommendations of the land management review team in finalizing the required 10-year update of its management plan. <b>Can be addressed in the body of the plan or addressed in an appendix. If not in agreement, the managing agency should reply in a statement in the appendix.</b>	417-423
<b>Other Requirements</b>	
47. This checklist table at front of plan (pursuant to request of ARC and consensus agreement of managing agencies.)	Moved to back post-ARC.
48. Accomplishments (implementation) from last plan (format variable by agency)	396-398
49. FNAI-based natural community maps (may differ from FNAI in some cases)	37 & 39
50. Fire management plans (either by inclusion or reference)(259.032)	404-414
51. A statement regarding incompatible uses [ref. Ch. 253.034 (9)]	84
52. Cultural resources, including maps of all sites <u>except Native American sites*</u>	47-51
53. Arthropod control plan	434
<i>*While maps of Native American sites should not be included in the body of the management plan, the DSL urges each managing agency to provide such information to the Division of Historical Resources for inclusion in their proprietary database. This information should be available for access to new managers to assist them in developing, implementing and coordinating their management activities.</i>	

### E.2 / Trustees Lease Agreement and Related Documents

The lease (Lease #3862) and associated amendments, including legal descriptions, for ANERR-managed state-owned lands can be obtained by contacting the Office of Coastal and Aquatic Managed Areas by phone at 850/245-2098 or mail at CAMA, 3900 Commonwealth Blvd., MS 235, Tallahassee, Florida 32399-3000.

# FRANKLIN COUNTY



REPLY TO

BOARD OF COUNTY COMMISSIONERS  
33 MARKET STREET, SUITE 203  
APALACHICOLA, FL 32320  
(850) 653-8861, EXT. 100  
FAX (850) 653-4795

REPLY TO

PLANNING & BUILDING DEPT.  
34 FORBES STREET  
APALACHICOLA, FL 32320  
(850) 653-9783  
FAX (850) 653-9799

March 27, 2012

Mr. Lee Edmiston, Manager  
Apalachicola National Estuarine Research Reserve  
108 Island Drive  
Eastpoint, FL 32328

Dear Mr. Edmiston:

As County Planner for the Franklin County Board of County Commissioners, I have reviewed the Management Plan (dated October 2011) for the Apalachicola National Estuarine Research Reserve (ANERR) for consistency with the Franklin County Comprehensive Plan goals, policies, and objectives. I find the ANERR Management Plan to be consistent with the Franklin County Comprehensive Plan.

If you need any additional information, please feel free to contact me at 850-653-9783, ext. 161.

Sincerely,

Alan C. Pierce  
County Planner

---

PINKI JACKEL  
District One

CHERYL SANDERS  
District Two

NOAH LOCKLEY, JR.  
District Three

JOSEPH PARRISH  
District Four

BEVIN PUTNAL  
District Five



#### ***E.4 / Management Prospectus***

Much of the state-owned land managed by ANERR was acquired prior to the development of formal management prospectuses. The yet-to-be-acquired, possible future addition to ANERR, Florida Forever Pierce Mound Complex Project management prospectus is as follows: The Pierce Mound Complex is one of the most important archaeological sites on the Gulf Coast of Florida. Major natural communities in the project include estuarine tidal marsh, hydric hammock, mesic flatwoods, and scrub.

#### ***E.5 / Fire Management Plan***

# **Apalachicola National Estuarine Research Reserve Fire Management Plan**

**2012**

### E.5 - Prescribed Fire Plan

The legislature of the State of Florida has recognized the fact that prescribed burning is a valuable land management tool and has addressed this issue with legal requirements associated with prescribed burns. These requirements include laws, rules, and policies administered by the Florida Division of Forestry, Environmental Laws and Endangered Species Laws and Rules.

The primary laws are covered in Florida Statutes, Chapter 590 and Section 51-2 of the Florida Administrative Code (Appendix B.5). A summary of the legal requirements that apply to prescribed fire activity of the Apalachicola Research Reserve are listed below.

#### **Florida Statutes Chapter 590.125**

(1) DEFINITIONS.--As used in this section, the term:

(a) "Prescribed burning" means the controlled application of fire in accordance with a written prescription for vegetative fuels under specified environmental conditions while following appropriate precautionary measures that ensure that the fire is confined to a predetermined area to accomplish the planned fire or land-management objectives.

(b) "Certified prescribed burn manager" means an individual who successfully completes the certification program of the division and possesses a valid certification number.

(c) "Prescription" means a written plan establishing the criteria necessary for starting, controlling, and extinguishing a prescribed burn.

(d) "Extinguished" means that no spreading flame for wild land burning or certified prescribed burning, and no visible flame, smoke, or emissions for vegetative land-clearing debris burning, exist.

(3) "Certified Prescribed Burning; Legislative Findings and Purpose."

(a) The application of prescribed burning is a land management tool that benefits the safety of the public, the environment, and the economy of the state. The Legislature finds that:

1. Prescribed burning reduces vegetative fuels within wild land areas. Reduction of the fuel load reduces the risk and severity of wildfire, thereby reducing the threat of loss of life and property, particularly in urban areas.
2. Most of Florida's natural communities require periodic fire for maintenance of their ecological integrity. Prescribed burning is essential to the perpetuation, restoration, and management of many plant and animal communities. Significant loss of the state's biological diversity will occur if fire is excluded from fire-dependent systems.
3. Forestland and rangeland constitute significant economic, biological, and aesthetic resources of statewide importance. Prescribed burning on forestland prepares sites for reforestation, removes undesirable competing vegetation, expedites nutrient cycling, and controls or eliminates certain forest pathogens. On rangeland, prescribed burning improves the quality and quantity of herbaceous vegetation necessary for livestock production.
4. The state purchased hundreds of thousands of acres of land for parks, preserves, wildlife management areas, forests, and other public purposes. The use of prescribed burning for management of public lands is essential to maintain the specific resource values for which these lands were acquired.
5. A public education program is necessary to make citizens and visitors aware of the public safety, resource, and economic benefits of prescribed burning.
6. Proper training in the use of prescribed burning is necessary to ensure maximum benefits and protection for the public.
7. As Florida's population continues to grow, pressures from liability issues and nuisance complaints inhibit the use of prescribed burning. Therefore, the division is urged to maximize the opportunities for prescribed burning conducted during its daytime and nighttime authorization process.

#### **Florida Administrative Code 51-2.006 Open Burning Allowed.**

(2) Open Burning for Certified Prescribed Burn Managers (CPBM). (All burning conducted under this section is related to broadcast burning for the purposes of: Silviculture, Wildlife Management, Ecological Maintenance and Restoration, Range and Pasture

Management.) Open burning authorizations under this section require the Certified Prescribed Burn Manager's certification number be presented at the time of the request, and that a Certified Prescribed Burn Manager be on site for the entire burn.

(a) Prescription. A prescription for the burn must be completed prior to any ignition and it must be on site and available for inspection by a Department representative. The prescription will contain, as a minimum, (unless agreed to in writing locally between the burner and the District or Center Manager of the Division of Forestry) the following:

1. Stand or Site Description;
2. Map of the area to be burned;
3. Number of personnel and equipment types to be used on the prescribed burn;
4. Desired weather factors, including but not limited to surface wind speed and direction, transport wind speed and direction, minimum mixing height, minimum relative humidity, maximum temperature, and the minimum fine fuel moisture;
5. Desired fire behavior factors, such as type of burn technique, flame length, and rate of spread;
6. The time and date the prescription was prepared;
7. The authorization date and the time period of the authorization;
8. An evaluation and approval of the anticipated impact of the proposed burn on related smoke sensitive areas;
9. The signature and number of the Certified Prescribed Burn Manager.

(b) Open Burning Hours.

1. Daytime CPBM Authorizations will be issued for the burning to be conducted from 8:00 a.m. CT or 9:00 a.m. ET and the fire must discontinue spreading one hour after sunset.
2. Nighttime CPBM Authorizations will be issued with a Dispersion Index of 6 or above for the burning to be conducted between one hour before sunset and 8:00 a.m. CT or 9:00 a.m. ET the following day. Ignition of these fires is authorized up to midnight; however the fire can continue to spread until 8:00 a.m. CT or 9:00 a.m. ET the following day. If additional time is required a new authorization (daytime) must be obtained from the Division. The Division will issue authorizations at other times, in designated areas, when the Division has determined that atmospheric conditions in the vicinity of the burn will allow good dispersal of emissions, and the resulting smoke from the burn will not adversely impact smoke sensitive areas, e.g., highways, hospitals and airports.

(c) Burn Manager Certification Process. Certification to become a Certified Prescribed Burn Manager is accomplished by:

1. Satisfactory completion of the Division of Forestry's Prescribed Fire Correspondence Course and direct experience in three prescribed burns prior to taking the course or;
2. Satisfactory completion of the Division of Forestry's Prescribed Fire Classroom version of the Correspondence Course and a minimum of managing three prescribed burns prior to taking the course or;
3. Satisfactory completion of the Florida Inter-Agency Basic Prescribed Fire Course and direct experience in three prescribed burns following successful completion of the classroom training. The burns conducted during the training do not count as part of this three burn requirement. - 217
4. Applicants must submit a completed prescription for a proposed certifying burn to their local Florida Division of Forestry office prior to the burn for review and approval, and have the burn described in that prescription reviewed by the Division of Forestry during the burn operation. The local Division of Forestry District Manager (or their designee) will recommend DOF Prescribed Burn Manager certification upon satisfactory completion of both the prescription and required number of burns.
5. In order to continue to hold the Division of Forestry Prescribed Burn Manager Certification the burner must comply with paragraph 5I-2.006(2) (d), F.A.C., or Division Certification will terminate five years from the date of issue.

(d) Certification Renewal. A Certified Prescribed Burn Manager must satisfy the following requirements in order to retain certification.

