Amelia Island State Park

Big Talbot Island State Park

Little Talbot Island State Park

George Crady Bridge Fishing Pier State Park

Unit Management Plan

APPROVED

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL PROTECTION

Division of Recreation and Parks

June 13, 2008

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INTRODUCTION

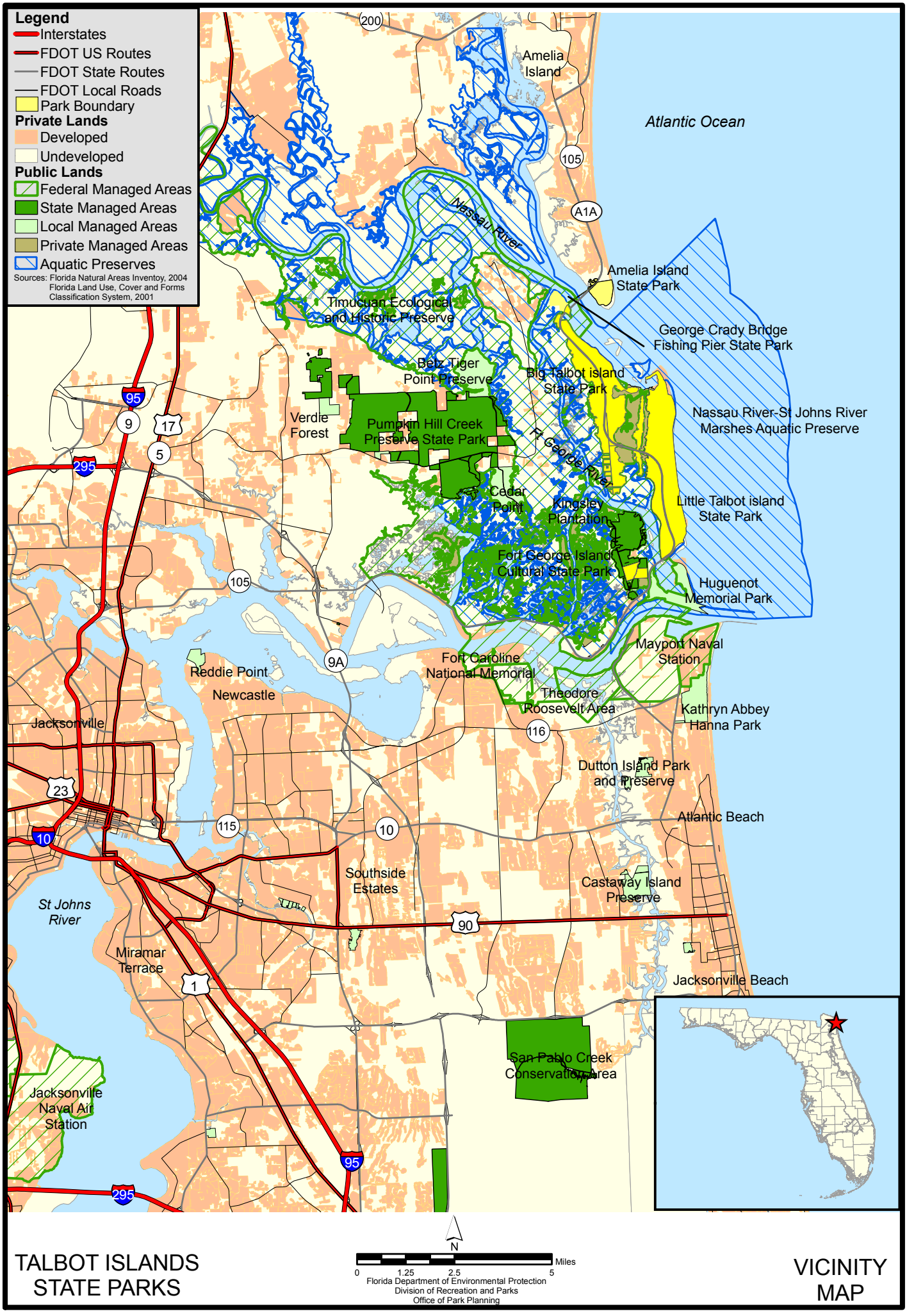
Amelia Island State Park is located in Nassau County. George Crady Bridge Fishing Pier State Park is located in Nassau County and Duval County. Big Talbot Island State Park and Little Talbot Island State Park are located in Duval County. The Rollins Bird and Plant Sanctuary, located on Fort George Island, is considered part of Little Talbot Island and is located in Duval County (see Vicinity Map). These four parks are collectively referred to as Talbot Islands State Parks. Access to the parks is from Highway A1A, also known as Heckscher Drive. Access to the Rollins Bird and Plant Sanctuary is from Fort George Road and Palmetto Avenue via Highway A1A (see Reference Map). The Mayport Ferry provides access to the area from the south side of the St. Johns River. The vicinity map also reflects significant land and water resources existing near the parks.

Currently Amelia Island State Park contains approximately 230.48 acres. George Crady Bridge Fishing Pier State Park contains 1.53 acres. Big Talbot Island State Park contains 1,708.34 acres. Little Talbot Island State Park contains 1,915.83 acres.

At Talbot Islands State Parks, public outdoor recreation and conservation is the designated single use of the properties. There are no legislative or executive directives that constrain the use of these properties. The acquisition of Amelia Island State Park began in 1983, under the Save Our Coast program. George Crady Bridge Fishing Pier was leased to the Division of Recreation and Parks for management from the Florida Department of Transportation. Acquisition of Big Talbot Island State Park began in 1982, under the LATF program, with subsequent acquisitions funded by P2000. Little Talbot Island State Park was acquired in 1950 from Rollins College, and in 1951 by donation, from the Florida Department of Transportation (see Addendum 1).

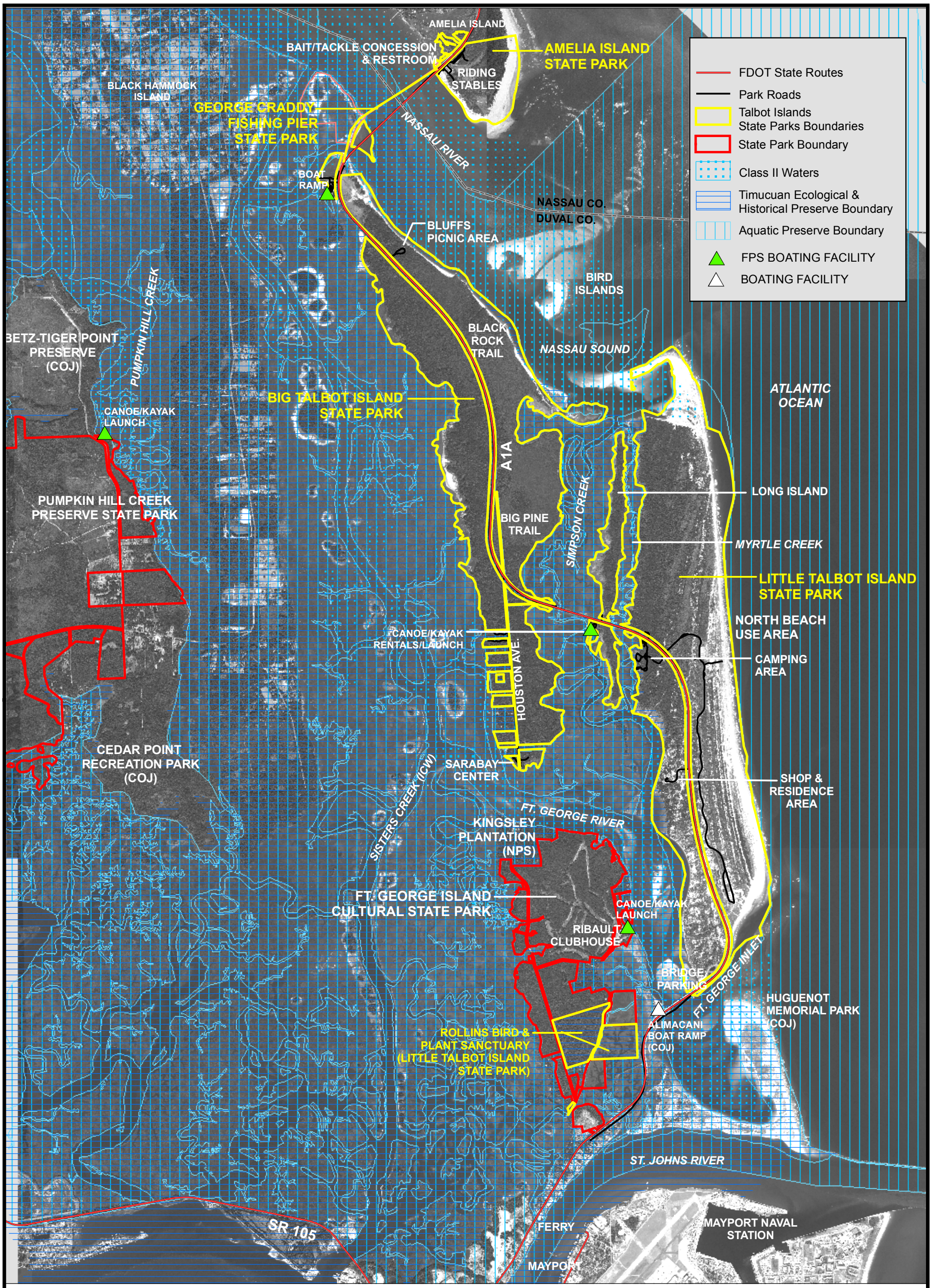
PURPOSE AND SCOPE OF THE PLAN

This plan serves as the basic statement of policy and direction for the management of Talbot Islands State Parks as a unit of Florida's state park system. It identifies the objectives, criteria and standards that guide each aspect of park administration, and sets forth the specific measures that will be implemented to meet management objectives. The plan is intended to meet the requirements of Sections 253.034 and 259.032, Florida Statutes, Chapter 18-2, Florida Administrative Code, and intended to be consistent with the State Lands Management Plan. With approval, this management plan will replace the October 17, 2000 approved plans. All development and resource alteration encompassed in this plan is subject to the granting of appropriate permits; easements, licenses, and other required legal instruments. Approval of the management plan does not constitute an exemption from complying with the appropriate local, state or federal agencies. This plan is also intended to meet the requirements for beach and shore preservation, as defined in Chapter 161, Florida Statutes and Chapters 62B-33, 62B-36 and 62R-49, Florida Administrative Code.



TALBOT ISLANDS STATE PARKS

VICINITY MAP



TALBOT ISLANDS STATE PARKS

Department of Environmental Protection
Division of Recreation and Parks
Office of Park Planning

REFERENCE MAP

The plan consists of two interrelated components. Each component corresponds to a particular aspect of the administration of the park. The resource management component provides a detailed inventory and assessment of the natural and cultural resources of the park. Resource management problems and needs are identified, and specific management objectives are established for each resource type. This component provides guidance on the application of such measures as prescribed burning, exotic species removal, and restoration of natural conditions.

The land use component is the recreational resource allocation plan for the unit. Based on considerations such as access, population, and adjacent land uses, an optimum allocation of the physical space of the park is made, locating use areas and proposing types of facilities and volume of use to be provided.

In the development of this plan, the potential of the park to accommodate secondary management purposes ("multiple uses") was analyzed. These secondary purposes were considered within the context of the Division's statutory responsibilities and an analysis of the resource needs and values of the park. This analysis considered the parks natural and cultural resources, management needs, aesthetic values, visitation and visitor experiences. For these parks, it was determined that no secondary purposes could be accommodated in a manner that would not interfere with the primary purpose of resource-based outdoor recreation and conservation. Uses such as, water resource development projects, water supply projects, stormwater management projects, linear facilities and sustainable agriculture and forestry (other than those forest management activities specifically identified in this plan) are not consistent with this plan or the management purposes of these parks.

The potential for generating revenue to enhance management was also analyzed. Visitor fees and charges are the principal source of revenue generated by the park. It was determined that multiple-use management activities would not be appropriate as a means of generating revenues for land management. Instead, techniques such as entrance fees, concessions and similar measures will be employed on a case-by-case basis as a means of supplementing park management funding.

MANAGEMENT PROGRAM OVERVIEW

Management Authority and Responsibility

In accordance with Chapter 258, Florida Statutes, and Chapter 62D-2, Florida Administrative Code, the Division of Recreation and Parks (Division) is charged with the responsibility of developing and operating Florida's recreation and parks system. These are administered in accordance with the following policy:

> It shall be the policy of the Division of Recreation and Parks to promote the state park system for the use, enjoyment, and benefit of the people of Florida and visitors; to acquire typical portions of the original domain of the state which will be accessible to all

> of the people, and of such character as to emblemize the state's natural values; conserve these natural values for all time; administer the development, use and maintenance of these lands and render such public service in so doing, in such a manner as to enable the people of Florida and visitors to enjoy these values without depleting them; to contribute materially to the development of a strong mental, moral, and physical fiber in the people; to provide for perpetual preservation of historic sites and memorials of statewide significance and interpretation of their history to the people; to contribute to the tourist appeal of Florida.

The Trustees have also granted management authority of certain sovereign submerged lands to the Division under Management Agreement MA 68-086 (as amended January 19, 1988). The management area includes a 400-foot zone from the edge of mean high water where a park boundary borders sovereign submerged lands fronting beaches, bays, estuarine areas, rivers or streams. Where emergent wetland vegetation exists, the zone extends waterward 400 feet beyond the vegetation. The agreement is intended to provide additional protection to resources of the park and nearshore areas and to provide authority to manage activities that could adversely impact public recreational uses.

Many operating procedures are standard system wide and are set by policy. These procedures are outlined in the Division's Operations Manual (OM) that covers such areas as personnel management, uniforms and personal appearance, training, signs, communications, fiscal procedures, interpretation, concessions, camping regulations, resource management, law enforcement, protection, safety and maintenance.

In the management of Talbot Islands State Parks, a balance is sought between the goals of maintaining and enhancing natural conditions and providing various recreational opportunities. Natural resource management activities are aimed at management of natural systems. Development in the park is directed toward providing public access to and within the park, and to providing recreational facilities, in a reasonable balance, that are both convenient and safe. Program emphasis is on interpretation on the park's natural, aesthetic and educational attributes.

Park Goals and Objectives

The following park goals and objectives express the Division's long-term intent in managing the state park. At the beginning of the process to update this management plan, the Division reviewed the goals and objectives of the previous plan to determine if they remain meaningful and practical and should be included in the updated plan. This process ensures that the goals and objectives for the park remain relevant over time.

Estimates are developed for the funding and staff resources needed to implement the management plan based on these goals, objectives and priority management activities. Funding priorities for all state park management and development activities are reviewed each year as part of the Division's legislative budget process. The Division

prepares an annual legislative budget request based on the priorities established for the entire state park system. The Division also aggressively pursues a wide range of other funds and staffing resources, such as grants, volunteers and partnerships with agencies, local governments and the private sector, for supplementing normal legislative appropriations to address unmet needs. The ability of the Division to implement the specific goals, objectives and priority actions identified in this plan will be determined by the availability of funding resources for these purposes.

Natural and Cultural Resources

1. Monitor and protect designated species breeding or overwintering in, or migrating through, Amelia and the Talbot Islands.