1. Participation in a minimum of eight hours of Division of Forestry approved training every five years relating to the subject of prescribed fire, or participation in a Division of Forestry recognized Fire Council Meeting, and
2. The Certified Prescribed Burn Manager has submitted their certification number for two completed prescribed burns in the



preceding five (5) years, or

3. Participation in five (5) burns and have this documented and verified in writing to the Forest Protection Bureau's Prescribed Fire Manager of the Division of Forestry by a current Certified Prescribed Burn Manager, or

4. Retaking either the Prescribed Fire Correspondence Course or the Inter-Agency Basic Prescribed Fire Course.

(e) Decertification. The Commissioner of Agriculture will revoke any Certified Prescribed Burn Manager's certification if they demonstrate that their practices and procedures repeatedly violated Florida law or agency rules or is a threat to public health, safety, or property. Recommendations for decertification by the Division of Forestry to the Commissioner of Agriculture will be based on the Certified Burner Violations – Point Assessment Table, effective July 1, 2003, which is incorporated by reference located at: [http://www.fl-dof.com/wildfire/wf\\_pdfs/CBMpoints.pdf](http://www.fl-dof.com/wildfire/wf_pdfs/CBMpoints.pdf).

**Apalachicola Research Reserve Site Fire History:**

Florida's natural communities have evolved over the millennia by direct influence of fire burning throughout the landscape. The majority of natural communities recognized in Florida today have existed for approximately 20,000 years. The biodiversity of many communities requires the influence of fire. Some communities have more frequent fire intervals than others and are more susceptible to carry fire. Fire frequency is dependent on the community pyrogenicity, or ease of ignition and ability to carry fire. Systems comprised mainly of herbaceous, fine fuels are usually the most pyrogenic. Systems comprised of this vegetation are responsible for the ignition of other less pyrogenic areas adjacent to or within them, such as coastal strand, oak scrub, or scrubby Flatwoods.

Florida's natural fire season can occur year round but peaks with the seasonal weather patterns that produce cloud to ground lightning, mainly thunderstorms. This time corresponds with Florida's growing season. The peak season of lightning-caused fire activity in Northwest Florida is May through August. Lightning fires are most common in May and June, despite the fact that more thunderstorms occur in July and August. May is the peak of the spring-time drought and the period of low moisture content in the vegetation which contributes to this natural timing of fires.

Much of the eastern US forests had been clear-cut in the late 19th century leaving logging slash across the landscape creating dangerous fuel conditions. Devastating fires followed this unsustainable harvesting practice, which led to the organization of efforts to control wildfires. Throughout the twentieth century, forest agencies developed extensive programs to prevent or extinguish wildfires.

As early as the 1970's public agencies and scientific professionals began to reexamine the role of natural fire across North America. Due to an increased understanding of the natural community ecology and the role of fire to maintain ecological integrity, fire has been reintroduced by land managers as an ecological management tool.

Apalachicola NERR lands have been mostly fire suppressed until very recently. The Lower River Marshes and Little St. George Island, which comprise the majority of ANERR managed land, are both accessible by boat only. The remaining ANERR managed lands are smaller parcels often with close urban interface. The small size and placement of these parcels has resulted in little or no natural fire (lightning) occurrence and quick suppression if they were to ignite for any cause. Up until 1998, staff routinely suppressed fire on Little St. George Island as well. The resultant condition of the natural communities located on the smaller parcels is one of long-term fire exclusion resulting in large fuel loads and reduced biodiversity. Mechanical fuel reduction and pine thinning remain viable options or enhancements to any planned burning on the smaller ANERR tracts.

**Burn Administration:**

Burning on ANERR lands will be conducted by DOF, private contractors or others who meet the current requirements for conducting prescribed burns on DEP uplands. Where applicable and practical CAMA land managers follow guidelines set by the Florida Park Service Fire Management Standards (attached), for purposes of training and equipment standards for prescribed burning. ANERR staff is pursuing "Certified Burner" status to allow for more flexibility in conducting burns.

**Apalachicola NERR Burn Zones:****Lower River Marsh (LRM)****Little St. George Island (LSGI)****Unit Four****Nick's Hole-Pelican Point****Cat Point****LRM:**

The Lower River Marsh tract is located along the Apalachicola River channel and between the distributary channels of the Apalachicola, East, St. Marks and Little St Marks Rivers. These land areas are literally "islands" and have escaped much anthropogenic alteration. The burnable portion of LRM, approximately 3011 acres, is comprised of emergent marsh vegetation including: saw-grass, bulrush, cattails, phragmites, spartina, juncus and other marsh associated vegetation. Anecdotal fire history includes deliberate ignition of the marshes by local hunters to allow for easy access.

This zone will be burned in conjunction and cooperatively with FWCC burning the ARWEA EEL Tract. Preferred burn conditions there include a southeasterly wind component to push smoke away from Highway 98 and the towns of Apalachicola and Eastpoint. Previous cooperative burns here have been accomplished with aerial ignition from a FWCC helicopter, with boat and staff support from ANERR. FWCC administers the burn permit administration for this zone.



**LSGI:**

Little St. George Island lies directly west from (Big) St. George Island, the two being separated by Sikes Cut, a man-made pass or opening from Apalachicola Bay to the Gulf of Mexico. The island's topography is mostly one of ancient dune-ridges with swales between. The high sandy dune ridges support scrub and scrubby flatwoods type natural communities of mostly slash pine and saw palmetto. These natural communities burn poorly unless fuel has been allowed to accumulate over longer time periods. The swales between, comprised of finer fuels, mostly saw-grass, burn more frequently and carry fire well, as do the transitional vegetative area between the two communities.

Burns are not planned per se for the island; rather, the practice of allowing a natural fire regime is practiced. This means that when a lightning fire...or suspected lightning fire occurs, the island's vegetation is allowed to burn without manipulation, the only exception being to protect the Marshall House field station complex on the bay side of the island, and a weather shelter on the gulf side. Allowing fire to burn under the varying environmental conditions of temperature, wind direction and speed, relative humidity and fuel moisture, results in varying fire effects throughout the island's natural communities. A fire on the island may last for days.

Upon discovering an ignition, staff is dispatched to the island equipped with portable pumps and hand tools. If conditions require, backfiring is conducted in areas adjacent to the Marshall House complex, to protect the structures. Staff monitors and patrols the active burn for any visitor interaction needed for their safety. Local fire departments, law enforcement agencies, Division of Forestry and local media are notified when burning occurs on the island.

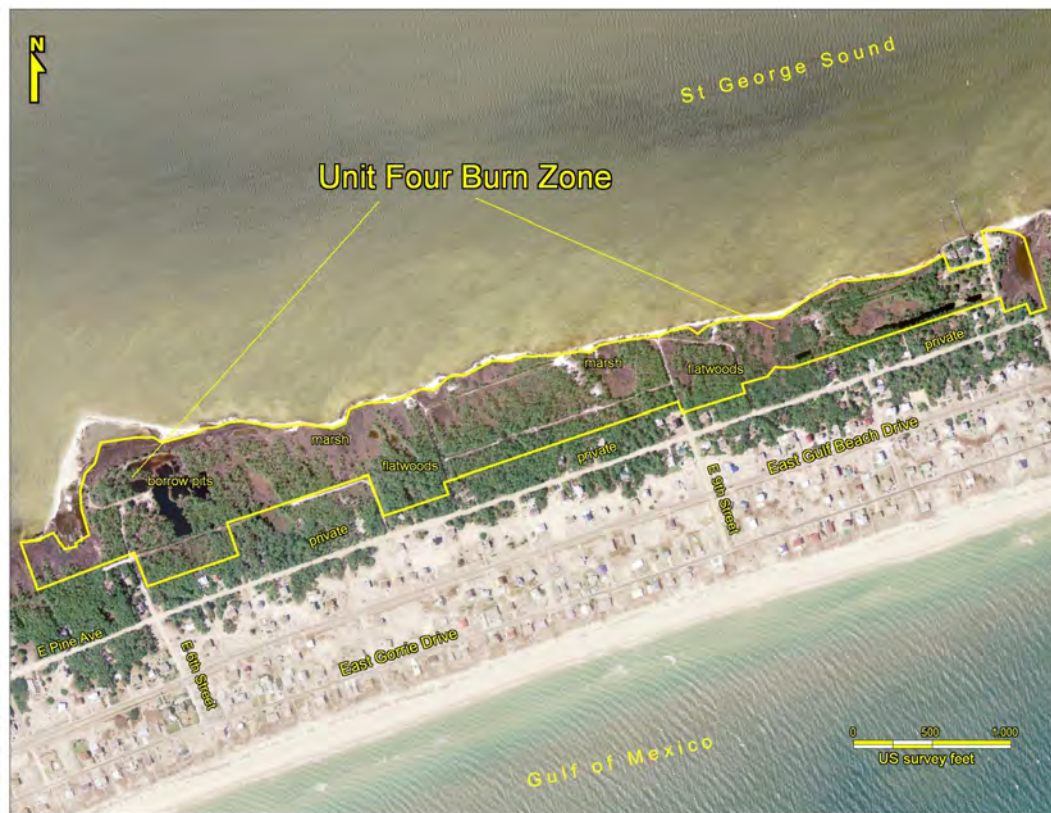




**Unit Four:**

This zone, located along the bay side shore of St. George Island is actually comprised of many residential building lots separated by county roads, alleys, canals and rights-of-way. The zone is mostly wet flatwoods with fragmented salt marsh. Dominant species include pine, palmetto, juncus and spartina. There is a high degree of urban interface with houses "embedded" in high fuel load lots adjacent to state owned lands. Past burning in this zone, by ANERR in 1999 and most recently by DOF in 2012, were fuel reduction burns. The zone is easily fragmented for burning due to the established road system.

Ideal burn conditions include a southerly component wind to push smoke away from St. George Island and the adjacent residential areas. The area should be burned with recent rainfall to avoid pine kill from smoldering duff layers. The most recent burning was conducted by DOF who administered the permit and resident notification process. ANERR staff assisted with day-of-burn participation, including firing the zone. Mechanical fuel reduction and pine thinning remain viable options or enhancements to any planned burning on this zone.