- **A.** Continue to participate in the marine turtle index nesting beach program. Protect nesting marine turtles and hatchlings from human disturbance, light pollution and abnormal predation.
- **B.** Continue to post areas of beach in the parks suitable for shorebird nesting, and exclude public access to those areas during pre-nesting and nesting seasons.
- **C.** Continue to document all breeding sites for wading birds within the parks. Protect wading bird rookeries and roosts from human intrusion. Educate the public about the harm that human disturbance causes wildlife.
- **D.** Continue to participate in monitoring of Painted Buntings. Consider impacts of habitat disturbance with new park development. Educate park visitors about the threats and declining numbers of neotropical migrants.
- **E.** Develop a management agreement between the Trustees, FFWCC, DEP and other appropriate entities to establish each agency's responsibilities for managing shorebirds within Nassau Sound, east of the A1A Bridge. Pursue transfer of title of the City-owned portion of Big Bird Island to the Trustees or develop an alternative management agreement with the City of Jacksonville. Assist FFWCC in redesignating the Bird Islands CWA to include all the emergent shoals in Nassau Sound east of the A1A bridge. Monitor shorebird-nesting habitat on the Nassau Sound Shoals using GIS and physical monitoring data on an annual basis.
- **F.** Coordinate shorebird monitoring and protection efforts with other entities such as FFWCC, CAMA, COJ, NPS and private organizations managing lands and resources within the regional shorebird populations. Continue to monitor shorebird populations throughout the year on Amelia and the Talbot Islands. Continue to exclude dogs and cats from park beaches and dune areas to protect resting, nesting, and foraging shorebirds. Educate park visitors about the critical need of many shorebirds for less human disturbance.
- **G.** Evaluate the impacts on shorebirds created by recreational access and make recommendations to address any observed impacts.
- **H.** Work with FDOT to develop a landscape design along A1A at the south end of Little Talbot Island to discourage shorebirds from flying across traffic lanes.

2. Document impacts from increased recreational use of estuarine areas, and seek ways to reduce, eliminate or mitigate documented and predicted impacts.

A. In cooperation with the FFWCC and the Florida Park Patrol, consider designating idle speed zones in certain tidal creeks for resource protection and public safety.

B. To the extent possible, coordinate with other entities to identify and control impacts to the estuarine tidal marshes. Implement coordinated management strategies to enhance recreational access while reducing negative impacts. Discourage direct, unsupervised access to the marshes within the park's jurisdictional area along Highway A1A. Continue conservation of sensitive salt pans within the tidal marshes. Consider providing alternative public access that minimizes recreational disturbance. Utilize interpretive opportunities to educate the public on importance and sensitivity of the estuary.

C. Coordinate with the FDOT to reduce negative impacts from the A1A highway corridor to the estuary.

D. Continue cooperative efforts with the FFWCC, CAMA, COJ, NPS, Florida Park Patrol and other private organizations to reduce wildlife disturbances and conflicts between recreational user groups in estuarine tidal marshes and emergent shoals adjacent to State Park lands.

3. Continue to monitor coastal sediment transport processes and coordinate with other agencies in developing and implementing erosion control projects and sediment management plans.

A. Monitor regional sediment transport patterns and trends for impacts to park properties. Specific regional bounds should be considered between the St. Marys River and the St. Johns River jetty systems. Monitor any projects affecting littoral drift patterns in this region.

B. Continue to use GPS and aerial photography to monitor coastal erosion rates within Amelia and the Talbot Islands. Adopt reasonable measures to protect park facilities, sensitive natural areas and cultural resources within areas subject to erosion.

C. Continue to coordinate closely with the FDOT and the Army Corps of Engineers to monitor existing coastal armoring systems and provide technical review for proposed designs currently under consideration. Continue participation in the Army Corps of Engineers' Regional Sediment Management working group. Provide technical support and comments for future studies and/or demonstration projects to address sand movement and shoaling. Seek notification of and provide appropriate comments regarding future dredging, sand mining, spoil disposal, and beach renourishment projects that might affect the parks.

4. Survey, document, protect and interpret the cultural resources of Amelia and the Talbot Islands.

A. Pursue funding to conduct comprehensive cultural resource surveys of

Amelia, Big Talbot, Little Talbot and Long Islands.

B. Identify and document the cultural resources of the parks and synthesize a comprehensive overview of them. Record additional cultural resources when discovered.

C. Continue to protect the cultural resources of the parks from deterioration caused by natural or human forces, and implement periodic maintenance. Expand the already established cultural site visitation program, which includes documentation with fixed photo points, to include all known cultural sites. Develop a cyclical schedule for cultural site visitations based on conditions and maintenance needs of the sites. Expand the information gathering, filing and retrieval routines for cultural resources.

D. Determine the historic status and conduct additional condition assessments of the two buildings associated with the Rollins Bird and Plant Sanctuary on Fort George Island (the Sanctuary is technically part of Little Talbot Island State Park). Report findings to the Florida Master Site File.

E. Make a final determination whether the Fort George Shell Ring, located in the Rollins Sanctuary, is eligible for listing on the National Register of Historic Places. If so, prepare a proposal for listing.

F. Establish Talbot Islands State Parks Cultural Resources Management training program.

G. Pursue salvage archaeology projects for sites threatened by erosion. Sites currently threatened include DU16006, DU13262 and DU106.

H. Expand interpretation at Amelia and the Talbot Islands to include a more thorough treatment of the archaeological and historic resources of the region. Enhance the public's appreciation of cultural resources by developing innovative interpretive programs that are non-damaging to resources.

5. Evaluate impacts on surface water and groundwater systems. Develop and implement plans for restoration of natural hydrology.

A. Seek funding for basic studies on Amelia Island to document hydrologic impacts of roads and ditches and to determine if restoration of natural hydrology is feasible. Depending on results of the studies, obtain additional funds to develop conceptual design and implementation for hydrologic restoration in areas altered by ditches and impoundments.

B. Complete the already initiated, conceptual design study that will determine the feasibility of restoring natural drainage patterns on Big and Little Talbot Islands.

C. In coordination with the Northeast District of DEP and the SJRWMD, seek mitigation funds to complete conceptual designs for needed hydrological restoration projects on Amelia, Big Talbot and Little Talbot Islands.

D. Continue cooperating with SJRWMD and USGS in monitoring groundwater.

6. Monitor, protect and restore natural communities on Amelia Island and the Talbot Islands.

A. Protect the natural communities from disturbance and fragmentation.

Carefully assess the need for roads and trails. If roads or trails are identified as unnecessary close them, and restore them to a natural state.

B. Continue to seek effective methods for reducing erosion of dunes caused by human activities. Limit visitor access to dunes and restore degraded areas. Regularly monitor dunes for abnormal erosion and for signs of unauthorized visitor access. Preserve the quality of the beach and dune systems, while permitting recreational use, by continuing to restrict traffic in dune areas and interpreting dune sensitivity.

C. Develop comprehensive fire management plans for Amelia and the Talbot Islands. Within the plans, incorporate specific recommendations for the establishment of additional firebreaks, both hard and soft, which should allow burning at appropriate fire return intervals, while maintaining safety and ecological standards. Conduct additional prescribed burns as needed to maintain fire-dependent communities on the islands. Continue to cooperate with other agencies to achieve fire management objectives.

D. Develop and implement a system to monitor populations of listed plant species and plant species growing at the limits of their range. Regulate visitor use in sensitive areas that contain these species, to prevent disturbance.

E. Continue to document wildlife mortality along Highway A1A and park roads, adding to the large data set of road kill information that already exists for the islands. When appropriate, request mitigation from the FDOT. Mitigation measures could include reducing speed limits, installing wildlife-crossing signs and erecting wildlife barriers and passages.

F. Pursue funding, partnerships, and academic research projects to complete floral and faunal surveys

7. Continue efforts to purchase the remaining out parcels listed within the Big Talbot Island Optimum Boundary, which include the original CARL Project, to protect the integrity of the park, and the surrounding Talbot Islands ecosystem.

8. Continue partnering efforts to achieve common resource management goals.

Recreational Goals

1. Continue to plan and develop the vision of the much larger, seamless, park experience for our visitors. The Timucuan Trail State and National Parks is a result of the partnership between the City of Jacksonville, Department of Parks, Recreation and Entertainment (COJ); The National Park Service, Timucuan Ecological and Historic Preserve (NPS); and the Florida Division of Recreation and Parks (Division) also known as the Florida Park Service (FPS), Talbot Islands State Parks, including Pumpkin Hill Creek Preserve State Park and other FPS managed areas within the cooperative zone of Division, NPS, and COJ.

A. Continue to cooperatively plan for the visitor's seamless experience within the identified cooperative zone, in the MOU of 1989 (renewed 2004), now known as the Timucuan Trail State and National Parks.

B. Continue to plan, monitor and comment on development plans for properties

in the Timucuan Trail State and National Parks, to provide complimenting experiences and avoid duplicative or competing experiences.

C. Continue to provide new and increased visitor access to the Talbot Islands State Parks.

D. Pursue efforts to increase highway signage, accessibility and gateways into the Timucuan Trail State and National Parks, facilitating ease of finding, entering, and enjoying the seamless park experiences offered.

E. A priority gateway and joint visitor center should be located, planned and developed along Interstate 95.

F. Develop, plan, and facilitate the provision of appropriate overnight accommodations for park visitors seeking a variety of accommodations within the Timucuan Trail State and National Parks in order to provide multi-day visitor experiences.

G. Develop, plan, and exploit marketing, media and advertising opportunities to promote the Timucuan Trail State and National Parks.

2. Continue to use Visitor Service Providers (VSPs) to provide quality, resource-based recreational experiences in the Talbot Islands State Parks, and the Timucuan Trail State and National Parks where possible and where FTE allocations do not meet these needs.

A. Continue to select, train, monitor and support VSPs that provide resource-based recreation, insuring that the park visitors' experience is the highest quality.

B. Continue to explore and evaluate new opportunities for providing visitor services, through VSP contracts that introduce visitors to the extensive recreational and eco-heritage tourism opportunities offered in these parks.

3. Seek funding to expand recreational and interpretive opportunities through the improvement of programs and the development of new use areas and facilities, as outlined in this management plan.

A. Pursue funding to complete the paved multi-use trail through the Talbot Islands State Parks.

B. Develop park facilities to provide access to recreational resources that would support such activities as historic appreciation, nature appreciation, fishing, beach activities, kayaking, canoeing, hiking, bicycling, jogging, and inline skating.

4. Identify and protect significant viewsheds. Explore additional opportunities for experiencing scenic vistas of the natural and cultural landscapes.

5. Monitor and manage access points and visitor use patterns. Evaluate impacts to determine if use patterns require additional park enhancements or restrictions.

Park Administration/Operations

1. Provide safe, appropriate, quality, outdoor recreational opportunities for park visitors.

A. Design park facilities to more appropriately manage, channel and facilitate

visitor use of park property along the extensive uncontrolled boundaries of Highway A1A and bordering waterways and beaches.

B. Pursue adequate funding for renovation or replacement of aging and deteriorated park facilities in a timely manner.

C. Pursue funding to prepare for and recover from storm damage.

D. Pursue adequate operational funding to ensure that appropriate levels of corrective maintenance, visitor protection, resource management and visitor service are possible.

E. Pursue funding for upgrades to assure compliance with the Americans with Disabilities Act.

F. Conduct routine safety inspections of facilities and public areas and correct deficiencies as needed.

G. Conduct regular inspections of facilities for cleanliness and maintenance needs. Develop and implement a comprehensive routine maintenance plan for facilities that assures clean, comfortable accommodations, and reduces long-term facility maintenance costs.

H. Pursue funding for corrective maintenance of existing facilities.

I. Assure compliance with state and federal safety guidelines for: use and disposal of hazardous waste, blood-borne pathogens policy, hazardous communications plans, safety training and development of Park Protection Plans as required by the Florida Park Service Operations Manual.

2. Implement the Statement of Interpretation for interpretive activities at the parks.

A. Expand current Statement of Interpretation for Big and Little Talbot Islands to include Amelia Island.

B. Design park programs to present themes identified in the parks' Statement of Interpretation.

C. Design school field trip programs that meet Sunshine State Standards.

D. Provide interpretive displays at various locations throughout the parks to interpret the themes identified by the Statement of Interpretation.

E. Design new and adapt existing programs to be universally accessible where possible.

F. Train staff appropriately to assure their ability to provide impromptu and formal interpretation for park visitors.

G. Schedule and conduct special events and interpretive programs, both within the parks and off-site.

H. Design, standardize and enhance interpretive literature.

I. Coordinate with VSPs to enhance programming opportunities.

J. Develop and maintain relationships with media and tourism outlets to promote the park, and its interpretive and recreational opportunities.

3. Use the parks' unique and intact natural communities as a classroom and laboratory for environmental education.

A. Build partnerships with regional educational institutions to develop natural resource educational and research opportunities on Amelia and the Talbot

Islands.

B. Utilize environmental education as a means to build appreciation for the Florida Park Service Mission and develop support for the parks and for regional natural resources.

4. Take advantage of the parks' cultural, historical and archaeological resources as a classroom and laboratory for cultural history education.

A. Build partnerships with regional educational institutions to develop cultural resource educational and research opportunities on the islands.

B. Utilize cultural history education as a means to build appreciation for the Florida Park Service Mission and to develop support for the parks and for regional and national cultural history.

5. Promote Amelia and the Talbot Islands as a destination for eco-tourism groups and tours.

A. Develop park facilities and programs so that they may be utilized in eco-tourism programming.

B. Design interpretive and educational programs to accommodate eco-tour groups.

C. Develop park facilities to provide access to recreational resources that would support eco-tour group interests.

6. Monitor activities outside the parks that may impact lands within the parks, and maintain public awareness of park resource management needs.

A. Monitor land use changes and permitting activities within the greenlines of Amelia Island, Big Talbot Island and Little Talbot Island State Parks.

B. Monitor aquatic resources and report unauthorized waste dumping and pollution to appropriate governmental agencies.

C. Maintain an active public relations program to increase public awareness of and support for the parks' resource management objectives.

Management Coordination

The parks are managed in accordance with all applicable Florida Statutes and administrative rules. Agencies having a major or direct role in the management of the park are discussed in this plan.

The Department of Agriculture and Consumer Services, Division of Forestry (DOF), assists Division staff in the development of wildfire emergency plans and provides the authorization required for prescribed burning. The Florida Fish and Wildlife Conservation Commission (FFWCC), assists staff in the enforcement of state laws pertaining to wildlife, freshwater fish and other aquatic life existing within park boundaries. In addition, the FFWCC aids the Division with wildlife management programs, including the development and management of Watchable Wildlife programs. The Department of State, Division of Historical Resources (DHR) assists staff to assure protection of archaeological and historical sites. The Department of Environmental Protection (DEP), Office of Coastal and Aquatic Managed Areas

(CAMA) aids staff in aquatic preserves management programs. The DEP, Bureau of Beaches and Wetland Resources aids staff in planning and construction activities seaward of the Coastal Construction Line. In addition, the Bureau of Beaches and Wetland Resources aid the staff in the development of erosion control projects. Emphasis is placed on protection of existing resources as well as the promotion of compatible outdoor recreational uses.

Talbot Islands State Parks (Division), The Timucuan Ecological and Historic Preserve (NPS) and the City of Jacksonville (COJ) has parallel management concerns on their respective management areas in northern Jacksonville. Together they manage an astonishing array of recreational, interpretive and educational resources. The three managing agencies have executed a Memorandum of Agreement to reinforce and support mutual management goals for natural and cultural resource management and for the provision of public education and recreational opportunities in this region of Florida. This is a unique effort on the part of federal, state and local governments to provide physical and administrative linkages between the public lands of northern Duval County.