**Nick's Hole:**

The Nick's Hole Zone is located on the bay side of St. George Island, within the gated and private "St. George Island Plantation" community. The site is directly adjacent to the airport located within the community. A Boy Scout special use area exists on a portion of the zone. The zone is comprised mostly of mesic and scrubby flatwoods and salt marsh. There is a small remnant dune with scrub vegetation on the south border, adjacent to the threshold of the airport's runway 32. Pine, palmetto, sand live oak, juncus and spartina are the dominant species. This zone, despite having no known burn history, is in fair to good condition. Numerous expansive homes are nearby the Nick's Hole area.

Burning conducted here will be for both fuel reduction and natural community maintenance. Ideal burn conditions include a southeast wind component adequate to push smoke away from the airport runway. Some portion of the zone could benefit from pine thinning.





**Cat Point:**

The Cat Point Zone is located near the mainland (North) end of the new St. George Island bridge. The zone is a collage of four sub-zones (A-D) totaling 93 acres. The zone includes long-term fire-excluded flatwoods, salt marshes and mixed forest, with high fuel loads and reduced natural community diversity. The near urban interface and ready accessibility for local fire departments has resulted in historic fire suppression.

Burn goals for this zone will be mostly fuel reduction/wildfire prevention. A small portion of the zone near the new ANERR facility will be burned as a demonstration "Fire Ecology" site. This burn is intended to demonstrate the effects of fire in reducing fuels and stimulating herbaceous growth in flatwoods. Pine thinning is a particularly viable pre-burn treatment for parcel A and D.

Burns conducted on Cat Point will by necessity be conducted by DOF personnel as urban-interface mitigation burning for fuel reduction, or contracted to others for completion. Ideal burn conditions, especially wind, vary for each portion. Generally speaking care has to be taken to avoid smoke impacts on US Hwy 98, Island Drive and the St. George Island Bridge. Mowing is a viable option to burning these lots as an interim management strategy for fuel reduction.





**Pelican Point:**

Similar to Unit Four, the Pelican Point Burn Zone is comprised of multiple residential building lots on two roads within the "Pelican Point" community of the 'Plantation'. This is a close urban-interface zone within multiple residences adjacent to the state-owned lots. The zone contains flatwoods and salt marsh species. Mowing is a viable option to burning these lots as an interim management strategy for fuel reduction. Ideal burn conditions include southerly or even southwesterly wind to avoid impacting the airport runway.



Burn Zones for Fire-Dependent Natural Communities of Apalachicola National Estuarine Research Reserve				
Burn Zone	Description	Acres	Intended Fire Frequency	Next Intended Burn
Lower River Marsh	Estuarine marsh community in good condition, with rushes, cattails, phragmites, saw grass, spartina, juncus and other miscellaneous species. No exotics noted.	3011	3-5 Years	To be burned in Conjunction with FFWCC EEL tract
Little St. George Island	Ancient dune ridge/swale topography with freshwater marsh within the swales and scrubby or scrub community on the ridges. All in fair to good condition. Expanses of coastal grassland occur on the island also. Estuarine salt marsh is found on the Apalachicola Bay side of the island. No known exotics.	2182	The island allows for naturally (lightning) recurring burn regime. 10 years +/-	Upon natural ignition.
Unit 4	Wet flatwoods with interspersed freshwater and tidal salt marsh. The zone is mostly fire excluded but in fair condition. Brazilian Pepper has been found and removed from the site (2008)	75	10 Year fuel reduction	2012-13
Nick's Hole	Scrubby and wet flatwoods with interspersed tidal salt marsh. The zone is in fair to good condition. Chinese Tallow occurs on the site and is removed as found.	19	10 Year Fuel reduction	2013-14
Cat Point	Zone is mostly flatwoods, mixed hammock and estuarine salt marsh, in poor condition due to fire exclusion. Chinese tallow has been found and treated/removed from the site.	93	10 Year Fuel reduction	2013-14
Pelican Point	Mostly salt marsh and scrubby flatwoods in fair to good condition. No exotics noted.	12		2013-14

**Note:** "Description" describes the type and condition of natural communities in the burn zone, and presence of exotics. "Intended Fire Frequency" is the number of years intended between burns (e.g., 8-15 yrs, 2-3 yrs). "Next Intended Burn" is the year(s) that this burn zone is next intended to be burned (e.g., 2004-05, 2006-07). [ARC requirement #43]

**Wildfire:**

Response to Wildfire on ANERR managed lands will be ultimately managed by DOF. Should fire occur on remote lands not easily accessed, or if environmental conditions allow, natural fires should be allowed to burn out. Public health and safety shall be the prime factor in any decision to allow an "unscheduled" fire to burn. ANERR staff will assist DOF as needed in any suppression or monitoring deemed necessary by DOF.

**Management Procedures for Archaeological and Historical Sites and Properties on State-Owned or Controlled Properties** / revised March 2013

**These procedures apply to state agencies, local governments, and non-profits that manage state-owned properties.**

**A. General Discussion**

Historic resources are both archaeological sites and historic structures. Per Chapter 267, Florida Statutes, *'Historic property' or 'historic resource' means any prehistoric district, site, building, object, or other real or personal property of historical, architectural, or archaeological value, and folklife resources. These properties or resources may include, but are not limited to, monuments, memorials, Indian habitations, ceremonial sites, abandoned settlements, sunken or abandoned ships, engineering works, treasure trove, artifacts, or other objects with intrinsic historical or archaeological value, or any part thereof, relating to the history, government, and culture of the state.'*

**B. Agency Responsibilities**

Per State Policy relative to historic properties, state agencies of the executive branch must allow the Division of Historical Resources (Division) the opportunity to comment on any undertakings, whether these undertakings directly involve the state agency, i.e., land management responsibilities, or the state agency has indirect jurisdiction, i.e. permitting authority, grants, etc. No state funds should be expended on the undertaking until the Division has the opportunity to review and comment on the project, permit, grant, etc.

State agencies shall preserve the historic resources which are owned or controlled by the agency.

Regarding proposed demolition or substantial alterations of historic properties, consultation with the Division must occur, and alternatives to demolition must be considered.

State agencies must consult with Division to establish a program to location, inventory and evaluate all historic properties under ownership or controlled by the agency.

**C. Statutory Authority**

Statutory Authority and more in depth information can be found at:

<http://www.flheritage.com/preservation/compliance/guidelines.cfm>

**D. Management Implementation**

**Even though the Division sits on the Acquisition and Restoration Council and approves land management plans, these plans are conceptual. Specific information regarding individual projects must be submitted to the Division for review and recommendations.**

Managers of state lands must coordinate any land clearing or ground disturbing activities with the Division to allow for review and comment on the proposed project. Recommendations may include, but are not limited to: approval of the project as submitted, cultural resource assessment survey by a qualified professional archaeologist, modifications to the proposed project to avoid or mitigate potential adverse effects.

Projects such as additions, exterior alteration, or related new construction regarding historic structures must also be submitted to the Division of Historical Resources for review and comment by the Division's architects. Projects involving structures fifty years of age or older, must be submitted to this agency for a significance determination. In rare cases, structures under fifty years of age may be deemed historically significant. These must be evaluated on a case by case basis.

Adverse impacts to significant sites, either archaeological sites or historic buildings, must be avoided. Furthermore, managers of state property should make preparations for locating and evaluating historic resources, both archaeological sites and historic structures.



## E. Minimum Review Documentation Requirements

In order to have a proposed project reviewed by the Division, certain information must be submitted for comments and recommendations. The minimum review documentation requirements can be found at: [http://www.flheritage.com/preservation/compliance/docs/minimum\\_review\\_documentation\\_requirements.pdf](http://www.flheritage.com/preservation/compliance/docs/minimum_review_documentation_requirements.pdf).

Questions relating to the treatment of archaeological and historic resources on state lands should be directed to:

Deena S. Woodward

Division of Historical Resources / Bureau of Historic Preservation / Compliance and Review Section

R. A. Gray Building, 500 South Bronough Street, Tallahassee, FL 32399-0250

Phone: (850) 245-6425, Toll Free: (800) 847-7278, Fax: (850) 245-6435

### E.7 / Analysis of Contracting Potential

The following restoration and management activities have been considered for outsourcing to private entities. In general, most day-to-day operations at ANERR can be handled more efficiently and at a lesser cost with Florida Department of Environmental Protection (DEP) staff. Projects requiring excavation and engineering must be outsourced. In the past five years, outsourced labor has included mainly construction, exhibit design and construction, and some laboratory analysis. The table below contains potentially outsourced activities with categories as follows: “approved” designates items that DEP does not have expertise to complete and/or those that can be done at less cost with equivalent results by outside sources; “conditional” designates items that can be done by DEP or outside sources for equivalent cost and results; “rejected” designates items that can be done with DEP expertise and/or at less cost than outside sources.

Potential Contracting for Activities on Apalachicola National Estuarine Research Reserve			
Activity	Approved	Conditional	Rejected
Prescribed burning			X
Minor fireline and fence installation			X
Nuisance animal control		X	
CTP Needs assessments and surveys	X	X	
Nutrient analysis	X		
Restoration projects		X	
Listed species mapping and needs assessment			X
Cleaning and janitorial services			X
Survey and installation of sentinel site infrastructure	X		
Restore hydrology via fill and excavation (low water crossings)	X		
Eradication and control of invasive exotic species		X	
Education facilities, programs, and literature development and printing		X	
Education signs development and installation		X	
Trail and boardwalk installation		X	
Exhibit design and installation	X		
Timber harvesting	X		

### E.8 / Land Management Review Team Recommendations and Management Response

Land management review teams were established by Section 259.036, Florida Statutes, to evaluate management of conservation, preservation, and recreation lands titled in the name of the Board of Trustees of the Internal Improvement Trust Fund. The teams determine whether the lands are being managed for the purposes for which they were acquired and in accordance with a land management plan adopted pursuant to s. 259.032 by the Board of Trustees, acting through the Department of Environmental Protection. The managing agency is to consider the findings and recommendations of the land management review team in finalizing the required update of its management plan.