The following objectives are included in the Memorandum of Agreement between the three cooperative partners:

1. **Promotion.** The parties will agree upon a name, the Timucuan Trail State and National Parks, for the area identified as the cooperative zone and develop a marketing plan, which will maintain each agency's identity while promoting the combined properties to the public as one larger entity.
2. **Planning.** To the extent practicable, cooperative zone planning will be jointly produced and reviewed. Ongoing planning efforts will accommodate the participation of Division, COJ and NPS, together. Existing plans will serve as current direction, pending their revision or replacement. The agencies shall cooperatively review non-cooperative zone plans that affect cooperative zone interests.
3. **Coordination: Staff Liaison.** Division, COJ and NPS shall each designate a staff liaison for purposes of discussing and resolving coordination matters. Agency heads or their designees will resolve substantive issues, including issues not resolved at the liaison level.
4. **Operating Procedures.** Division, COJ and NPS, to ensure accomplishments of cooperative zone activities, may jointly develop operating procedures and standards.
5. **Resource Sharing.** To the extent practicable, Division, COJ and NPS, mutually agree to commit staff, equipment and facilities assigned to the cooperative zone for the common protection of all resources contained within the cooperative zone, as well as for the appropriate enjoyment and appreciation of the same by the public.

6. **Management Approach.** Division, COJ and NPS shall explore cooperative operations and efficiencies to promote the effective implementation of cooperative zone management.
7. **Work Plan.** Division, COJ and NPS will work cooperatively to prepare an annual work plan that identifies common projects. The work plan will contain specific goals, actions and target completion dates, to be incorporated into the goals and objectives of the responsible Division, COJ and NPS managers.

Public Participation

The Division provided an opportunity for public input by conducting a public workshop and an advisory group meeting. A public workshop was held on Tuesday, October 23, 2007. The purpose of this meeting was to present these management plans to the public. An Advisory Group meeting was held on Wednesday, October 24, 2007. The purpose of this meeting was to provide the Advisory Group members the opportunity to discuss the draft management plan.

Other Designations

Talbot Islands State Parks are not within an Area Of Critical State Concern as defined in section 380.05, Florida Statutes. Currently they are not under study for such designation. The parks are a component of the Florida Greenways and Trails System.

Portions of the Amelia Island and Little Talbot Island were designated as a Colonial Nesting Bird Site in 1981 and then as a Critical Wildlife Area in 1982 by the FFWCC. Portions of Big Talbot Island and all of Little Talbot Island are currently designated USFWS Critical Piping Plover Habitat. Big Talbot Island and Little Talbot Island are currently designated as Important Bird Areas (IBAs) by the National Audubon Society. Amelia Island, Big Talbot Island and Little Talbot Island contain sites along the Great Florida Birding Trail designated by FFWCC. Waters offshore Talbot Islands State Parks are designated Critical Habitat Area for the Northern Right Whale by USFWS.

All waters within the units have been designated as Outstanding Florida Waters, pursuant to Chapter 62-302 Florida Administrative Code. Surface waters in these units are also classified as Class II or III waters by DEP. These units are adjacent to the Nassau River - St. Johns River Marshes Aquatic Preserve as designated under the Florida Aquatic Preserve Act of 1975 (section 258.35, Florida Statutes).

RESOURCE MANAGEMENT COMPONENT

INTRODUCTION

The Division of Recreation and Parks has implemented resource management programs for preserving for all time the representative examples of natural and cultural resources of statewide significance under its administration. This component of the unit plan describes the natural and cultural resources of the park and identifies the methods that will be used to manage them. The stated management measures in this plan are consistent with the Department's overall mission in ecosystem management. Cited references are contained in Addendum 2.

The Division's philosophy of resource management is natural systems management. Primary emphasis is on restoring and maintaining, to the degree practicable, the natural processes that shape the structure, function and species composition of Florida's diverse natural communities as they occurred in the original domain. Single species management may be implemented when the recovery or persistence of a species is problematic provided it is compatible with natural systems management.

The management goal of cultural resources is to preserve sites and objects that represent all of Florida's cultural periods as well as significant historic events or persons. This goal may entail active measures to stabilize, reconstruct or restore resources, or to rehabilitate them for appropriate public use.

Because park units are often components of larger ecosystems, their proper management is often affected by conditions and occurrences beyond park boundaries. Ecosystem management is implemented through a resource management evaluation program (to assess resource conditions, evaluate management activities, and refine management actions), review of local comprehensive plans, and review of permit applications for park/ecosystem impacts.

RESOURCE DESCRIPTION AND ASSESSMENT

Natural Resources

Topography

Amelia and the Talbot Islands are in the coastal lowlands physiographic zone, specifically in the Atlantic Coastal Lowlands, Atlantic Coastal Ridge, Lagoons and Barrier Island Chain (Puri and Vernon 1959). The islands are at the southern end of a long string of barrier islands that extends from the Santee River in South Carolina to the St. John's River in Florida. These are "Sea Islands", formed through submergence of the mainland and the subsequent accumulation of younger unconsolidated sediments along the barrier beach (Godfrey 1976). Sea Islands characteristically are short, curved barrier islands, separated from each other by river entrances or sounds and from the

mainland by well-developed marshes or estuaries (Raichle et al. 1997).

As with all barrier islands, Amelia and the Talbot Islands consist of parallel dune ridges and swales covered with predictable coastal vegetation. Ponds and marshes have developed in many of the swales that lie among the dune ridges. These features comprise the primary topographical relief of the islands. The elevations of the primary dunes on Amelia Island typically range from 12 to 20 feet; however the primary dunes in the southern portion of the island may exceed 35 feet in elevation. Secondary dunes on Amelia Island reach elevations of 65 feet. Topographic elevations on Big Talbot Island range from sea level at the beach to 20 feet at "The Bluffs" on the northeastern side of the island, and 20 feet at "Half Moon Bluff" on the central-eastern side. The highest elevations on Little Talbot Island reach 40 feet in the sand dunes at the north end of the island. The maximum elevation on Long Island is 30 feet at the north end.

The natural topography of Amelia and the Talbot Islands has been altered significantly over time by the construction of a major roadway and associated drainage features, construction of several mosquito control ditches, and perhaps most notably by coastal erosion. The Florida Department of Transportation (FDOT) altered the topography of the islands during construction of A1A, the highway that bisects the islands. Construction activities included excavation of roadside swales and associated drainage ditches, raising of some sections of roadbed, and creation of soil abutments for bridges across tidal creeks.

In addition to the construction of Highway A1A, construction of mosquito control ditches has also altered the natural topography and surface drainage of the islands. Between 1953 and 1960, ditches were constructed throughout the area in an effort to eradicate mosquito larvae which developed in the low, wet swale areas between the dunes. These ditches connected the swales and drained to adjacent estuarine tidal marsh areas. The leveling of dunes to fill low areas and the piling of spoil from the ditches combined to alter natural elevations throughout the dune systems. During ditch construction, heavy machinery damaged plant life adjacent to and along the routes of the ditches. Impacts to natural communities along the routes of the ditches are still evident throughout the parks.

One very old ditch located on Big Talbot Island, apparently dating from the 1800s, runs west from Half Moon Bluff. Appropriately named "Old Ditch" on early survey maps, this ditch is considered an historic feature of the island. Its historic significance must be weighed against any negative impacts the ditch may have on the island's natural hydrology.

Perhaps the most dramatic topographic changes apparent on Talbot Islands State Parks are the result of coastal erosion and accretion. The shoreline from mid-Georgia south to Little Talbot Island, Florida has changed significantly in position and volume over the

past 150 years, primarily as a result of the building of jetties at the mouths of the St. Marys River and St. Johns River in the late 1800s. While the jetties themselves were localized, they caused significant changes in sand erosion and accretion on islands both to the south and the north. Ongoing regional beach renourishment projects, which place additional sand in littoral drift and shoreline armoring, complicate the already dynamic erosion and accretion patterns of the barrier islands.

An ongoing beach erosion problem exists along much of Amelia Island's Atlantic shoreline. This erosion has threatened private and public upland development and has caused FDEP to classify several sections of the park as "severe" and "critical" erosion sites. The southernmost 20,000 feet of Amelia Island, which includes the park, have been erosional over the entire period of record with the most significant erosion occurring immediately after jetty construction. Over the period 1857 - 1924, the island's southern tip receded approximately 2,200 ft. (Raichle et al. 1997).

Until 1985, Nassau Sound to the north of Big Talbot Island was one of the last two unaltered, natural inlets on the eastern coast of Florida. Subsequent sediment removal from the western side of the Nassau Sound Bridge between Amelia Island and Sawpit Island at the junction of the Amelia and Nassau Rivers has changed that situation. According to the U. S. Army Corps of Engineers, the south end of Amelia Island served as the original deposition site for the sediments. Trucks subsequently hauled the dredged materials to the middle shoreline of Amelia Island to correct beach erosion problems. This beach nourishment appears to have placed tons of sand in littoral drift. Substantial changes in the shoals offshore of Big Talbot Island have occurred since that project began. The northward movement of Nassau Sound and the southward migration of Bird Island have resulted in the fusion of the southernmost Bird Island with Little Talbot Island, as predicted by Raichle (1993).

In 1994, because existing upland development was threatened by erosion, local interests arranged a 2.6 million cubic yard beach fill along 18,000 feet of the southern Amelia Island shoreline. This project extended the mean high water line as much as 350 feet seaward of the pre-project location. In response to significant erosional stresses at the southern end of the renourishment area, a temporary, terminal groin field was constructed in 1995 to limit losses of fill material to Nassau Sound. This groin field directly impacted the northern portion of the park where two of the groins were located. Subsequent beach renourishment along the southern part of Amelia Island was conducted in 1997; some of the beach fill material was deposited past the groin field well into the park. The temporary groinfield eventually failed, and in 2004, a permanent terminal groin structure and offshore breakwaters were constructed at the south tip of Amelia Island.

Big and Little Talbot Islands are also subject to beach erosion, although the scouring of the high escarpment at "the Bluffs" on Big Talbot is primarily due to the natural process

of island migration. Outside perturbations that disrupt the natural littoral drift of sand may influence the rate of erosion. The northeast shoreline of Big Talbot Island is considered a naturally receding shoreline. The dramatic effects of beach recession on the adjacent coastal strand and maritime hammock on Big Talbot Island, and the retreat of the southern tip of Little Talbot Island, are of great interpretive value.

Between 1871 and 1933, the shoreline of Little Talbot Island expanded three miles southward and 2,200 feet seaward. This accretion coincided with the construction of the jetties at the mouth of the St. Johns River, which began in 1881. Since 1938, the southern end of Little Talbot Island has been retreating due to the capping of the St. Johns River north jetty in 1934. The southern tip of the island has receded over 4000 feet since that time (Raichle 1993).

The sand spit on the northeastern tip of Little Talbot Island has been accreting, creating a large area of sand flats and intertidal salt marsh. Between 1974 and 1990 the northern end of the island expanded 1,000 feet to the north. Much of the sand accretion was probably attributable to erosion along the mile of shoreline just south of the spit on Little Talbot Island, which has been steadily receding during the same period of time (Raichle 1993). More recent sand accumulation at the northeastern tip of the island is probably the result of southward drift of the Bird Island shoals. The northwestern tip of Little Talbot Island is eroding, producing truncated dune ridges in this area, lowering dune elevations, and impacting adjacent maritime hammock.

The middle section of Little Talbot Island consists of north-south oriented dune ridges with distinct interdunal swales or low areas between them. The shoreline in this section of the island has been accreting consistently, expanding over 2,600 feet seaward between 1871 and 1990. The southern part of Little Talbot Island also contains multiple dune ridges, which are arc-shaped on the western side of the island. Here, although the southernmost shoreline has been receding landward since 1933 (Raichle 1993), some of the arc-shaped ridges remain. The northward migration of the Fort George Inlet and the resultant scouring action at the southern end of the island have truncated many of these beach ridges, however. The dramatic recession of the southern end of the island has also caused loss of park facilities there, including the fishing pier, associated parking lot, and restroom drain field. The Division has relocated the elevated restroom to the Nassau Sound Fishing Bridge. The erosive force of the migrating inlet continues to threaten the southern end of Little Talbot Island; however the recent, slightly southward, natural relocation of the primary inlet has alleviated the situation somewhat.

Geology

Amelia Island was formed during the Pleistocene and more recent Holocene Ages as a result of two major fluctuations in sea level. Details about the formation of this "Sea Island" type of barrier island are provided by Henry in his discussion of the geologic history of Amelia Island (Henry 1971). Research has not satisfactorily defined the

geology of the Talbot Islands; however an interpretation of Talbot Island geology is possible through extrapolating from the Henry's (1971) discussion of Amelia Island.

Amelia and the Talbot Islands are composed of several geologic deposits; from youngest to oldest these include the Holocene and Pleistocene sediments, the Hawthorn Group, and the Ocala Group. Pleistocene and Recent deposits of soil, muck, sand, shell and clay extend from the surface to depths of approximately 150 feet. Holocene sediments, dating from 12,000 B.P., are primarily composed of unsorted sands with silt and shell layers. The younger portions of Amelia and Little Talbot Islands consist largely of modern Holocene sediments (White 1970).

Underlying the Holocene sediments, the core of each island consists of Pleistocene deposits, which are primarily composed of fine sands with little shell material and distinct soil profiles (Henry 1971). Successive alternation of sea levels occurred during the later part of the Pleistocene (dating from approximately 50,000 B.P.) as the glaciers were alternately freezing and melting. During this period, the islands were apparently exposed to weathering and erosion. Long Island may once have been a part of Big Talbot Island and become distinct over time as marshland and creeks evolved in lowlands between them. Distinct soil profiles developed in response to erosional processes. The numerous spodic layers in the bluffs of Big Talbot Island reveal the many alternating changes in water table levels over geologic time.

Beneath the Holocene and Pleistocene sediments lies the Hawthorn Group of middle Miocene age, composed primarily of silty clays and limestones, 260 to 490 feet thick. Except near the base of the formation, beds of sand and clay dominate the Hawthorn Group. Hard beds of sand and carbonate occur at the base. Underlying the Hawthorn Group is the Ocala Group, consisting of relatively pure limestone of Eocene age (Watts 1991).

The unique juxtaposition of natural communities in Amelia and the Talbot Islands emphasizes natural island migration and the process of shoreline "retreat" (Godfrey 1976) in this area. The high primary dunes on Amelia Island are currently migrating westward into the deep trough that lies immediately landward. The distinct temporal origins of the island are revealed here as the white sands of the more recently deposited beaches and dunes merge with the older deposits found in the trough's marshes and uplands. On Big Talbot Island the tall oak hammock which now occupies the bluffs above the beach would normally occur in more protected, back barrier areas. Such shoreline retreat is a natural event involving erosion of shorefront facies caused by sea level rise, and resulting in the exposure of spodosol deposits on the beach. The bluffs at Big Talbot Island State Park and the eroding dunes on Amelia and Little Talbot Islands State Parks are unique, protected examples of the geologic processes of erosion and accretion that are critical in the formation of sea islands.

Soils

Five soil types occur within Amelia Island State Park, and fifteen soil types occur within Big and Little Talbot Islands State Parks (see Soils Map). While some of the soil types are common to Amelia and the Talbot Islands, they may be named and numerically coded differently by their respective county soil surveys. See Addendum 3 for a complete listing and detailed descriptions of the soils identified in each park. Sandy, well-drained soils occur along the beaches and in the rolling upland ridges. Poorly drained, mucky, organic, sulfur-smelling, lowland soils occur in the estuarine marshes. The soils inland of the beaches tend to be distributed in elongated, well drained, rolling dune ridges or in more poorly drained swales paralleling the ridges (Watts 1991).