A land management review was conducted for the Apalachicola Research Reserve on September 20, 2006. The 2006 Land Management Review Team had three recommendations for Reserve management:

1) "The team recommends that DEP work toward development of a full time presence on Little St. George Island to enhance resource and visitor management."

Managers Response: "Satisfactory completion of current staff management activities requires infrequent trips to the island, an 11 mile one-way boat trip. The recent loss of the Cape St. George Light has resulted in a decrease in visitation on the island. Staff monitors visitor impact to the island and will continue to do so. If impacts to the natural and cultural resources there increase to the point of degradation or if visitor needs there go unmet, staff will increase trips to the island to specifically address resource and visitor issues. However, current staffing levels do not allow a full time presence on the island."

2) "The team recommends that DEP initiate a dialogue with DOT regarding potentially bridging the east Bay/ Apalachicola River/Apalachicola Bay, removal of the Highway 98 causeway to restore the natural hydrologic regime to the lower river basin."

Managers Response: "Staff will initiate causeway removal dialogue with FDOT."

3) "The team recommends that DEP provide a more detailed listed species section in the upcoming management plan, including a list of management goals and objectives specific to the ANERR managed areas."

Managers Response: "Staff will include a more detailed listed species section, including management goals and objectives specific to ANERR managed areas, in the next management plan revision."

#### Land Management Review of Apalachicola NERR / Lease No. 3862 • September 20, 2006

Prepared by Division of State Lands Staff, *Keith Singleton, Land Acquisition & Management Planner, Cindy Morris, Administrative Assistant For Apalachicola NERR Review Team*

FINAL / December 18, 2006

Land Manager: CAMA

Area: 6507.70 acres

County: Franklin/Gulf/Liberty

Mgt. Plan Revised: 7/23/1998

Mgt. Plan Due: 7/23/2008

#### Management Review Team Members

Agency Represented	Team Member Appointed	Team Member in Attendance
DOF	John Barrow	
DEP/DRP	Tova Spector	
FFWCC	Phil Manor	
Private Land Mgr. (TNC)	Elisabeth Mizell	
DEP District	Bradley Hartshorn	
Observer (FNAI)		Carolyn Kindell
CAMA		Ellen Stere
DOS/DHR		Michael Wisenbaker

*William Howell for DEP/DSL*

#### Process for Implementing Regional Management Review Teams

##### Legislative Intent and Guidance:

Chapter 259.036, F. S. was enacted in 1997 to determine whether conservation, preservation, and recreation lands owned by the state Board of Trustees of the Internal Improvement Trust Fund (Board) are being managed properly. It directs the Department of Environmental Protection (DEP) to establish land management review teams to evaluate the extent to which the existing management plan provides sufficient protection to threatened or endangered species, unique or important natural or physical features, geological or hydrological functions, and

archaeological features. The teams also evaluate the extent to which the land is being managed for the purposes for which it was acquired and the degree to which actual management practices, including public access, are in compliance with the adopted management plan. If a land management plan has not been adopted, the review shall consider the extent to which the land is being managed for the purposes for which it was acquired and the degree to which actual management practices are in compliance with the management policy statement and management prospectus for that property. If the land management review team determines that reviewed lands are not being managed for the purposes for which they were acquired or in compliance with the adopted land management plan, management policy statement, or management prospectus, DEP shall provide the review findings to the Board, and the managing agency must report to the Board its reasons for managing the lands as it has. A report of the review team findings is given to the managing agency under review, the Acquisition and Restoration Council, and the Governor and Cabinet and made available by site on the web at [www.dep.state.fl.us/lands/landmgt/maps/default.htm](http://www.dep.state.fl.us/lands/landmgt/maps/default.htm).

### **Review Site**

The management review team for Apalachicola NERR considered approximately 6508 acres in Franklin County that are managed by the Coastal & Aquatic Managed Areas (CAMA). The team evaluated the extent to which current management actions are sufficient, whether the land is being managed for the purpose for which it was acquired, and whether actual management practices, including public access, are in compliance with the management plan. The management plan update is due on July 23, 2008.

#### *Review Team Determination*

##### Is the land being managed for the purpose for which it was acquired?

After completing the checklist, team members were asked to answer “yes” or “no” to this question. Four team members agreed that Apalachicola NERR is being managed for the purpose for which it was acquired and one team member refused to answer.

##### Are actual management practices, including public access, in compliance with the management plan?

After completing the checklist, team members were asked to answer “yes” or “no” to this question. Four team members agreed that Apalachicola NERR is in compliance with the management plan and one team member refused to answer.

### **Commendations to the Managing Agency**

- 1. The team commends the manager and staff on the many outstanding public outreach and environmental education programs offered through this facility. (VOTE 5+, 0-)**
- 2. The team commends the staff on their extensive cooperative partnerships with land managers throughout the Apalachicola River watershed. (VOTE: 5+, 0-)**
- 3. The team commends the staff for their dedication to archaeological and historical resource management and protection, and their work toward acquisition of critical historical sites. (VOTE 5+, 0-)**
- 4. The team commends the manager on pursuit of resolution of the encroachment issues on marshlands within the ANERR. (VOTE 5+, 0-)**

### **Exceptional Management Actions**

The following items received high scores on the review team checklist (see attachments), which indicates that management actions exceeded expectations

#### ***Exceptional management actions:***

- Management of the beach dune, mesic flatwoods, scrub, bottomland forest, wet flatwoods, estuarine and marine tidal marsh and coastal grassland communities.
- Management and protection of the listed animals including the shore birds and sea turtles.
- Protection and preservation of the cultural resources.
- Area and quality of the prescribed burns.
- Restoration of the Salt Marsh.
- Control of invasive animals and plants
- Hydrologic/Geologic function - working with ACF.
- Monitoring of the surface water quality and quantity.
- Gates and fencing, boundary surveys and signage.
- Managing impacts from expanding development, encroachment by docks, Franklin County comprehensive plan and inholding and additions.
- Multiple-uses including grazing and timber harvesting.
- Public access including roads, parking, docks, recreational opportunities and interpretive facilities and signs.
- Environmental education and outreach programs.
- Waste disposal, sanitary facilities, buildings and equipment.



## Recommendations and Checklist Findings

The management plan must include responses to the recommendations and checklist items that are identified below.

### Recommendations

The following recommendations resulted from a discussion and vote of review team members.

1. **The team recommends that DEP work toward development of a full-time presence on Little St. George Island to enhance resource and visitor management. (VOTE: 5+, 0- )**

#### **Manager's Response:**

*Satisfactory completion of current staff management activities requires infrequent trips to the island, an 11 mile one-way boat trip. The recent loss of the Cape St. George Light has resulted in a decrease in visitation on the island. Staff monitors visitor impact to the island and will continue to do so. If impacts to the natural and cultural resources there increase to the point of degradation or if visitor needs there go unmet, staff will increase trips to the island to specifically address resource and visitor issues. However, current staffing levels do not allow a full time presence on the island.*

2. **The team recommends that DEP initiate a dialogue with DOT regarding potentially bridging the East Bay/Apalachicola River/Apalachicola Bay, removal of the Highway 98 causeway to restore the natural hydrologic regime to the lower river basin (from Eastpoint to Apalachicola). (VOTE: 5+, 0- )**

#### **Manager's Response:**

*Staff will initiate causeway removal dialogue with FDOT.*

3. **The team recommends that DEP provide a more detailed listed species section in the upcoming management plan, including a list of management goals and objectives specific to the ANERR managed areas. (VOTE: 5+, 0- )**

#### **Manager's Response:**

*Staff will include a more detailed listed species section, including management goals and objectives specific to ANERR managed areas, in the next management plan revision.*

### Checklist findings

The following items received low scores on the review team checklist (see Attachment 1), which indicates that management actions, in the field, were insufficient (f) or that the issue was not sufficiently addressed in the management plan (p). These items need to be further addressed in the management plan update.

1. **Discussion in the management plan to address the management issues related to the coastal grassland communities. (p)**

#### **Manager's Response:**

*A more detailed natural communities section (including coastal grassland) will be included in the next management plan revision.*

2. **Discussion in management plan for the need for additional staff. (f)**

#### **Manager's Response:**

*The Apalachicola NERR is undergoing a significant upgrade to its educational-outreach and visitor facility. Also, new visitor use facilities are being added to ANERR managed areas in an attempt to promote better visitor access. Anticipated increases in visitation and subsequent workload will necessitate the development of a revised comprehensive staffing schedule. Additional needed positions identified during this change and after the change occurs will be addressed through the development of volunteer programs and additional staff requests through normal means.*

### Team Member's Comments

#### **Natural Communities: protection and maintenance: (I.A)**

- Beach dune is managed by natural processes. Practice natural fire regime. Coastal grassland needs to be added to the plan.
- I'm not sure if we saw bottomland forest. It may have been baygall.
- Key management tool – fire will keep communities healthy except for beach dune and estuarine, exotics, development and pollution addressed. Prescription fire is difficult in some parcels due to urban interface.
- The urban interface/disjunct parcels make it very difficult for the ANERR to manage with prescribed fire.

#### **Listed Species: protection and preservation (I.B1, I.B.2)**

- I did not see specific species in the plan. Excellent management of these species, however, there needs to be more information on how to protect and preserve the listed animals. There are no listed plants in the area.
- Need to have a more thorough discussion of the Apalachicola NERR efforts for protecting and preserving listed species.
- Fire and exotics control for plants protection and preservation is addressed. It is better to have a more detailed monitoring and protection strategies.
- General description of animals in the current plan. Specific details of each known animal.