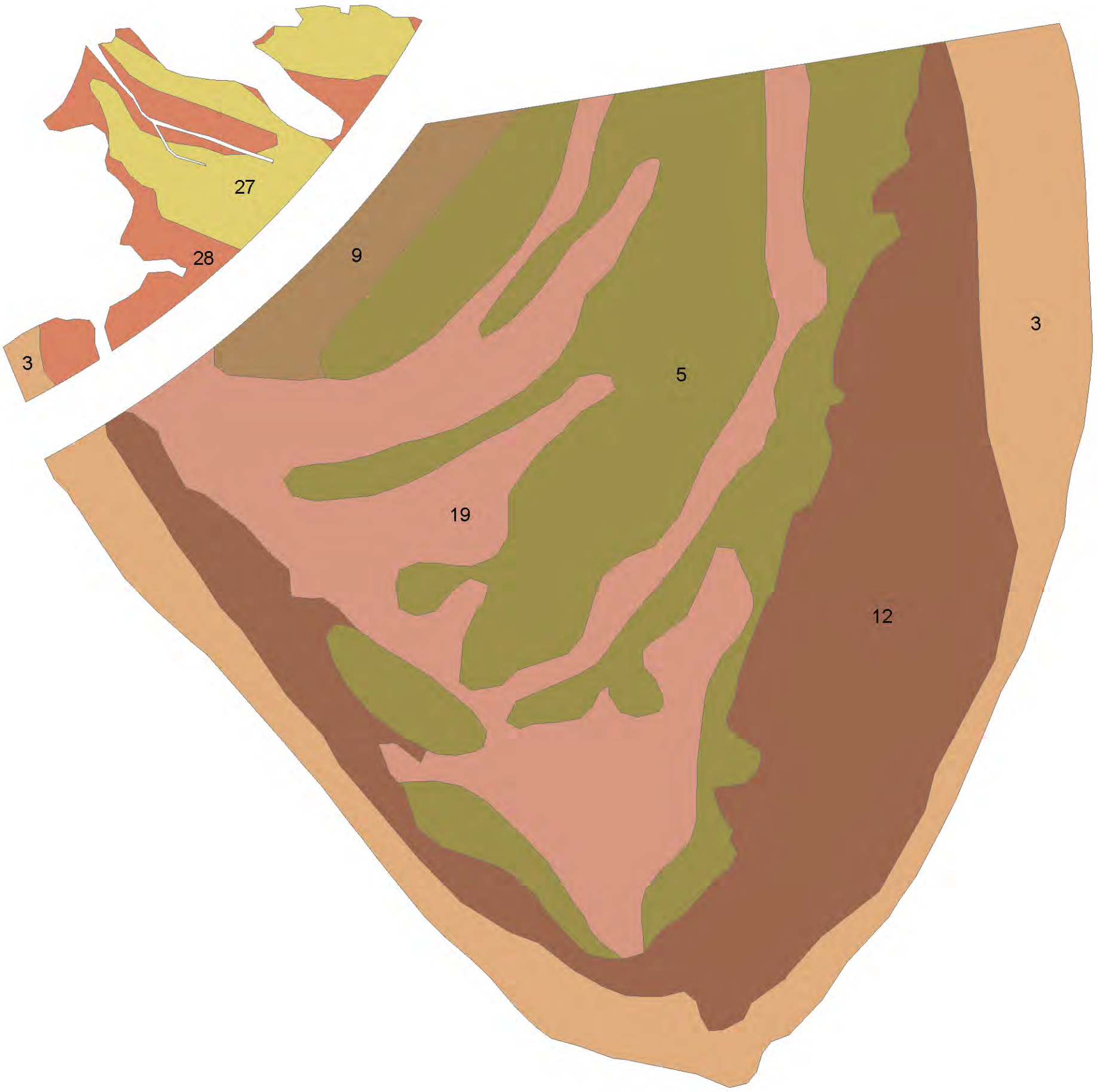
Newhan-Corolla soils, which are excessively drained to somewhat poorly drained, occur on the narrow dune-like ridges that rise impressively from the beaches at Amelia Island State Park. Fingers of Fripp fine sand, an excessively drained soil, and the poorly drained Leon fine sand, the only spodosol (soil with a hardpan) in the park, add to the diversity of soils in this area.

Spodosols account for 90 percent of all Big Talbot Island soils. This soil family is the most common in the state, identified by a hardpan or red spodic layer. The hardpan is composed of organic matter, iron, and sometimes aluminum. Layers of the spodic hardpan are visible in long horizontal stripes in the eroded bluffs at Big Talbot Island.

Although Spodosols are very common in Florida, the particular suborder of the soil series Cornelia found on Big Talbot Island is a spodosol with a thick hard pan, and is one of the rarer soils in the United States. These particular soils commonly occur in areas dominated by scrub oaks, and characteristically have a very thick accumulation of organic carbon in the spodic layer. The "Black Rocks" on the east shoreline of Big Talbot Island are undoubtedly remnants of spodic horizons from an earlier age and are of unique geologic importance. Mount Cornelia, consisting of dome-shaped knolls on Fort George Island, is also composed of the Cornelia soil series. Most of these soil types formed in the late Pleistocene or Holocene.

On Little Talbot Island, the upland soils are excessively drained sands, with no diagnostic horizons. The dark red, spodic layer found in the Cornelia soil series of Fort George and Big Talbot Islands does not occur on Little Talbot Island. The north end of Little Talbot Island has soils of brown fine sand that contain bands of heavy minerals, mostly rutile and ilmenite. Shell and rock fragments are common.

Soil erosion within Amelia and the Talbot Islands is associated with either erosion of the coastal margins of the islands or destabilization of older dune ridges within the interiors of the islands. Erosional forces acting on the inlets and coastlines of the islands are difficult to mitigate, and in fact may serve a purpose in illustrating the pitfalls of



LEGEND

- 3 - Beaches
- 5 - Fripp fine sand, rolling
- 9 - Leon fine sand
- 12 - Newhan-Corolla rarely flooded, fine sands, rolling
- 19 - Leon fine sand, tidal
- 27 - Ridgewood fine sand, 0 to 5 percent slopes
- 28 - Tisonia mucky-peat, frequently flooded

AMELIA ISLAND
STATE PARK

N

0 150 300 600 Feet

Florida Department of Environmental Protection
Division of Recreation and Parks
Office of Park Planning

SOILS
MAP

LEGEND

- 2-Albany fine sand, 0 to 5 percent slopes
- 7-Arents, nearly level
- 10-Beaches, very frequently flooded
- 19-Cornelia fine sand, 0 to 5 percent slopes
- 22-Evergreen-Wesconnett complex, depressional, 0 to 2 percent slopes
- 23-Fripp-Corolla, rarely flooded, complex, gently undulating to hilly
- 24-Hurricane and Ridgewood soils, 0 to 5 percent slopes
- 29-Kureb fine sand, 2 to 8 percent slopes
- 32-Leon fine sand, 0 to 2 percent slopes
- 33-Leon fine sand, 0 to 2 percent slopes,very frequently flooded
- 35-Lynn Haven fine sand, 0 to 2 percent slopes
- 36-Mandarin fine sand, 0 to 2 percent slopes
- 49-Pamlico muck, depressional, 0 to 1 percent slopes
- 68-Tisonia mucky peat, 0 to 1 percent slopes, very frequently flooded
- Water

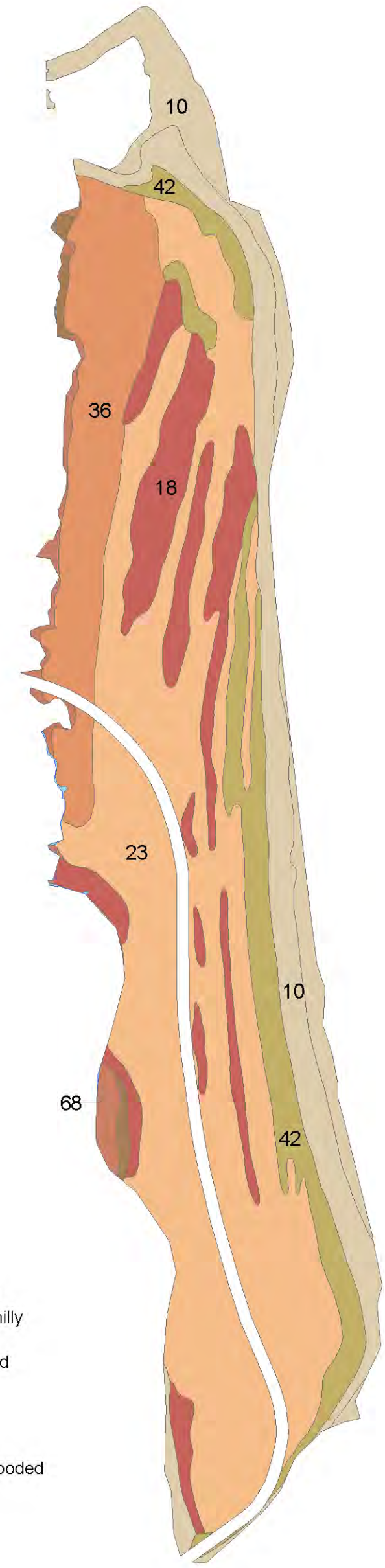
N

0 625 1,250 2,500 Feet

Florida Department of Environmental Protection
Division of Recreation and Parks
Office of Park Planning

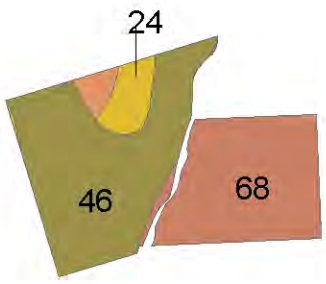
BIG TALBOT ISLAND STATE PARK

SOILS MAP



LEGEND

- 7-Arents, nearly level
- 10-Beaches, very frequently flooded
- 18-Corolla fine sand, gently undulating to rolling, rarely flooded
- 23-Fripp-Corolla, rarely flooded, complex, gently undulating to hilly
- 24-Hurricane and Ridgewood soils, 0 to 5 percent slopes
- 33-Leon fine sand, 0 to 2 percent slopes, very frequently flooded
- 36-Mandarin fine sand, 0 to 2 percent slopes
- 42-Newhan-Corolla, rarely flooded, complex, gently undulating to hilly, 2 to 20 percent slopes
- 46-Ortega fine sand, 0 to 5 percent slopes
- 68-Tisonia mucky peat, 0 to 1 percent slopes, very frequently flooded
- Water



N

0 750 1,500 3,000 Feet

Florida Department of Environmental Protection
Division of Recreation and Parks
Office of Park Planning

LITTLE TALBOT ISLAND
STATE PARK

SOILS MAP

placing structures on barrier islands. Staff often resort to temporary measures, i.e. fabric mats or sandbags, to slow the erosion in areas such as the stairway located at the "Bluffs" on Big Talbot Island. Erosion of stabilized dunes within the interior of the islands is often a result of foot traffic trampling the vegetation. Once an area destabilizes, gravity and wind combine to create blowouts or slumping of the dune slopes. Foot traffic is restricted in these sensitive areas. Pedestrian and equestrian trails in the coastal zone are monitored periodically to check for significant impacts on resources. Management activities will follow generally accepted best management practices

Hydrology

Amelia, Big Talbot and Little Talbot Islands State Parks are located within the Nassau River Basin, with the exception of the Rollins Bird and Plant Sanctuary (located on Fort George Island), which drains to the St. Johns River. The Nassau River is a relatively small river that drains 430 square miles of predominantly forest and wetlands. The basin encompasses 54.8 river miles and about 10 square miles of estuary, including estuarine tidal marsh associated with the Nassau River, South Amelia River, Pumpkin Hill Creek, and Sawpit Creek, all of which converge just west of Nassau Sound. In the downstream reaches of the river, flow reverses twice daily because of ocean tides.

Amelia Island State Park is bordered by the Atlantic Ocean on the east, Nassau Sound and Big Talbot Island to the south, South Amelia River/Intracoastal Waterway on the west, and Walker Creek and associated marshes on the northwest. The Amelia River extends along the west side of Amelia Island for the full length of the island, connecting with the St. Marys Entrance to the north and with the Nassau River to the south. Numerous small waterways feed this river, including Walker Creek in the northwestern portion of the park.

Nassau Sound bounds the Talbot Islands on the north, while the Atlantic Ocean lies to the east and Fort George Inlet to the south. West of the islands lay the tidal marshes associated with the Intracoastal Waterway. The named tidal creeks in this area include Sawpit Creek, Mud River, and the Fort George River. Simpson and Myrtle Creeks lie to the west and east, respectively, of Long Island, which separates Big and Little Talbot Islands.

All waters surrounding Amelia, Big Talbot and Little Talbot Island State Parks are classified as Class II, pursuant to Chapter 62-302.400, Florida Statutes. This means that they are suitable for propagation and harvesting of shellfish, although shellfish harvesting is locally restricted at present due to problems with water quality. Open water and salt marsh areas adjacent to the Talbot Island parks are part of the Nassau River – St. Johns River Aquatic Preserve. The State manages this preserve to maintain essentially natural conditions and to provide recreational opportunities. All waters within the preserve are designated Outstanding Florida Waters (OFW). The intent of

this designation is to preserve the existing water quality. The boundaries of the Timucuan Ecological and Historic Preserve, managed by the National Park Service, overlap with and intersect the aquatic preserve boundaries. The Timucuan Preserve boundaries incorporate part of Little Talbot Island, all of Big Talbot Island, and all of Fort George Island, including the Rollins Sanctuary.

Until 1985, Nassau Sound, which borders the southern portion of Amelia Island, was one of the last two remaining natural inlets on the east coast of Florida in that it had not yet been altered by humans. Sediments have since been removed from the western side of Nassau Sound near the bridge between Amelia and Sawpit Islands, at the junction of the Amelia and Nassau Rivers. The U. S. Army Corps of Engineers has stated that dredged material was temporarily placed at the end of Amelia Island and was subsequently moved by truck to mid-Amelia Island to patch erosional areas. The main channel of the Amelia River has also been dredged to accommodate the Intracoastal Waterway.

The hydraulic and sediment dynamics of the Nassau Sound Inlet drive continual changes in adjacent landforms. These changes include northward accretion of Little Talbot Island and the northward movement of the south end of Amelia Island (Dean and O'Brien 1987). A series of shoals known as the Bird Islands occur within the inlet, and vary in size and location depending on sand movements within the inlet. Kojima and Hunt (1980) estimate that sand transport southward along the Atlantic Ocean beach at Little Talbot occurs at a rate of 1.48x105 cubic yards per year.

The Fort George Inlet bounds Little Talbot Island on the south. This inlet has been stabilized through continued, haphazard deposition of riprap along the southernmost shore of Little Talbot Island. The tidal plume of the Fort George River impacts the accreting sands on Wards Bank and is deflected northward along the southern edge of Little Talbot Island (Kojima and Hunt 1980). The scouring effect of the reflected current along the southern shore of the island and the impact of shore-line hardening in this area (i.e. the cement riprap) combine to exacerbate the shoreline erosion here. The Florida Department of Transportation (FDOT) installed a new revetment in 2004 in conjunction with the Fort George Inlet Bridge Replacement Project.