**Cultural Resources: (II.A; II.B)**

- Some looting on two sites, not all surveys have been done, but overall a good job at protection and surveying the sites.
- Actual survey sites within the Apalachicola NERR political boundary are good.
- During the field review it was noted that not all of the sites within ANERR have been surveyed

**Prescribed Fire (Natural Community Maintenance): (III.A)**

- Vague on the number of acres under fire management and the frequency of burns. Let St. George Island burn naturally, burn marsh with FWC.
- Include recent fire interval work in the next management plan update.
- As fire needs had not been evaluated at the time of the plan development, no target acres of frequency is mentioned. The quality is good and moving towards growing season burning. It is difficult to burn some areas because of urban interface zones. Need a clear direction on what parcels to be managed for fire.
- The plan stated small acreage easily controlled burn, but doesn't indicate the number of acres.
- Fire return interval to Little St. George Island and marsh needs additional research to determine.

**Restoration of Disturbed Natural Communities: (III.B)**

- Need to identify more specific restoration areas.

**Non-native Invasive and Problem Species: (III.D)**

- Feral hogs and goats are gone, but there is an occasional coyote on St. George Island.
- Aquatic invasive exotic plants were not addressed. Terrestrial infestations are unknown, but will be treated aggressively when discovered - good. Raccoons and feral hogs on Cape St. George need to be controlled or eradicated.
- No feral hogs of St. George Island.

**Hydrologic/Geologic Function (III.E)**

- Apalachicola NERR is doing a good job of working on Apalachicola/Chattahoochee/Flint issue and research for this issue.
- Lots by the Shellfish section and NFWMD on monitoring surface water in the area.
- Plan – Archive in water allocation formulas for Apalachicola/Chattahoochee/Flint.
- No need for ground water monitoring. Surface water monitoring is being done by other agencies.
- Work with DOT to restore hydrology through the causeway of the Apalachicola Bridge.

**Resource Protection: (III.F)**

- Need signage for wildlife nesting areas and the beaches need to be closed to vehicles.
- It is difficult to get law enforcement out to enforce on ANERR land. ANERR has no law enforcement authority. Need to cooperate as best as they can with local and state and DEP/FWC enforcement.
- ANERR staff relies on law enforcement from other agencies when needed.
- Need more signs at the Island for visitors to know the rules of the use of the property.

**Adjacent Property Concerns: (III.G)**

- Good job of monitoring land uses in Apalachicola NERR and capturing surplus property of Carrabelle Beach tract and Marsh habitat for management.
- Good cooperation with county, city organizations and the government. Would like to organize more coastal lands and have encroachment issues on St. George Island that are in the works to being dealt with.
- Dock encroachment appears to be a problem and is being addressed by the manager.

**Public Access and Education: (IV.1; IV.2; IV.3; IV.4)**

- Excellent outreach programs especially to schools. Nice recreational upgrade for redfish fishing access and parking.
- Outstanding!
- Excellent education program. Contracted waste disposal is in place.
- Could have more interpretive signs for the management of visitors on the Island, the facilities are great.

**Management Resources: (V.2.; V.3; V.4)**

- More staff is needed. The current staff does excellent work for a small resource management staff. More could be done with additional funding.
- Leave no trace use promoted – great!
- There is a new building in the works. Could always use additional equipment.
- Need four FTE's on site, law enforcement officer, interpretation stuff. Not enough funding to increase the staff, current funding is sufficient for current needs.
- As noted above, contracted waste disposal is in place.
- Additional staff is needed.
- The road to the education facility is in bad repair and needs work. Need more room for staff and visitors.

**Exceptional Management Actions**

- The environmental Education and Outreach programs by Apalachicola NERR are outstanding. Apalachicola NERR is very involved with AWING and has done a good job surveying and controlling exotics by partnering with other agencies and groups. Dedication to surveying and protecting archaeological sites is exceptional.
- Education outreach.
- Environmental education and outreach.
- Management of marsh in conjunction with other agencies.
- Pursuing funding for lighthouse and cultural sites.

### Areas of insufficient management

- More presence on St. George Island is needed. Address the listed species in the comprehensive management plan.

### Recommendations for Improving Management of this Site:

- More staff is needed.
- Like to see an updated management plan. More specific “Action items” for restoration, fire, government relations and exotics control strategies to draw their annual work plan.
- Need more presence on Little St. George Island.
- Need more signs for visitor management.

PLAN REVIEW		1	2	3	4	5	AVERAGE
<b>Natural Communities ( I.A )</b>							
Beach Dune	I.A.1	1	1	1	1	1	1.00
Mesic Flatwoods	I.A.2	1	1	1	1	1	1.00
Scrub	I.A.3	1	1	1	1	1	1.00
Bottomland Forest	I.A.4	1	1	1	1	1	1.00
Floodplain Forest	I.A.5	1	1	1	1	1	1.00
Wet Flatwoods	I.A.6	1	1	1	1	1	1.00
Estuarine and Marine Tidal Marsh	I.A.7	1	1	1	1	1	1.00
Coastal Grassland	I.A.8	0		1	0	1	0.50
<b>Listed species: Protection &amp; Preservation ( I.B )</b>							
Animals	I.B.1	0		1	1	1	0.75
Shore Birds	I.B.1.a	0	1	1	1	1	0.80
Sea Turtles	I.B.1.b	0	1	1	1		0.75
<b>Cultural Resources (Archeological &amp; Historic sites) (II.A,II.B )</b>							
Cultural Res. Survey	II.A	1	1	1	1	1	1.00
Protection and preservation	II.B	1	1	1	1	1	1.00
<b>Resource Management, Prescribed Fire (III.A)</b>							
Area Being Burned (no. acres)	III.A.1	1	1	0	0	1	0.60
Frequency	III.A.2	1	1	0	0	1	0.60
Quality	III.A.3	1	1	1	1	1	1.00
<b>Restoration of Ruderal Areas (III.B)</b>							
Salt Marsh Restoration	III.B.1	1	0	1	1	1	0.80
<b>Non-Native, Invasive &amp; Problem Species (III.D)</b>							
Animals	III.D.1		1	1	1	1	1.00
Plants	III.D.2		1	0	1	1	0.75
<b>Hydrologic/Geologic function Hydro-Alteration (III.E.1)</b>							
Working with ACF	III.E.1.e		1	1	1	1	1.00
<b>Surface Water Monitoring (III.E.3)</b>							
Surface water quality	III.E.3.a	1	1	1	1	1	1.00
Surface water quantity	III.E.3.b	1	1	1	1	1	1.00
<b>Resource Protection (III.F)</b>							
Boundary survey	III.F.1	1	1	1	1	1	1.00
Gates & fencing	III.F.2	1	1	1	1	1	1.00
Signage	III.F.3	1	1	1	1	1	1.00
Law enforcement presence	III.F.4		1	1	1	0	0.75
<b>Adjacent Property Concerns (III.G)</b>							
<b>Land Use</b>							
Expanding development	III.G.1a	1	1	1	1	1	1.00
Encroachment by Docks	III.G.1b	1		1	1	1	1.00
Franklin County Comprehensive Plan	III.G.1c	1	1	1	1	1	1.00
Inholdings/additions	III.G.2	1	1	1	1	1	1.00
<b>Public Access &amp; Education</b>							
<b>Public Access-Maintenance</b>							
Roads	IV.1a	1	1	1	1	1	1.00
Parking	IV.1b	1	1	1	0	1	0.80
Docks	IV.1c	1	1	1	0	1	0.80



<b>PLAN REVIEW</b>		<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>AVERAGE</b>
Recreational Opportunities	IV.2	1	1	1	1	1	1.00
Management of Visitor Impacts	IV.3	1	1	1	1	1	1.00
Interpretive facilities and signs	IV.4	1	1	1	1	1	1.00
Environmental education/outreach	IV.5	1	1	1	1	1	1.00
<b>Managed Area Uses</b>							
<b>Existing Uses</b>							
Fishing	VI.A.1	1	1	1	1	1	1.00
Hiking	VI.A.2	1	1	1	1	1	1.00
Camping	VI.A.3	1	1	1	1	1	1.00
Canoeing/Kayaking	VI.A.4	1	1	1	1	1	1.00
Wildlife Viewing	VI.A.5	1	1	1	1	1	1.00
Environmental Education	VI.A.6	1	1	1	1	1	1.00

<b>FIELD REVIEW</b>		<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>AVERAGE</b>
<b>Natural Communities ( I.A )</b>							
Beach Dune	I.A.1	4	5	5	5	5	4.80
Mesic Flatwoods	I.A.2	4	4	5	4	5	4.40
Scrub	I.A.3	4	4	5	4	5	4.40
Bottomland Forest	I.A.4	4	x	5	4	5	4.50
Floodplain Forest	I.A.5	5	4	5	5	5	4.80
Wet Flatwoods	I.A.6	4	4	5	4	5	4.40
Estuarine and Marine Tidal Marsh	I.A.7	5	4	5	5	5	4.80
Coastal Grassland	I.A.8	5	x	5	4	5	4.75
<b>Listed species: Protection &amp; Preservation ( I.B )</b>							
Animals	I.B.1	5	x	5	3	5	4.50
Shore Birds	I.B.1.a	5	4	5	3	4	4.20
Sea Turtles	I.B.1.b	x	4	5	3	x	4.00
<b>Cultural Resources (Archeological &amp; Historic sites) (II.A,II.B )</b>							
Cultural Res. Survey	II.A	4	4	5	4	5	4.40
Protection and preservation	II.B	4	5	5	4	5	4.60
<b>Resource Management, Prescribed Fire (III.A)</b>							
Area Being Burned (no. acres)	III.A1	3	4	3	3	5	3.60
Frequency	III.A.2	3	4	3	3	4	3.40
Quality	III.A.3	3	5	5	3	5	4.20
<b>Restoration of Ruderal Areas (III.B)</b>							
Salt Marsh Restoration	III.B.1	5	3	x	5	4	4.25
<b>Non-Native, Invasive &amp; Problem Species (III.D)</b>							
Animals	III.D.1	5	5	5	5	4	4.80
Plants	III.D.2	x	2	5	5	4	4.00
<b>Hydrologic/Geologic function Hydro-Alteration (III.E.1)</b>							
Working with ACF	III.E.1.e	5	3	3	3	5	3.80
<b>Surface Water Monitoring (III.E.3)</b>							
Surface water quality	III.E.3.a	5	4	5	4	5	4.60
Surface water quantity	III.E.3.b	5	4	5	4	5	4.60
<b>Resource Protection (III.F)</b>							
Boundary survey	III.F.1	5	4	5	3	5	4.40
Gates & fencing	III.F.2	5	4	5	3	5	4.40
Signage	III.F.3	5	4	5	3	3	4.00
Law enforcement presence	III.F.4	3	3	3	3	3	3.00
<b>Adjacent Property Concerns (III.G)</b>							
<b>Land Use</b>							
Expanding development	III.G.1a	5	3	5	4	5	4.40
Encroachment by Docks	III.G.1b	5	x	5	4	4	4.50
Franklin County Comprehensive Plan	III.G.1c	5	4	5	4	5	4.60

<b>FIELD REVIEW</b>		<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>AVERAGE</b>
Inholdings/additions	III.G.2	5	5	5	5	0	4.00
<b>Public Access &amp; Education</b>							
<b>Public Access-Maintenance</b>							
Roads	IV.1a	4	3	x	4	5	4.00
Parking	IV.1b	4	3	x	4	5	4.00
Docks	IV.1c	4	4	5	5	5	4.60
Recreational Opportunities	IV.2	5	3	5	5	5	4.60
Management of Visitor Impacts	IV.3	4	3	5	5	4	4.20
Interpretive facilities and signs	IV.4	5	3	5	5	4	4.40
Environmental education/outreach	IV.5	5	5	5	5	5	5.00
<b>Management Resources</b>							
<b>Maintenance</b>							
Waste disposal	V.1a	4	3	5	5	4	4.20
Sanitary facilities	V.1b	x	3	5	4	4	4.00
<b>Infrastructure</b>							
Buildings	V.2a	5	4	5	4	3	4.20
Equipment	V.2b	4	3	5	4	3	3.80
Staff	V.3	3	3	2	2	1	2.20
Funding	V.4	3	4	2	2	3	2.80

## Management Plan for Division of State Lands Sublease 3584-01 between the Florida Fish and Wildlife Conservation Commission (FWC) and the Florida Department of Environmental Protection (DEP)-Office of Coastal and Aquatic Managed Areas (CAMA)

The Apalachicola National Estuarine Research Reserve (ANERR) is the local CAMA office using the Sublease site.

The small size of the ANERR allowable use area precludes any management activities associated with natural resource restoration or maintenance. Any comments addressing the following listed/numbered items, apply to the 4-acre ANERR use area only. The remainder of this Management Plan form applies to the ARWEA which includes the portion of the Sublease outside the ANERR 4 acre use area. For information regarding the remaining 199.6 acres of Sublease area, see the approved Conceptual Management Plan for Apalachicola River Wildlife and Environmental Area.

### A. General Information

1. Common name of the property: ANERR Magnolia Bluff Tract
2. Lease number: (Sublease) 3584-01
3. Acres: 203.6 acres (legal), 4 acres ANERR Use Area
4. Name of agency that is managing the property: CAMA
5. Provide an executive summary/description of this property that includes a brief description of the resources, uses and proposed uses, outstanding features etc.

The purpose of this plan is to meet the requirements set forth in Sublease Number 3584-01 dated January 12, 2001. FWC is the sublessor, CAMA is the sublessee. The Apalachicola National Estuarine Research Reserve (ANERR) is the local CAMA office using the site.

The Sublease Agreement states:

4. PURPOSE: SUBLESSEE shall manage the subleased premises only for the establishment and operation of administrative office, land base and maintenance shop along with other related uses necessary for the accomplishment of this purpose as designated in the management plan required by paragraph 6 of this sublease.”

(See Appendix A.6 Magnolia Bluff Sublease 3584-01)

The area required for purposes of the sublease is approximately 4 acres, including the entrance road and boardwalk-dock associated with the compound (see map on page 7-Sublease Facilities). The remainder of the sublease area (approximately 199.6 acres) remains under the lead management of FWC as part of the Apalachicola River Wildlife and Environmental Area (ARWEA).

The ANERR use area and facility is currently used by both FWC and ANERR. The administration building houses the FWC Fish and Wildlife Research Institute's (FWRI) local Marine Fisheries Independent Monitoring operation. FWRI maintains the administrative office and wet-lab portions of the building for their program use and shares the shop/open-bay portion with ANERR. FWRI also uses on-site outdoor storage areas to park their trailered watercraft and locate two of the aluminum storage buildings.

ANERR maintains a shop and storage area within the open-bay portion of the administration building. ANERR stores equipment under the pole barn, in the two wooden storage buildings and in one of the aluminum storage buildings. ANERR also stores equipment and material in the outdoor storage area. ANERR uses the boardwalk and dock facility for a land base to access East Bay and Apalachicola Bay via boats kept at the terminal end of the dock. Visiting researchers and others (ANERR and FWC) intermittently stay at the dormitory.



**Maintenance and repair responsibilities for the facility are shared by FWC and CAMA.**

6. Attach a map showing the location and boundaries of the property including:

**See pages 5 and 8.**

a) The location and type of structures or improvements currently on the property

**See page 7.**

**List of Structures:**

- 1- 8,800 square foot administration building (including a 900 square foot wet laboratory and a 2,700 square foot open-bay, drive through shop area)
- 1- 1,700 square foot pole barn
- 1- 240 square foot wooden storage building
- 1- 288 square foot wooden storage building
- 3- 240 square foot aluminum storage buildings
- 1- boardwalk-dock (including a 730' x 5' boardwalk/dock with a 30' x 30' terminal docking platform with two electric boat lifts)
- 1- 12' x 65' dormitory (mobile home)

b) The location and type of proposed improvements.

**There are no proposed improvements for the site.**

7. A map showing the proximity of this managed area to other conservation areas within 10 miles.

**See page 6.**

8. Please attach a legal description of the property.

**See page 15 of Appendix A.6 (Sublease 3584-01)  
See page 10 below (Magnolia Bluff Survey)**

9. Provide a physical description of the land including a quantitative data description of the land which includes an inventory of forest and other natural resource, exotic and invasive plants, hydrologic features, infrastructure including recreational facilities, and other significant land, cultural or historical features.

**The 4 acre ANERR-use area contains no significant forest or other natural resources, hydrologic features or other significant land, cultural or historical features.**

10. A brief description of soil types, attaching USDA maps when available.

**See the ARWEA Management Plan.**

11. Is the property adjacent to an aquatic preserve or designated area of critical state concern?  
YES  NO  If YES, please identify

**The sublease area is adjacent to the Apalachicola Bay Aquatic Preserve.**

12. Was the property acquired by a conservation land acquisition program?

**See the ARWEA Management Plan.**

13. Do any agency-specific statute requirements or legislative/executive directives constrain the use of the property? (These restrictions can frequently be found in the lease) YES  NO  If YES, please identify

14. Are there any reservations or encumbrances on the property?

YES  NO  If YES, please identify.

Management.) Open burning authorizations under this section require the Certified Prescribed Burn Manager's certification number be presented at the time of the request, and that a Certified Prescribed Burn Manager be on site for the entire burn.

(a) Prescription. A prescription for the burn must be completed prior to any ignition and it must be on site and available for inspection by a Department representative. The prescription will contain, as a minimum, (unless agreed to in writing locally between the burner and the District or Center Manager of the Division of Forestry) the following:

1. Stand or Site Description;
2. Map of the area to be burned;
3. Number of personnel and equipment types to be used on the prescribed burn;
4. Desired weather factors, including but not limited to surface wind speed and direction, transport wind speed and direction, minimum mixing height, minimum relative humidity, maximum temperature, and the minimum fine fuel moisture;
5. Desired fire behavior factors, such as type of burn technique, flame length, and rate of spread;
6. The time and date the prescription was prepared;
7. The authorization date and the time period of the authorization;
8. An evaluation and approval of the anticipated impact of the proposed burn on related smoke sensitive areas;
9. The signature and number of the Certified Prescribed Burn Manager.

(b) Open Burning Hours.

1. Daytime CPBM Authorizations will be issued for the burning to be conducted from 8:00 a.m. CT or 9:00 a.m. ET and the fire must discontinue spreading one hour after sunset.
2. Nighttime CPBM Authorizations will be issued with a Dispersion Index of 6 or above for the burning to be conducted between one hour before sunset and 8:00 a.m. CT or 9:00 a.m. ET the following day. Ignition of these fires is authorized up to midnight; however the fire can continue to spread until 8:00 a.m. CT or 9:00 a.m. ET the following day. If additional time is required a new authorization (daytime) must be obtained from the Division. The Division will issue authorizations at other times, in designated areas, when the Division has determined that atmospheric conditions in the vicinity of the burn will allow good dispersal of emissions, and the resulting smoke from the burn will not adversely impact smoke sensitive areas, e.g., highways, hospitals and airports.

(c) Burn Manager Certification Process. Certification to become a Certified Prescribed Burn Manager is accomplished by:

1. Satisfactory completion of the Division of Forestry's Prescribed Fire Correspondence Course and direct experience in three prescribed burns prior to taking the course or;
2. Satisfactory completion of the Division of Forestry's Prescribed Fire Classroom version of the Correspondence Course and a minimum of managing three prescribed burns prior to taking the course or;
3. Satisfactory completion of the Florida Inter-Agency Basic Prescribed Fire Course and direct experience in three prescribed burns following successful completion of the classroom training. The burns conducted during the training do not count as part of this three burn requirement. - 217
4. Applicants must submit a completed prescription for a proposed certifying burn to their local Florida Division of Forestry office prior to the burn for review and approval, and have the burn described in that prescription reviewed by the Division of Forestry during the burn operation. The local Division of Forestry District Manager (or their designee) will recommend DOF Prescribed Burn Manager certification upon satisfactory completion of both the prescription and required number of burns.
5. In order to continue to hold the Division of Forestry Prescribed Burn Manager Certification the burner must comply with paragraph 5I-2.006(2) (d), F.A.C., or Division Certification will terminate five years from the date of issue.