Meanwhile, tidal sediment deposition in the Fort George Inlet threatens to block normal flow through the inlet. This poses serious potential impacts to water resources on the western side of Little Talbot Island and within the Timucuan Ecological and Historic Preserve. The Army Corps of Engineers is attempting to fund a demonstration project through their Regional Sediment Management Program, which would entail some form of sand dredging within the inlet to restore historic flow patterns.

Dredging in the vicinity of Nassau Sound, the Fort George Inlet, or the Intracoastal Waterway may affect water quality in the area, increasing turbidity and decreasing the

sport fishing potential. Waste dumping by ships and boats passing through these waters or offshore also lowers water quality. Other sources of pollutants include the golf courses, septic tanks, and lawns located throughout the islands.

Effluent from local industries and other interests also lowers the quality of adjacent surface waters. The Amelia River has shown extremely high levels of ammonia, probably associated with paper mill discharges (Livingston 1996). As classified by the FDEP, water quality west in the Nassau and Lower St. Johns River basins is most commonly degraded by fecal coliforms and low dissolved oxygen (FDEP 2004). All immediate area waters which are Class II surface waters are closed to shellfish harvesting (FDACS 2005).

Barrier islands in Florida have severely limited groundwater supplies. The groundwater supply in the region of the parks is influenced by increasing public consumption in developing areas, heavy industrial use, and local rainfall trends. Amelia and the Talbot Islands fall within an area of critical concern for lateral salt intrusion of the shallow clastic and secondary artesian aquifers (Frazee and McClaughtery 1979). Cautious pumping and careful monitoring of water quality are major concerns in this area. Any park development on the islands should carefully assess water availability.

Three groundwater aquifers—the Floridan aquifer, a secondary artesian aquifer, and a shallow clastic (or water table) aquifer—occur in the region. The shallow clastic, sand-shell aquifer is located nearest the surface, and is approximately 50 feet thick. This shallow aquifer is recommended only for limited utility purposes because of potential septic tank contamination, potentially high salt intrusion, and limited yields (Frazee and McClaughtery 1979). The secondary artesian aquifer of shallow rock underlies the water table aquifer, reaching depths of 80 to 100 feet below mean sea level (msl). Test wells located at the end of Little Talbot Island show the water table in the shallow-rock zone has salt intrusion and is unusable, and the same may be true for Amelia and Big Talbot Islands. The underlying Floridan aquifer is separated from the upper aquifers by a thick confining unit, the Hawthorn formation. Located 400 to over 500 feet below the surface, the Floridan aquifer is an important source of potable water in the region.

Local hydrology and water quality within the parks have been altered in several ways, often resulting in intrusions of salt water into primarily freshwater systems. As described above in the Topography section, ditches constructed on the islands for the control of mosquitoes and road drainage have allowed salt water to enter freshwater interdunal wetlands, thereby changing their characteristic flora and fauna and some of their functions. Past erosion near the southernmost tip of Amelia Island allowed salt water to enter the swale behind the primary dunes during very high tides and intense storms. This intrusion of salt water also impacted the park's natural communities. The sand pumped onto the tip of the island, in conjunction with the construction of the terminal groin in 2004, has widened the beach profile and provides a buffer against

further salt-water intrusion into these areas.

In 1997, a roadway was created just outside the northern boundary of Amelia Island State Park on the east side of Highway A1A. This road traversed maritime hammock and made a significant cut in the primary dune system that parallels the Atlantic Ocean. The widening of the beach in 2004 has also prevented overwash through this gap in the primary dune.

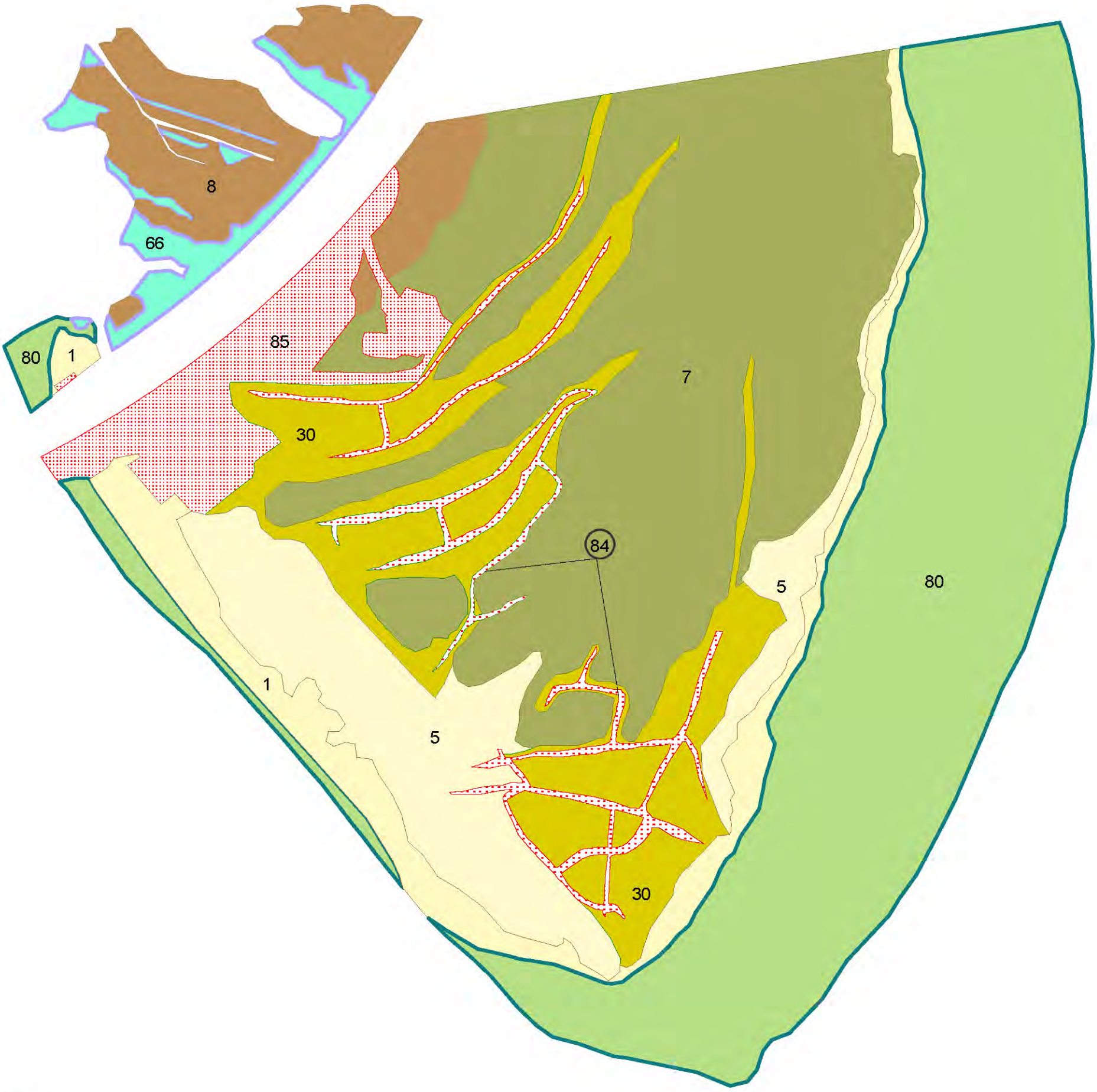
The location within the park of a horse stable creates the potential for a lowering of water quality on site. The horse trail that lies behind the primary dunes along Nassau Sound passes through portions of the interdunal swales. The slight line of depression created by repeated use of the trail by horses can act as a conduit for the movement of water during high tides or rainfall events. The horse stable area lies adjacent to the ditched swale which is the most northwesterly of the swales east of Highway A1A. Improper storage or disposal of horse manure generated by the stable operation could potentially contaminate the nearby wetland system.

A hydrologic restoration study was recently completed for portions of Big and Little Talbot Islands. The study addressed the impacts of constructed ditches on the natural communities on both islands, and the impacts of fill roads on freshwater marshes within Little Talbot Island. Several conceptual topographic restoration plans were discussed, and final recommendations for feasible restoration projects were provided in the final study document (WilsonMiller 2005). Additional information on hydrology, water quality issues and water resources in vicinity of Amelia and the Talbot Islands State Parks is available in the Timucuan Ecological and Historic Preserve Water Resources Management Plan (National Park Service 1996).

Natural Communities

The system of classifying natural communities employed in this plan was developed by the Florida Natural Areas Inventory (FNAI). The premise of this system is that physical factors, such as climate, geology, soil, hydrology and fire frequency generally determine the species composition of an area, and that areas which are similar with respect to these factors will tend to have natural communities with similar species compositions. Obvious differences in species composition can occur, despite similar physical conditions. In other instances, physical factors are substantially different, yet the species compositions are quite similar. For example, coastal strand and scrub--two communities with similar species compositions--generally have quite different climatic environments, and these necessitate different management programs.

Thirteen distinct natural communities, in addition to ruderal and developed areas, are found on Amelia, Big Talbot and Little Talbot Islands State Parks (see Natural Communities Maps). For practical reasons, only eleven communities actually appear on the Natural Communities Map. Estuarine mollusk reef (i.e. oyster bars) and estuarine



LEGEND

- 1 - Beach Dune-13.35 ac.
- 5 - Coastal Strand-21.41 ac.
- 7 - Maritime Hammock-65.84 ac.
- 8 - Mesic Flatwoods-13.65 ac.
- 30 - Coastal Interdunal Swale-28.39 ac.
- 66 - Estuarine Tidal Marsh-4.62 ac.
- 80 - Marine Unconsolidated Substrate-66.58 ac.
- 84 - Ruderal-5.03 ac.
- 85 - Developed-11.61 ac.

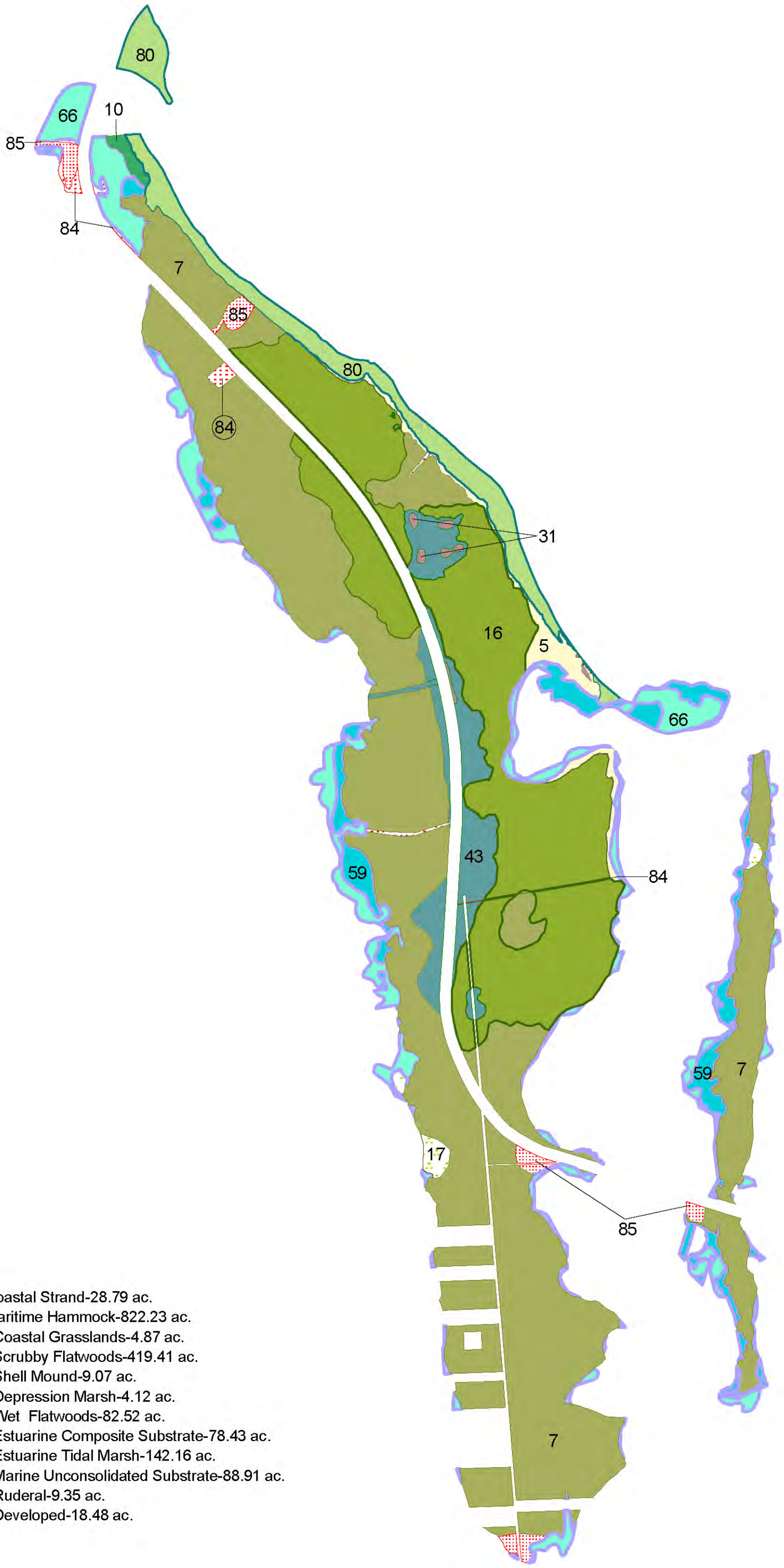
AMELIA ISLAND
STATE PARK

N

0 150 300 600 Feet

Florida Department of Environmental Protection
Division of Recreation and Parks
Office of Park Planning

NATURAL COMMINITIES
MAP



LEGEND

- 5 - Coastal Strand-28.79 ac.
- 7 - Maritime Hammock-822.23 ac.
- 10 - Coastal Grasslands-4.87 ac.
- 16 - Scrubby Flatwoods-419.41 ac.
- 17 - Shell Mound-9.07 ac.
- 31 - Depression Marsh-4.12 ac.
- 43 - Wet Flatwoods-82.52 ac.
- 59 - Estuarine Composite Substrate-78.43 ac.
- 66 - Estuarine Tidal Marsh-142.16 ac.
- 80 - Marine Unconsolidated Substrate-88.91 ac.
- 84 - Ruderal-9.35 ac.
- 85 - Developed-18.48 ac.