(d) Certification Renewal. A Certified Prescribed Burn Manager must satisfy the following requirements in order to retain certification.

1. Participation in a minimum of eight hours of Division of Forestry approved training every five years relating to the subject of prescribed fire, or participation in a Division of Forestry recognized Fire Council Meeting, and
2. The Certified Prescribed Burn Manager has submitted their certification number for two completed prescribed burns in the

**C. Use of the Property**

22. Please provide a statement of the purpose for which the lands were acquired, the projected use or uses as defined in s. 253.034, and the statutory authority you have for such uses.
23. Please state the desired outcome for this property, and key management activities necessary to achieve the desired outcome, including public access.
24. Please state the single or multiple uses currently made of the property and if the property is single use, please provide an analysis of its potential for multiple-use.  
Single \_\_\_\_\_ multiple \_\_\_\_\_ use/s is/are
25. Were multiple uses considered but not adopted?  
YES \_\_\_\_\_ NO \_\_\_\_\_ If YES, please describe why.
26. Please provide an analysis of the potential use of private land managers to facilitate the restoration or management of these lands.
27. Please provide an analysis of the potential of the property to generate revenues to enhance the management of the property.
28. Describe the projected, current and recent past uses of the property, and any unauthorized uses, if known.
29. Do the planned uses impact renewable and non-renewable resources on the property? YES \_\_\_\_\_ NO \_\_\_\_\_  
If YES, please describe what specific activities will be taken to protect or enhance and conserve those resources and to compensate/mitigate the damage that is caused by the impacting use.
30. Should any parcels of land within or adjacent to the property be purchased because they are essential to management of the property?  
YES \_\_\_\_\_ NO \_\_\_\_\_ IF YES, please attach a map of this area.
31. Are there any portions of this property no longer needed for your use? YES \_\_\_\_\_ NO \_\_\_\_\_ IF YES, please attach a map of this area.
32. Please describe what public uses and public access that would be consistent with the purpose for which this property was acquired.

**D. Management Activities**

33. If more than one agency manages this property, describe the management responsibilities of each agency and how such responsibilities will be coordinated.

**The ANERR-use area portion of the sublease is used by both FWC and ANERR. Both agencies jointly maintain the use area grounds and structures. FWC currently maintains the Administration Building housing their FWRI program.**

34. Please discuss management needs and problems on the property including conservation of soil and water resources and control and prevention of soil erosion and water and soil contamination.
35. Identify adjacent land uses that will conflict with the planned use of this property, if any.
36. Please describe measures used to prevent/control invasive, non-native plants.
37. Was there any public or local government involvement/participation in the development of this plan? YES \_\_\_\_\_ NO \_\_\_\_\_ If YES, please describe.



38. Management Goals -The following 8 goals may not all be applicable to your site. Write N/A where appropriate. Also please add as many additional goals, objectives and measures as you wish.

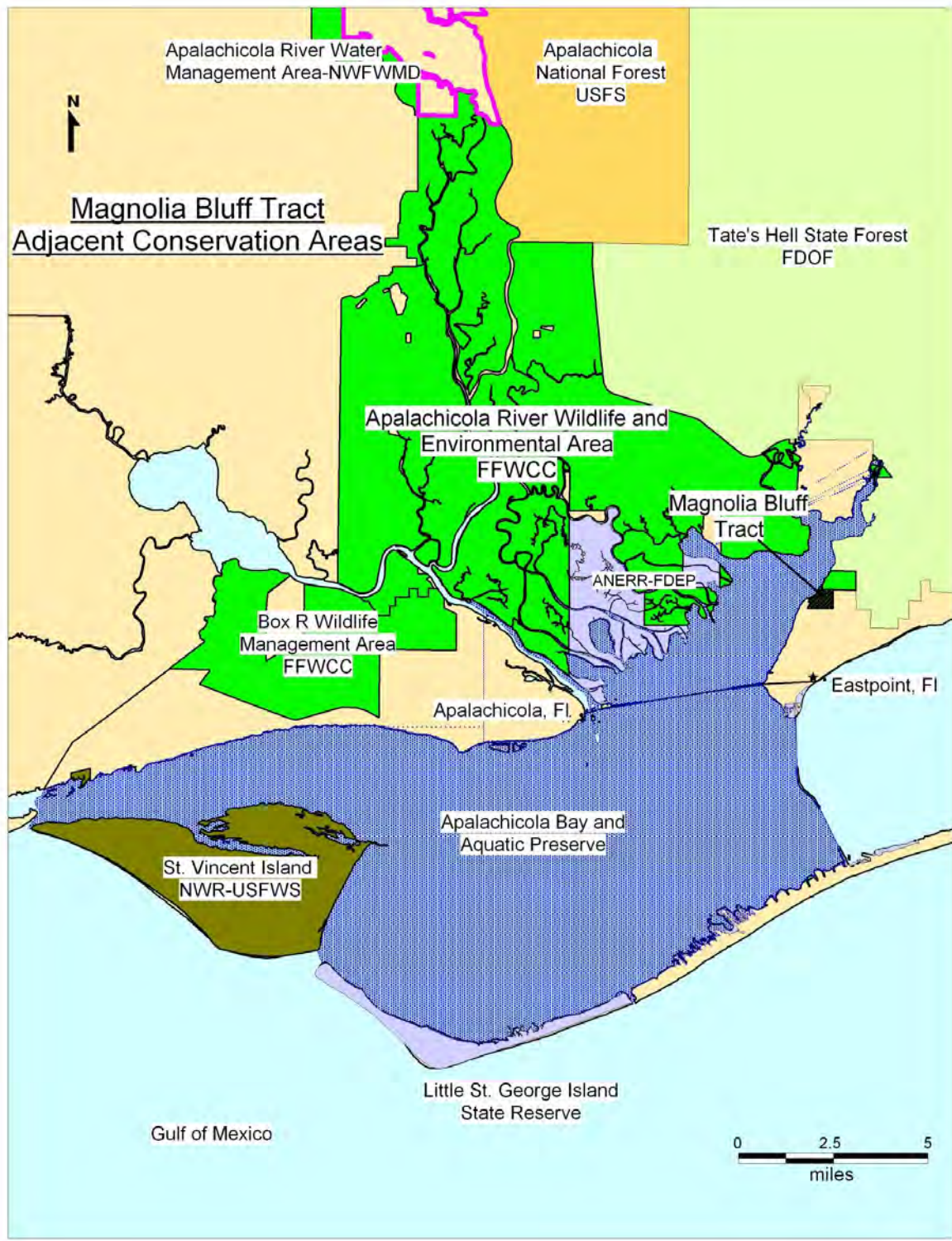
- Habitat restoration
- Prescribe Fire
- Timber Harvest
- Public Access/recreational Opportunities
- Hydrology Restoration
- Silviculture Management
- Exotic Species
- Capital Facilities
- Cultural and Historical Resources
- Imperiled Species

39. Costs

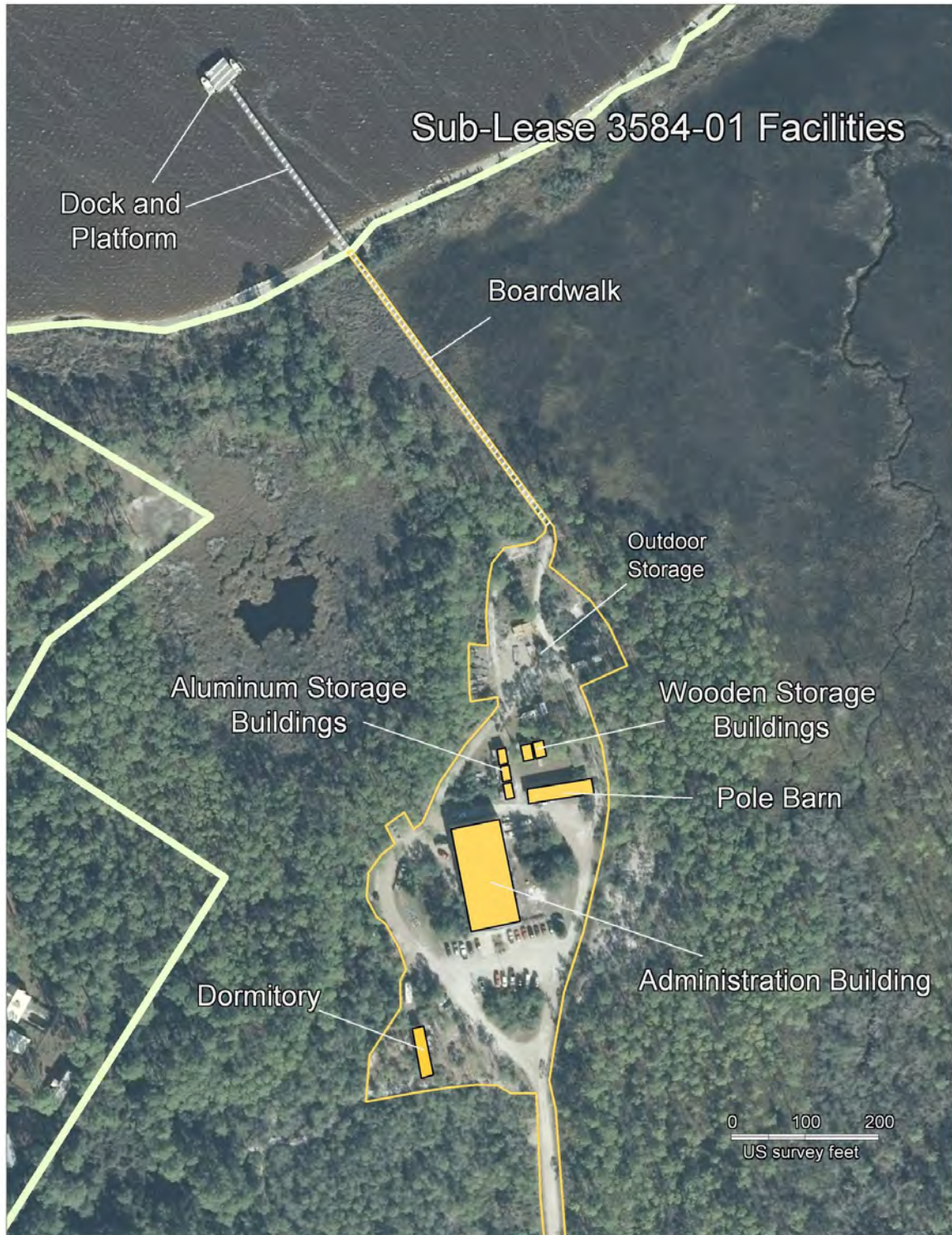
- Activity Yearly Estimated Cost
- Priority Cost Other Management Cost Effective Methods
- Resource
- Management
- Administration
- Support
- Capital Improvements
- Recreation Visitor
- Services
- Law Enforcement
- Activities