N

0 625 1,250 2,500 Feet

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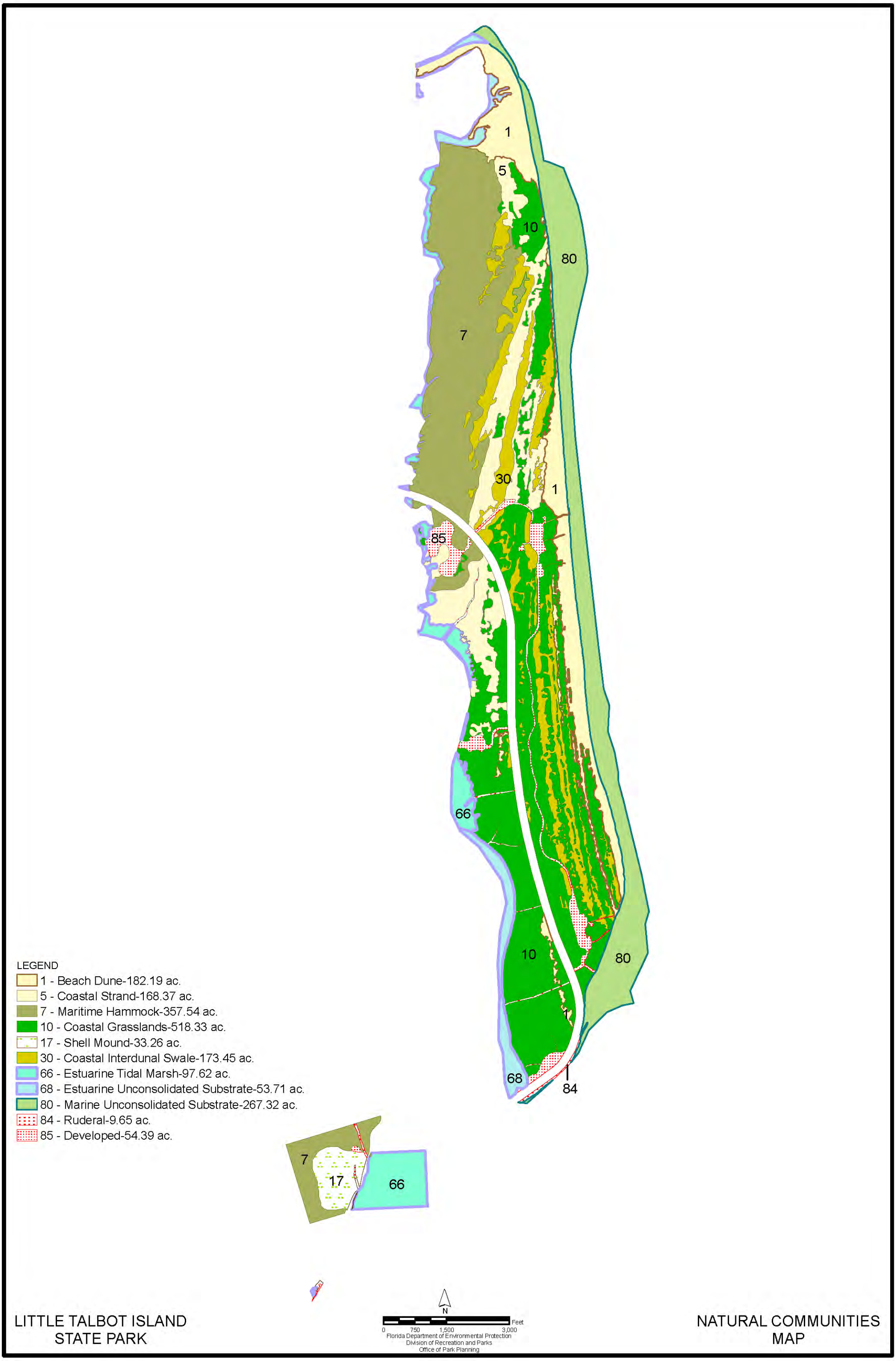
BIG TALBOT ISLAND STATE PARK

NATURAL COMMUNITIES MAP



LEGEND

- 1 - Beach Dune-182.19 ac.
- 5 - Coastal Strand-168.37 ac.
- 7 - Maritime Hammock-357.54 ac.
- 10 - Coastal Grasslands-518.33 ac.
- 17 - Shell Mound-33.26 ac.
- 30 - Coastal Interdunal Swale-173.45 ac.
- 66 - Estuarine Tidal Marsh-97.62 ac.
- 68 - Estuarine Unconsolidated Substrate-53.71 ac.
- 80 - Marine Unconsolidated Substrate-267.32 ac.
- 84 - Ruderal-9.65 ac.
- 85 - Developed-54.39 ac.

LITTLE TALBOT ISLAND
STATE PARK

NATURAL COMMUNITIES
MAP

unconsolidated substrate (i.e. tidal creeks and flats) intermingle so closely in the subtidal and intertidal zones that it is very difficult to delineate them as separate communities on maps. Consequently, they are lumped under an umbrella classification called estuarine composite substrate. The narrative below provides park-specific assessments of the existing natural communities. Addendum 4 contains a list of plants and animals occurring in the parks.

Beach dune. Beach dunes occur within Amelia Island and Little Talbot Island. The beach dune community is highly variable in both parks, which is partly a function of the amount of exposure to prevailing winds and waves. The southern end and southwest coastline of Amelia Island are relatively sheltered from the effects of the Atlantic Ocean. These low energy areas typically have five foot high dunes covered with sea oats (*Uniola paniculata*), saltgrass (*Distichlis spicata*), railroad vine (*Ipomoea pes-caprae* ssp. *Brasiliensis*) and beach morning glory (*Ipomoea imperati*). Behind the primary dunes near the southern end of the island, and along the Nassau Sound, sheltered copses of tough bumelia (*Sideroxylon tenax*), red cedar (*Juniperus virginiana*) and red bay (*Persea borbonia*) have become established. Dredge spoil that was dumped near the tip of Amelia Island in the 1980s has been colonized by typical dune plants and is now barely distinguishable from undisturbed natural areas in the park.

In contrast to the southern end of Amelia Island, the northeast corner of the park along the Atlantic shoreline is dominated by twenty-five foot high dunes that rise abruptly from the beach. These large, well-developed dunes shelter adjacent maritime hammock from the relatively high energy wave action of the Atlantic Ocean. Disturbance of these large dunes can negatively affect the mature maritime hammock which is located on the leeward side of the dunes. The shoreline in this area of the park is generally receding, which causes destabilization of the large dunes. Once destabilized, these dunes migrate westward with the prevailing wind and begin to overrun the maritime hammock.

On Little Talbot Island, beach dune occurs along the northeastern shoreline and in the more recently accreted southern half of the island. The primary dune system at the southern end of Little Talbot Island reaches a relatively low height of ten feet. The dunes in this area appear relatively stable. Farther north on the older part of the island the dunes are taller, reaching 15 to 20 feet in height. These dunes are subject to erosion during storm tides.

Though adapted to a harsh environment, dune plants are very vulnerable to human disturbance. The beach dune is usually a very dynamic community due to the unstable nature of active dune fields. Once dunes are stabilized by pioneer vegetation, succession to more enduring communities may occur, particularly in areas experiencing long-term shoreline accretion. The beach dune community on both Amelia and Little Talbot Islands has been affected by foot traffic. The horse stable Visitor Services Provider located on Amelia Island usually routes horseback tours along the unconsolidated

sands of that beach. During periods of high water, however, or when the beach is closed due to the presence of nesting least terns (*Sterna antillarum*), the horses are routed through the beach dunes landward of the primary dune system along Nassau Sound. Although the horse path may cause localized destabilization of the dunes, it is in a relatively sheltered location and levels of impact have been tolerable to date. The dunes landward of the primary dunes on Amelia Island have also been impacted by vehicles in the past—an old road scar paralleling the sound is still visible within the dune field. Boardwalks through dune systems in visitor use areas of Little Talbot provide the public with convenient access to the beaches, greatly reducing the inclination to create unauthorized footpaths through the dunes.

Due to historical and recent changes in littoral drift along the chain of Sea Islands south of Georgia, the Atlantic and Nassau Sound shorelines in the park have experienced severe erosion in certain portions and significant sand deposition in others. Jetty construction at the St. Marys and St. Johns River inlets to the north and south of Nassau Sound, and installation of a temporary groin field at the north end of Amelia Island State Park have had dramatic impacts on the beach dunes in this area.

Chronic erosion along the southeastern corner of Little Talbot Island near the Fort George Inlet has caused significant loss of beach dunes and adjacent natural communities. The erosion escalated in the late 1990s, and since 1998, inlet currents have devoured park facilities such as a fishing pier, associated parking lots, and a septic drain field. Even Highway A1A is threatened. Although erosion levels in 2002 decreased somewhat due to a shifting of the main inlet channel southward, there is still concern that severe erosion could recur. Additional information on the recent shoreline changes can be found in the Topography section.

Coastal strand. Coastal strand community typically forms a transition zone between younger beach dune and coastal grassland communities and older maritime hammocks. On Amelia Island, coastal strand occurs along Nassau Sound where shrub and hardwood species have become established on older beach dunes. As with the adjacent beach dunes, this area has been impacted to some degree by an old roadway which parallels the sound. On Big Talbot Island, coastal strand occurs where recession of the Atlantic shoreline has exposed the maritime hammock and scrubby flatwoods communities to increased incidence of salt spray. On the southern half of Little Talbot Island, as the process of succession proceeds, pockets of coastal strand are forming where shrubs have colonized small portions of the coastal grasslands.

Typically, coastal strand develops in relatively stable and sheltered areas within the coastal grassland or beach dune communities. Coastal strand is a shrub-dominated community usually maintained by wind-driven salt spray. Periodic fire may also be a factor in maintaining this community and preventing its succession to maritime hammock. Along the northeast coast of Florida in areas protected from salt spray,

coastal strand may undergo succession to maritime hammock or scrubby flatwoods.

Succession of this type has occurred on Big Talbot as the island has expanded eastward and as the influence of salt spray in the interior has diminished. This is especially true for the lower part of Big Talbot Island, which is buffered from extreme events by the presence of Long Island and Little Talbot Island to the east. With the dramatic recession of the Big Talbot shoreline over the past several decades, however, these two communities again lie exposed to marine elements. Wind-driven salt spray now assaults the seaward edges of the maritime hammock and scrubby flatwoods, sculpting trees and shrubs into the dwarfed, pruned stands that typify coastal strand. The relatively narrow band of coastal strand that occurs along the northeast shoreline of Big Talbot Island is an example of this reversed succession. The coastal strand here is dynamic in the sense that, as wave action undercuts the shoreline, trees and shrubs fall onto the beach exposing additional areas to the effects of the wind and salt spray.

Maritime hammock. On Amelia Island State Park the maritime hammock extends from Highway A1A east and south to the beach dune and coastal strand communities. Maritime hammock dominates the southern and western portions of Big Talbot Island, while on Little Talbot Island it is restricted to the northwestern quadrant. Live oak (*Quercus virginiana*) dominates the tree canopy in undisturbed areas, and laurel oak (*Quercus laurifolia*) is found in old road scars and other disturbed areas. Redbay, southern magnolia (*Magnolia grandiflora*), American holly (*Ilex opaca*), hackberry (*Celtis laevigata*) and cabbage palm (*Sabal palmetto*) are common in the subcanopy, and remnant red cedars occur throughout the area. Within the hammock, the undulating dune topography incorporates high ridges and low interdunal troughs. The latter features are sheltered, moist habitats filled with wax myrtle (*Myrica cerifera*), grape (*Vitis* spp.), peppervine (*Ampelopsis arborea*) and occasionally cinnamon fern (*Osmunda cinnamomea*).

According to early surveyors' reports, timbering of live oaks was common in parts of Amelia Island (Washington and Willis (1831) as cited in McCormick and Squiers (1971)). It is likely that the oldest live oaks remaining in the park are less than 150 years old.

The maritime hammock on Little Talbot and Long Islands bears a closer resemblance to that on Amelia Island than on Big Talbot. The maritime hammock on Amelia, Little Talbot and Long Islands occupies relatively steep, stabilized dunes, and appears to have been less affected by human occupation. These areas, however, are naturally more vulnerable to erosion from foot traffic. Unauthorized foot traffic within the maritime hammock around the Little Talbot Island campground has caused erosion on several large dunes.

The maritime hammock on Big Talbot Island occurs on older sediments. There is little topographic relief compared to the steep slopes of the younger stabilized dunes found

on Amelia, Little Talbot and Long Islands. Human activities over the last few thousand years have had a significant impact on the maritime hammock of Big Talbot Island, perhaps due to the flat terrain of the island and its relatively sheltered location. The community has displayed some resilience, however. The maritime hammock has reclaimed aboriginal clearings and shell middens, as well as 18th and 19th century plantations, thereby showing some ability to recover from the massive natural and cultural disturbances of the past. Although most if not all the maritime hammock on the island is second growth, it now appears relatively undisturbed except where modern development has occurred.

Traces of several abandoned roads are still detectable in the maritime hammock of the parks. Where present, these old roads follow the troughs which run parallel to the dune ridges. Where the roads cross from one trough to another the dune ridges have been flattened. Portions of these roads run alongside the interdunal wetlands within the maritime hammock, but other sections pass through closed canopy hammock. Roads may severely disturb maritime hammock, especially when the canopy is broken to the extent that salt-laden onshore winds can penetrate the vegetative cover (Bellis and Keough 1995).

Fortunately, the tree canopy within the park's maritime hammock has recovered remarkably and achieved almost complete closure over the abandoned roads. Researchers have found that footpaths and hiking trails have little effect on the vegetation of the maritime hammock as long as the canopy is kept intact, although there are impacts on wildlife, particularly reptiles and amphibians (Gaddy and Kohlsaat 1987). Roads and trails within maritime hammock can alter drainage patterns when oriented perpendicular to the parallel dunes (Gaddy and Kohlsaat 1987). Although the park's old roads may be serviceable as trails, any removal of the tree canopy to "improve" them could severely impact the adjacent tree canopy on the downwind side of the disturbance.

Receding shorelines along the Atlantic coasts of Amelia, Big Talbot and Little Talbot Islands are impacting several areas of maritime hammock. Erosion in these areas is causing large oaks to topple onto the beaches at Amelia and Big Talbot Islands, and is encouraging active dunes to smother maritime hammock on Little Talbot Island. As trees along the immediate shoreline die or fall onto the beach, increasing the exposure of vegetation further inland to the influences of wind and salt spray, the ecological succession that typically operates on accreting barrier islands is effectively reversed.

The maritime hammocks of the coastal barrier islands are important habitat for wildlife of all kinds, but they additionally serve as important refugia for migrating songbirds. Loss of maritime hammock to development along the Atlantic coast has reduced this once continuous forest to isolated patches. Preservation of these remaining patches is a top priority.

Mesic flatwoods. An area of mesic flatwoods lies to the northwest of the maritime hammock in the southern portion of Amelia Island State Park. In contrast to the rolling topography of the maritime hammock to the southeast, the mesic flatwoods are relatively flat. Dominated by loblolly pines (*Pinus taeda*) and slash pines (*Pinus elliottii*) with an understory of hardwoods and saw palmetto (*Serenoa repens*), this area of mesic flatwoods has suffered from fire exclusion and is considered to be in fair condition.

Coastal grasslands. Coastal grasslands are described as a flat or gently rolling grass-dominated area located behind the beach dunes on barrier islands (FNAI 1990). They are typically interspersed among beach dunes and coastal interdunal swales. Coastal interdunal swales are described as primarily freshwater wetlands dominated by herbs and grasses which occur in the swales of coastal dunes on barrier islands (Orzell and Johnson n.d.). Although coastal interdunal swale is now recognized as a distinct community type by the Florida Natural Areas Inventory (Marois 1997), it is still included within the coastal grasslands category for the purposes of this management plan.

Coastal grasslands occur on Amelia, Big and Little Talbot Islands, typically appearing on the more recently deposited sediments on the leeward side of beach dunes. At Amelia Island State Park this natural community occurs in the troughs at the tapered ends of the stabilized dunes within the maritime hammock. Due to their freshwater wetland characteristics, these areas may be more accurately described as coastal interdunal swales, as explained above. Another area mapped as coastal grassland near the southeast corner of the park is probably true coastal grassland, although any freshwater wetlands within that area may be better described as coastal interdunal swales.