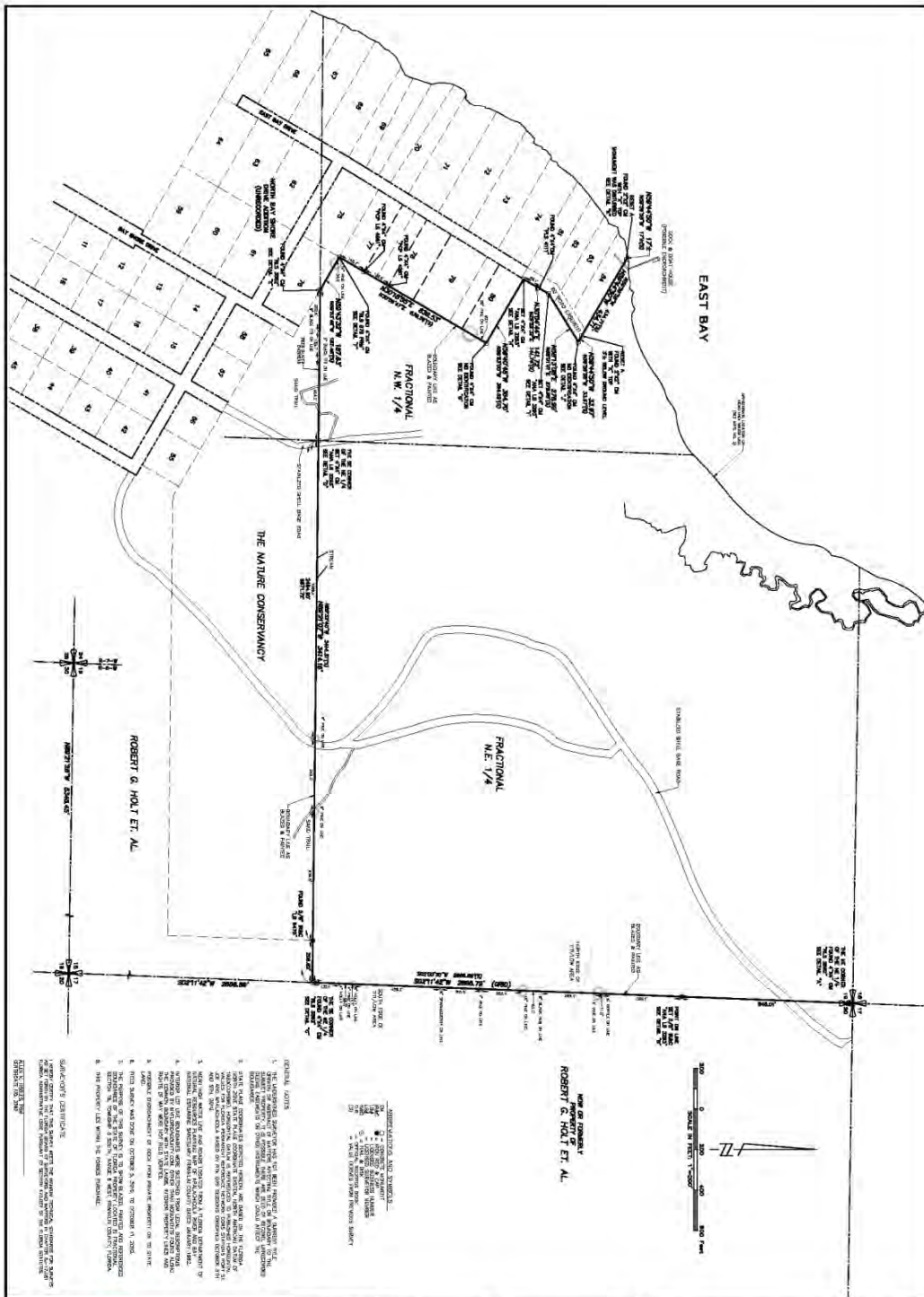












<p><b>NCG</b> NORRIS CONSULTING GROUP, INC. LAND SURVEYING &amp; ENGINEERING 1000 W. UNIVERSITY AVENUE, SUITE 100 GAINESVILLE, FLORIDA 32609 TEL: 352-336-1111 WWW.NCGSURVEYING.COM</p>	PROJECT NO. DATE DRAWN BY CHECKED BY APPROVED BY	CLIENT FLORIDA WILDLIFE COMMISSION	PROJECT MAGNOLIA BLUFF FRACTIONAL SECTION 19 T-8-S, R-6-W FRANKLIN COUNTY, FLORIDA	SHEET TITLE SPECIFIC PURPOSE SURVEY
	SHEET NO. 1 2	DATE PLOTTED: 11/11/2010 PLOT SCALE: 1" = 100' PLOT BY: [Name] CHECKED BY: [Name]		

**LEGEND**

(S) SURVEY POINT  
 (L) LOT CORNER  
 (C) CENTER POINT  
 (E) EASEMENT  
 (R) RIGHT-OF-WAY  
 (B) BOUNDARY  
 (D) DISTANCE  
 (A) AREA  
 (V) VOLUME  
 (W) WEIGHT  
 (M) MEASURE  
 (T) TIME  
 (F) FORCE  
 (G) GRAVITY  
 (P) PRESSURE  
 (H) HEIGHT  
 (L) LENGTH  
 (W) WIDTH  
 (D) DEPTH  
 (A) ANGLE  
 (C) CURVATURE  
 (R) RADIUS  
 (D) DIAMETER  
 (C) CIRCUMFERENCE  
 (A) AREA  
 (V) VOLUME  
 (W) WEIGHT  
 (M) MEASURE  
 (T) TIME  
 (F) FORCE  
 (G) GRAVITY  
 (P) PRESSURE  
 (H) HEIGHT  
 (L) LENGTH  
 (W) WIDTH  
 (D) DEPTH  
 (A) ANGLE  
 (C) CURVATURE  
 (R) RADIUS  
 (D) DIAMETER  
 (C) CIRCUMFERENCE

**NOTES**

1. THE SURVEYED AREA IS THE TOTAL AREA OF THE SECTION AS SHOWN ON THE ORIGINAL PLAT OF THE SECTION AND IS NOT TO BE DIVIDED INTO SMALLER AREAS.
2. THE SURVEYED AREA IS THE TOTAL AREA OF THE SECTION AS SHOWN ON THE ORIGINAL PLAT OF THE SECTION AND IS NOT TO BE DIVIDED INTO SMALLER AREAS.
3. THE SURVEYED AREA IS THE TOTAL AREA OF THE SECTION AS SHOWN ON THE ORIGINAL PLAT OF THE SECTION AND IS NOT TO BE DIVIDED INTO SMALLER AREAS.
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# FRANKLIN COUNTY



REPLY TO

BOARD OF COUNTY COMMISSIONERS  
33 MARKET STREET, SUITE 203  
APALACHICOLA, FL 32320  
(850) 653-8861, EXT. 100  
FAX (850) 653-4795

REPLY TO

PLANNING & BUILDING DEPT.  
34 FORBES STREET  
APALACHICOLA, FL 32320  
(850) 653-9783  
FAX (850) 653-9799

May 29, 2013

Mr. Lee Edmiston, Director  
ANERR  
Eastpoint, Fl. 32328

Dear Lee:

Please be advised that Franklin County has not and does not engage in aerial spraying for any arthropods, including mosquitoes, in any area of the county. The Board of County Commissioners recognizes the risk aerial spraying poses to the health and productivity of the Apalachicola Bay.

If the occasion ever arises where aerial spraying is a necessity for the protection of public health the Board will certainly contact the Reserve before any spraying is done. The county has traditionally not participated in aerial spraying after hurricanes, but from time to time, depending on the storm event and the amount of rain, both the state and the FEMA have asked the county if it wants to participate in some jointly funded programs. If this situation arises the Reserve will be contacted regarding any spraying of land managed by the Reserve, and a plan mutually agreeable to both parties will be put in place before any spraying occurs.

If I can be of further assistance please let me know.

Sincerely,

Alan C. Pierce, Director  
Administrative Services

Cc: Dewitt Polous, Mosquito Control

PINKI JACKEL  
District One

CHERYL SANDERS  
District Two

NOAH LOCKLEY, JR.  
District Three

JOSEPH PARRISH  
District Four

WILLIAM MASSEY  
District Five



## Apalachicola National Estuarine Research Reserve Management Plan

**Apalachicola National Estuarine Research Reserve**  
108 Island Drive • Eastpoint, FL 32328  
850.670.4783 • [www.dep.state.fl.us/coastal/sites/apalachicola](http://www.dep.state.fl.us/coastal/sites/apalachicola)



**Florida Department of Environmental Protection**  
Coastal and Aquatic Managed Areas  
3900 Commonwealth Blvd., MS #235  
Tallahassee, FL 32399 • [FloridaCoasts.org](http://FloridaCoasts.org)