Big Talbot Island, geologically much older than Amelia and Little Talbot Islands, naturally has a very limited area of coastal grasslands, which occurs at the northern end of the island. Little Talbot Island has extensive areas of coastal grasslands, distributed mainly in the more recently formed dune fields on the southern half of the island. Grasslands also occupy a narrow zone behind the beach dunes at the northern end of the island.

Typical plant species of coastal grasslands include broomsedge (*Andropogon virginicus*), muhly grass (*Muhlenbergia capillaris*), croton (*Croton spp*.), camphor weed (*Heterotheca subaxillaris*), smilax (*Smilax spp*.), prickly pear cactus (*Opuntia stricta*), and wax myrtle. The open aspect of this community and the abundant herbaceous growth attract gopher tortoises (*Gopherus polyphemus*) and other herbivores, as well as diamondback rattlesnakes (*Crotalus adamanteus*).

On Amelia Island, this community type has been drastically altered by mosquito ditching, and the majority of it is now classified as ruderal due to long-term exposure to

salt water intrusion. Some remnants of this community exist near the northern ends of the wet swales where salt water effects have been minimal. On Big Talbot Island, the small patch of coastal grassland is relatively undisturbed. On Little Talbot Island, the development of park facilities such as parking lots, picnic shelters, and bathhouses has had some impact on the coastal grasslands. Additional disturbance in the form of mosquito ditching has also occurred within the grasslands on the western side of the island. Additional information on this area is included in the description of ruderal areas below.

Shell mound. Several small shell mounds occur within tidal marsh areas adjacent to Big Talbot Island and Long Island. In addition, the Rollins Bird and Plant Sanctuary on Fort George Island contain a remarkable example of shell mound. The shell deposits here are particularly deep and relatively undisturbed.

The shell mound natural community commonly supports plant species such as tiny-leaved buckthorn (*Sageretia minutiflora*) that are climatically out of their normal range in north Florida. The Grand Site on Big Talbot Island is a shell mound particularly notable for its assemblage of tiny-leaved buckthorn, tropical sage (*Salvia coccinea*), soapberry (*Sapindus saponaria*) and other distinctive plant species. Southern red cedar (*Juniperus silicicola*) is often an indicator plant in the more exposed portions of shell mounds, and roots of red cedar and live oak often spread across the tops of midden piles. The shell mound community at the Rollins Sanctuary, although similar in appearance to maritime hammock, harbors several calcium-loving species such as tiny-leaved buckthorn and Godfrey's privet (*Forestiera godfreyi*) that are not found in the hammock. Two plant species that are at the northernmost limits of their range, terrestrial peperomia (*Peperomia humilis*) and wild coffee (*Psychotria nervosa*), also thrive there.

Maritime hammock may sometimes supplant a shell mound community. Such has likely happened at midden sites on Long Island and along Houston Road on Big Talbot Island. Shell even underlies surface soils within the scrub community at the point of Half Moon Bluff on Big Talbot. It is possible that early plantations used Timucuan shell middens extensively in agricultural activities, causing a gradual intermingling of shell and natural soils throughout the island.

Scrubby flatwoods. This natural community covers much of the eastern half of Big Talbot Island. Although scrubby flatwoods and true scrub have a similar appearance and the communities share many species, the soil characteristics of the Big Talbot scrub support its classification as scrubby flatwoods. In fact, Myers (1990) states that true scrub does not extend north of St. Johns County. MacLaren (1991) identified the Big Talbot scrub as coastal scrub, an FNAI synonym of coastal strand. That community, however, typically is under the direct influence of salt spray (FNAI 1990). The scrub forest on Big Talbot Island is much broader and extends further inland than does typical coastal strand. Sand live oak (*Quercus geminata*), myrtle oak (*Quercus myrtifolia*),

and occasionally Chapman's oak (*Quercus chapmanii*) are the principal tree species within the Big Talbot scrub, with staggerbush (*Lyonia spp.*), wild olive (*Osmanthus americanus*) and sparkleberry (*Vaccineum arboreum*) scattered throughout.

The physical appearance of the scrubby flatwoods community on Big Talbot Island varies considerably. In some areas, the scrub oaks are well developed but maintain a low stature, while in other areas the scrub appears on the verge of succession to xeric hammock, with the oaks often reaching tree height. The incidence of fire, and perhaps of other natural disturbances, appears to have played a major role in determining the current condition of the scrubby flatwoods. Fire suppression or exclusion had been the general rule in this area for many years until the park initiated its prescribed burn program in March 1990.

The Big Talbot scrubby flatwoods grades into maritime hammock to the west and coastal strand to the east. The coastal strand overlaps in species composition with the scrubby flatwoods community, but it differs in being under the direct influence of coastal winds and salt spray. Since the Big Talbot Island shoreline is receding in this area and constantly exposing new areas of vegetation to salt spray, it is likely that today's coastal strand may well have once been scrubby flatwoods.

The scrubby flatwoods community contains a variety of wildlife species, although the ranges of many of the species endemic to scrub and scrubby flatwoods do not extend this far north. The gopher tortoise is a resident of the scrubby flatwoods and the adjacent coastal strand.

Depression marsh. Depression marsh communities are found on Big and Little Talbot Islands. With a couple exceptions, the depression marshes on Big Talbot Island are concentrated within areas of wet flatwoods. The Big Talbot marshes are much older than those found on Little Talbot Island. The depression marshes on Little Talbot Island occur within low areas in the interdunal swales that run the length of the island parallel to beach dunes. These marshes display a variety of sizes and shapes, some very unlike the typical depression marsh described by FNAI (1990). Little Talbot depression marshes range from smaller bowl-shaped ephemeral wetlands to larger linear swales that may be narrow or broad.

Ditches and impoundments have disrupted the hydrology of the depression marshes on both islands. On Big Talbot Island, roadside ditches associated with Highway A1A have altered the natural hydroperiod of depression marshes situated in a long swale that runs through the middle of the island. On Little Talbot Island, at least half a dozen drainage and mosquito ditches located on the western side of the island are responsible for most of the hydrological impacts. These ditches have a total length of about 1.2 miles and range from six to ten feet deep and about twenty feet wide. The ditches accelerate the drainage of fresh water from the island and enable tidal waters to penetrate far into

the interior. Road construction on Little Talbot Island, including the park drive and Highway A1A, has also impacted several depression marshes by altering drainage patterns and increasing runoff from impervious surfaces. A hydrologic restoration study recently recommended installing culverts under A1A and the park drive to restore natural flow patterns within the depression marshes (WilsonMiller, in print).

A freshwater cattail marsh once existed at the north end of Big Talbot Island east of Highway A1A. The marsh actually developed within an impoundment created by the construction of A1A and the deposition of dredge spoil derived from the Intracoastal Waterway. Aerial photographs taken in 1943, before construction of the highway, clearly show that this marsh was continuous with estuarine tidal marsh northwest of Big Talbot Island. During the period when a freshwater regime has dominated the system, it has been appropriate to classify it as a depression marsh. Recent winter storm events, however, have created breaches in the dredge spoil piles, reintroducing salt water and tidal influences to this system. If the overwash events continue, expectations are that the marsh will again become a part of the estuarine tidal marsh associated with Sawpit Creek.

Wet flatwoods. The wet flatwoods community, with its characteristic pond pines (*Pinus serotina*), occurs on Big Talbot Island only. There the wet flatwoods tend to occupy areas of lower elevation where the water table lies much closer to the surface than in the surrounding scrubby flatwoods and maritime hammock communities. Such conditions exist in a long narrow swale that stretches in a north-south direction for over a mile through the center of the island. Within this relict swale, wet flatwoods are interspersed with grassy depression marshes.

At one time, this interior strand of wetlands probably was an interdunal swale similar to the younger versions that exist on Amelia and Little Talbot Islands today. With the natural eastward expansion of Big Talbot Island over time, this swale probably became increasingly isolated from the influence of saltwater. As succession progressed, wet flatwoods species such as pond pine and slash pine eventually invaded the wet swale. This intrusion by woody species probably has accelerated since 1960 because of hydrological changes attributable to drainage ditches excavated by the Department of Transportation during construction of A1A. Hydrological fluctuation is the dominant agent in maintaining the natural state of the wet flatwoods, but some degree of restoration of this community may be possible through the periodic application of prescribed fire. Unfortunately, fire exclusion has been the standard practice on Big Talbot over the past half century. The first recorded prescribed burn of the Big Talbot wet flatwoods took place in March 1990.

Estuarine composite substrate. Estuarine composite substrate is actually a broad community designation encompassing a number of mineral and faunal-based estuarine communities that exist in a given area, but in quantities too small to delineate

separately. The estuarine composite substrate identified within the Talbot Islands State Parks includes communities such as estuarine mollusk reef and estuarine unconsolidated substrate. Individually mapping these intermingled subtidal and intertidal natural communities is very difficult, so together they receive a classification as estuarine composite substrate.

Estuarine mollusk reef. Estuarine mollusk reefs are found within tidal creeks that weave through the marshes adjacent to Big and Little Talbot Islands, but the reefs are too scattered or diffuse to map accurately at this time. As described above, acreage for mollusk reefs is included within the total acreage for estuarine composite substrate.

The eastern oyster (*Crassostrea virginica*) is the dominant species in the estuarine mollusk reef, although other mollusk species also inhabit the reefs. Mollusk reefs are vulnerable to impacts from degradation of water quality. The mollusk reefs at Talbot are situated within Class II waters, but shellfish harvesting is now locally prohibited due to water quality concerns.

Estuarine unconsolidated substrate. Estuarine unconsolidated substrate is a mineral-based natural community found in subtidal, intertidal and supratidal zones along the coast. Areas of unconsolidated substrate tend to be relatively open and the populations of estuarine vegetation there are considerably less dense than in adjacent tidal marsh. Specific examples within the Talbot Islands include tidal creeks and tidal flats or salt pans. For mapping purposes, as with mollusk reef, this community is lumped under the category, estuarine composite substrate. As described above, acreage for estuarine unconsolidated substrate is included within the total acreage for estuarine composite substrate.

Numerous tidal creeks, both large and small, lie within the estuarine tidal marshes of the Talbot Islands. These creeks provide critical habitat for many fish species. Diamondback terrapins (*Malaclemys terrapin centrata*) range within the creeks and nest on adjoining sandy shorelines. West Indian manatees (*Trichechus manatus*) visit the tidal creeks seasonally, particularly during spring and fall migration.

Salt pan flats, occurring in the upper intertidal zone, function as ecotones in association with the estuarine tidal marshes that fringe Big Talbot Island, Long Island, and Little Talbot Island. These flats are barren and sandy, with a soil salinity reaching 200 ppt in the dry season. Algae and insects flourish in the pans during the wet season, and in the dry season insects and other arthropods frequent complex underground labyrinths. Certain organisms in the salt pans are used as fish bait, and at one time fishermen had despoiled the pans by digging and driving, especially on the northwestern side of Long Island. Now the flats are relatively intact and are some of the last in the state unspoiled by ditching.

Fiddler crabs, marsh crabs and other crustaceans and mollusks constitute a vital link in the food chain for the incredible number of fish species that feed and spawn in the tidal creeks of the area. At low tide, exposed tidal flats provide critical feeding areas for many types of shorebirds and wading birds. Boat traffic in the creeks and foot traffic on the flats may each create a high potential for wildlife disturbance.

Marine unconsolidated substrate. This natural community is the beach that rims the seaward edge of Amelia Island State Park, and the eastern side of the Talbot Islands. On Amelia Island, the white sand beach forms a fringe of variable width around the south tip of the island, interspersed with muddy tidal flats. On Big Talbot Island, this community is relatively narrow. Dead trees that have fallen from the eroding bluffs are strewn along the beach. The receding contour of Nassau Sound provides the Big Talbot shoreline with relative protection from the pounding of the Atlantic.

Little Talbot Island has a more typical beach since it has a more exposed, much higher energy shoreline. Recent accretion at the northeastern end of Little Talbot Island has produced a broad tidal flat. At low tide, the accreted sand now connects Little Talbot Island to the southernmost Bird Island, an offshore shoal island within Nassau Sound. At the southern end of Little Talbot Island, currents associated with the St. Johns River jetty and the Fort George Inlet has scoured away much of the southeastern tip. Tides have washed away a fishing pier, an associated parking lot, and a septic drain field. The south tip of Little Talbot Island is armored with concrete riprap to protect the Highway A1A right-of-way and the Fort George Inlet bridge.

This natural community has been affected more than any other on the three islands by the drastic changes in littoral drift processes along this coastline. Recent receding and accretion patterns are discussed in the Topography section.

Wildlife species that frequent the Amelia and Talbot Islands beaches include various species of raptors, terns, gulls, and shorebirds, several of which nest on the higher portions of the beaches. Most of these species use the beaches as resting and feeding areas, and many do not tolerate disturbance. Included among these species are some that are listed as threatened or endangered and others that have declined markedly in North America over the past several decades. The beaches on Amelia and Little Talbot Island also provide nesting sites for marine turtles, primarily the Atlantic loggerhead (*Caretta caretta caretta*).

Ghost crabs frequent the upper areas of the beaches, while coquina clams and hausteriid amphipods live within the intertidal sands. Numerous marine mollusks occur within the subtidal zone of the beaches, along with many species of marine fish.

Ruderal. Interdunal swales at the southern end of Amelia Island that were ditched in the 1950s are now considered ruderal. Tidal waters flow in the ditches and salt marsh

cordgrass (*Spartina alterniflora*), black needlerush (*Juncus roemerianus*), and other plants typical of estuarine tidal marshes can be found far inland within these ditches. These wetlands, now brackish, were probably freshwater swales prior to the mosquito ditching. The ditching introduced daily tidal influences to nearly the entire length of these swales and also likely lowered the water table in the vicinity.

Aerial photos from 1943 (prior to the construction of Highway A1A) and 1953 (prior to the mosquito ditching) show a system distinctly different from the estuarine tidal marshes found to the west. It appears that there was a relatively narrow connection between these swales and an adjacent tidal creek near the present location of the George Crady Bridge Fishing Pier. A culvert now passes under Highway A1A where the tidal creek once flowed. Salt water influences in the mid to upper reaches of the swales were likely limited to periods of extremely high tide or to storm events. Soils evidence also suggests that these wetlands were at one time freshwater marshes which followed an arcuate dune pattern typical of the southern ends of barrier islands. The soils are not the sulfihemist soils of the adjacent saline marshes; rather they are wet haploquods (see Soils Map). Over time, the spoil from the excavated ditches has served as a substrate for grasses such as muhly grass and broomsedge and for other common herbs such as camphor weed and sandspur. The spoil piles have naturalized in some areas and are now vegetated by scrubby oaks, slash pines, and in some areas, cedar and wax myrtle. Restoration of these swales would add significantly to the biodiversity in the park and would restore a relatively rare natural community type, coastal interdunal swale, which is listed as a G3, S2 natural community by FNAI (Marois, 1997).

Within Big Talbot Island, the eastern end of Sawpit Island consists mainly of spoil deposits. It supports a span of the old Highway A1A bridge, which now functions as a fishing bridge facility. Another ruderal area along Sawpit Creek is on the northwest corner of Big Talbot Island. The Division recently developed a portion of this area into a boat ramp and parking facility. North of the scrubby flatwoods on Big Talbot Island and west of A1A is a disturbed area dominated by rosemary (*Ceratiola ericoides*) and scrub oaks. Reindeer lichens cover patches of bare sand in the area. It may be possible to restore the area, but research to determine the original natural community is necessary. Another small ruderal area is located west of A1A near the center of the island; this area may be associated with the construction of A1A.

At least three east-west oriented ditches occur on Big Talbot Island. One, the "Old Ditch," runs from the vicinity of A1A east to Simpson Creek and may have historical significance. At least two other ditches extend from A1A west to the edge of the estuarine tidal marsh along the Intracoastal Waterway. These ditches probably drain storm water that accumulates in the roadside swales of A1A. The mosquito ditches located west of A1A on Little Talbot Island are also considered ruderal.

The long history of human occupation Big Talbot Island has left some areas that were

once ruderal, but which have recovered to the extent that it is now difficult to discern the previous disturbances. Clearing for agriculture at one time probably removed much of the forest on Big Talbot Island, but maritime hammock has reclaimed these areas.

Developed. Developed areas range from minimally developed visitor access areas such as the Bluffs on Big Talbot Island to the large paved parking lots on Amelia and Little Talbot Islands. On Amelia Island, developed areas include the horse stable area, Seahorse Stables, and the parking area, bath house and Visitor Services Provider adjacent to the George Crady Bridge Fishing Pier. Big Talbot Island has a roadside park, a boat ramp in the northwest corner, several parking areas, a residence, and an environmental education center located at a second residence on the south tip of the island. A canoe and kayak facility, including a floating dock, is located on Long Island. On Little Talbot Island, developed areas include the shop complex, ranger station, parking area at the Fort George Inlet bridge, bath houses and residences.

Designated Species

Designated species are those that are listed by the Florida Natural Areas Inventory (FNAI), U.S. Fish and Wildlife Service (USFWS), Florida Fish and Wildlife Conservation Commission (FFWCC), and the Florida Department of Agriculture and Consumer Services (FDA) as endangered, threatened or of special concern. Addendum 5 contains a list of the designated species and their designated status for this park. Management measures will be addressed later in this plan.

Many designated species have been identified on or adjacent to Amelia and the Talbot Islands State Parks. Although the impetus of natural systems management as practiced by the Division is management of natural communities and not individual species, certain species are of particular concern and importance, and merit special management attention. Within Amelia and the Talbot Islands State Parks these species include the Atlantic loggerhead sea turtle, gopher tortoise, and least tern. Other marine turtle species that occur in the near shore areas of all three parks include the green sea turtle (*Chelonia mydas*), Kemp's ridley (*Lepidochelys kempi*), leatherback (*Dermochelys coriacea*), and hawksbill (*Eretmochelys imbricata*). These species do not normally nest within the parks, although leatherback sea turtles have been documented on Little Talbot Island. Songbirds and neotropical migrants, such as the Painted Bunting (*Passerina ciris*), use upland habitats for breeding and foraging. The gopher tortoise, a species of special concern, is found in dune fields within all three parks, and in open areas in other uplands within the parks.

Designated shorebird species use the Amelia and the Talbot Islands for feeding and resting sites, but least terns have traditionally used the south end of Amelia Island and the north end of Little Talbot Island as breeding sites. This species is a colonial ground-nester on open areas of beach where it is highly vulnerable to predation, storms, and human disturbance. Portions of the parks are designated as a Critical Wildlife Area by

the FFWCC.

Little Talbot Island is one of the few places in northeast Florida where over wintering piping plovers (*Charadrius melodus*) occur. A significant number of designated wading bird species use the marshes and beaches of Amelia and the Talbot Islands for resting and feeding habitat. These species also tend to be vulnerable to human disturbance.

Ongoing shoreline and sand management projects, and growing pressure from increased visitation within the parks have necessitated the development of a formal shorebird management plan. This document, a permit requirement for recent shoreline armoring on Amelia Island, provides a long-term strategy for maintaining viable shorebird habitat within the parks. A more detailed discussion regarding this plan and shorebirds is provided below in *Special Management Considerations*.

The waters offshore of Amelia and the Talbot Islands are winter calving grounds for the endangered northern right whale (*Eubalaena glacialis*) from December 1 through March 31. The National Marine Fisheries Service has designated the South Georgia and north Florida region as Critical Habitat for the northern right whale. The boundaries of this area extend from the shoreline to 15 miles offshore (Raichle et al 1997).

The West Indian manatee has been documented in the estuarine areas around the Talbot Islands. Manatee sightings from aerial surveys in 1994-95 (Bolen 1998) exist for Sawpit Creek and the Intracoastal Waterway north of the Fort George River.

Designated plant species within the parks primarily include commercially exploited species such as coontie (*Zamia pumila*). It should be noted, however, that the endangered Atlantic coast Florida lantana (*Lantana depressa* var. *floridana*) was recorded on Little Talbot Island in 1990. This represents a northern limit of its range, and although the specimen was vouchered and confirmed by the University of Florida Herbarium, it may actually be an escaped cultivar of *Lantana depressa* (Hattaway 1995). It is possible that this species also occurs on Amelia Island within the maritime hammock.

Special Natural Features

Nassau Sound borders the southern part of Amelia Island State Park and the northern shoreline of Big Talbot Island State Park and Little Talbot Island State Park. This inlet is a dominant scenic feature of this barrier island system and has great ecological and historical value for the region. Threats to the integrity of Nassau Sound include potential dredge and fill projects.

The maritime hammock within Amelia Island State Park occurs on massive stabilized dunes that parallel the adjacent coastline. The maritime hammock covers the peaks and valleys of these dunes creating a "sunken forest" effect between the dunes. Shoreline

recession along the eastern and southeastern edges of the park has resulted in the erosion and breaching of the primary dune and a cutting away of the mature maritime hammock. The stark contrast between the dense sheltered forest of the stabilized dunes and the collapsing forest of the eroding escarpment illustrates the fragility of coastal systems.

Two scenic bluffs with panoramic vistas are located on the eastern side of Big Talbot Island. One of these, "The Bluffs", has views of the Bird Islands, Little Talbot Island, Nassau Sound, and the southern end of Amelia Island. The Bluffs are about a quarter mile long and rise to 20 feet above the beach. Considerable natural erosion, or scour, has occurred as the Nassau and Amelia Rivers merge at Nassau Sound, combining forces as they exit to the ocean. The scouring process has eroded the bluff and caused many trees to fall onto the beach below. William Bartram is believed to have visited this lookout during his travels.

At the base of the Bluffs, and along the beach in other areas facing Nassau Sound, are several outcroppings of black, reddish-brown consolidated hardpan material. This material has been described as hematite, a ferrous oxide and spodic material similar to that seen in the soil profiles at Big Talbot Island today. These "black rocks" are highly eroded and very picturesque.

"Half Moon Bluff" is located to the south of the Bluffs and overlooks Simpson Creek, the large estuarine marshes to the south, and Long Island. An apparent change in the meandering course of Simpson Creek over time has created a large, open estuarine tidal marsh inlet to the north of Half Moon Bluff. This scenic expanse is often viewed from the water by boaters and bait collectors; however, at this point it appears intact and unexploited.

Cultural Resources

Evaluating the condition of cultural resources is accomplished using a three part evaluative scale, expressed as good, fair, and poor. These terms describe the present state of affairs, rather than comparing what exists against the ideal, a newly constructed component. Good describes a condition of structural stability and physical wholeness, where no obvious deterioration other than normal occurs. Fair describes a condition in which there is a discernible decline in condition between inspections, and the wholeness or physical integrity is and continues to be threatened by factors other than normal wear. A fair judgment is cause for concern. Poor describes an unstable condition where there is palpable, accelerating decline, and physical integrity is being compromised quickly. A resource in poor condition suffers obvious declines in physical integrity from year to year. A poor condition suggests immediate action to reestablish physical stability.

The Florida Master Site File, maintained by the Division of Historical Resources, reveals

one recorded site within Amelia Island State Park, and at least 23-recorded cultural resources or sites on Little Talbot, Big Talbot and Long Islands. In addition, there are two recorded sites within the Rollins Bird and Plant Sanctuary on Fort George Island. Until recently, recorded survey activity within the parks has been limited to occasional visits by professional and avocational archaeologists, who left no survey plans or documentation of intent, or by state archaeologists responding to specific requests for technical assistance. A 1970s survey of Duval County included the islands, but activities appear to have been limited to visiting previously recorded sites. Ashley and Thunen (2000) performed an archaeological survey of the southern one-third of Big Talbot Island in 1998, locating, bounding and sampling one new archaeological site and seven previously recorded sites. A site specific survey conducted in 2005 for the Timucuan Trail project revealed an additional archaeological site which was previously unrecorded.

Human activities affected these small islands well before European Contact, about 1516-1530. The islands' exposure to the Atlantic Ocean and its seasonal extremes probably dictated occasional or seasonal human use and settlement, rather than long term and persistent village occupations. After Contact, documented uses of the islands were still intermittent and short lived, at least until the establishment of plantation agriculture on Big Talbot Island (and, of course, on Fort George Island) during the late Second Spanish (1783 - 1821) and early American Territorial (1821 - 1845) periods. Settlement has been more or less continuous since that time.

Most of the cultural sites recorded for Amelia Island occur outside the boundary of Amelia Island State Park. A single midden site, Na730, has been recorded within the unit.

Recorded cultural resources in Big Talbot Island State Park are all archaeological in nature. -The Grand Site, Du1, is a sand mound and shell midden ring with St. Johns II, Savannah and Mission period elements. The National Register of Historic Places listed it in 1970. Other resources include Du2, Talbot Island Mound B, a sand mound of undetermined period and Du80, the Talbot Island site, a multi-component shell midden bisected by A1A. Although damaged, much of the site is intact and preserved. Du93, the Half Moon Bluff site, is a shallow shell midden, heavily impacted by natural erosion. Du106, somewhat confusingly named the Big Talbot Island site, is a shallow oyster shell midden, and Du627, the Middle Midden, is a shell midden with Swift Creek, St. Johns II, Savannah, and Mission period elements. Disturbances include pot hunting, and possibly mining the shell midden for tabby in constructing the Houston plantation buildings. The Simpson Point site, Du13260, is a shell midden with evidence of Deptford period occupation. Du13262, the Big Talbot Bluff site, is a shell midden located on an eroding dune. Other pre-Contact resources include Du628, a shell midden with St. Johns II elements, and Du629, located nearby. Florida Master Site File materials are somewhat contradictory about the cultural affiliation (either St. Johns II or

unknown) of this aboriginal shell midden. Du630 is a shell midden of unknown period. The Talbot Tip site, Du16346, is located on the northern third of Big Talbot and is also a multicomponent shell midden site encompassing the St. Johns period. Du8097 is a shell midden site on Sawpit Island, which the waters of Nassau Sound have eroded significantly.

Records of post-contact sites on Big Talbot Island are few. The Houston Plantation, Du90, consists of the remains of foundations or walls of six tabby structures. As noted above, it is possible that shell from Du627 was used in making the Houston structures. A probable 18th or 19th century habitation site, based on recovery of ceramic jar sherds, was recorded as Talbot I, Du631. Du11254 is a 19th - 20th century structure remnant. The Chimney Site, Du1548, is likely to be a fallen sugar evaporator structure of the 19th and possibly the 18th centuries. Du1549, the Houston Cemetery, is located on private property adjacent to the park. An unrecorded, but widely known, resource on Big Talbot Island is the Old Public Road, a linear site that follows a generally north - south path on the island. It has probably been in use for 200 years.

A second plantation site, Du16006, named Dune Edge, is currently eroding into Nassau Sound at an alarming rate. It is believed that this site is associated with the Christopher Plantation, a late 18th century to early 19th century plantation site on the northernmost part of Big Talbot Island, and may also be associated with the Talbot Tip site, Du16346.

Long Island has fewer recorded sites, among them Du88, the Long Island Site. In 1959, potsherds of uncertain cultural affiliation were recovered from this site, which was described in the Duval County survey as virtually undisturbed. A shipwreck, Du637, is variously reported as occurring in a dune or under water in Simpson's Creek, which separates Long Island from Big Talbot.

The sole recorded cultural site on Little Talbot Island State Park is an object, Du3157, the remains of a wood-hulled ship which began washing out of the dunes at extreme high tides in the 1980s.

The Bird Island Wreck site, Du8030, is a late 19th century shipwreck site located near the Bird Islands in Nassau Sound.

Within the Rollins Bird and Plant Sanctuary, on Fort George Island, is the Fort George Shell Ring (Du72). This shell ring is the largest and most complicated shell ring known in the world, reaching a maximum diameter of 250 meters. It is larger in volume than any other known ring (Russo and Saunders 1999). It is also unique in that eleven smaller rings attach to the main ring. Recent investigations have indicated that the areas surrounding the shell ring may have been occupied year-round, which is contrary to current thinking about the life patterns of peoples from the Orange Period of 1600-2300 BC (Russo 1993, Russo and Saunders 1999). Many consider this site to be of such

significance that it deserves nomination to the National Register of Historic Places. Furthermore, studies of the site likely are sufficient to meet nomination criteria for the Register (see Russo and Saunders 1999, for nomination strategies). The current condition of the shell ring is fair. Some shell may have been mined out of the eastern side of the ring, but confirmation of that would require further testing.

Immediately surrounding the shell ring is the Rollins Bird Sanctuary site (Du7510), comprising the above mentioned village site and midden deposits from several periods. Other prehistoric midden deposits are located adjacent to the Rollins Bird Sanctuary site, including the Fort George Island Midden (Du5), the Chappelle Midden (Du1542) and the Liana Site (Du136). These are considered further in the Unit Management Plan for Fort George Island Cultural State Park.

Unrecorded resources within the Rollins Bird and Plant Sanctuary are the garage and lodge. Originally associated with the sanctuary, these buildings purportedly were built in the early 1940s. The garage is a log building. The exterior of the lodge is constructed of sawn half logs nailed in place to give the appearance of a log building (Stowell 1996). The lodge is in better condition than the garage, and is currently used as a residence for park personnel.

Not all the recorded resources in the parks have been visited recently, however all visited resources are in fair condition, with the exception of Du16006, which is deemed in poor condition. Looting and pilferage are absent on the three islands. Declines in condition of resources are due largely to age or climatic influences, or in the case of the Little Talbot Shipwreck, Du3157, to the ordinary action of surf, wind, and sand. Special attention needs to be paid to the Dune Edge site, Du16006, as the artifacts are rapidly eroding from the site and draw the attention of park visitors who collect the objects. As park visitation increases, it will be necessary to manage resources from a base of knowledge that is assembled and recorded, then utilized to make informed decisions about possible actions.

RESOURCE MANAGEMENT PROGRAM

Special Management Considerations

Timber Management Analysis

Chapters 253 and 259, Florida Statutes, require an assessment of the feasibility of managing timber in land management plans for parcels greater than 1,000 acres if the lead agency determines that timber management is not in conflict with the primary management objectives of the land. The feasibility of harvesting timber at this park during the period covered by this plan was considered in context of the Division's statutory responsibilities, and an analysis of the park's resource needs and values. The long-term management goal for forest communities in the state park system is to maintain or re-establish old-growth characteristics to the degree practicable, with the

exception of early successional communities such as sand pine scrub and coastal strand.

During the development of this plan, an analysis was made regarding the feasibility of timber management activities for these parks. It was then determined that the primary management objectives of the parks could be met without conducting timber management activities. Timber management will be reevaluated during the next revision of this management plan.

Additional Considerations

400-foot management zone. The Division maintains management authority over a 400-foot zone from the edge of mean high water along the sovereign submerged lands passing through or alongside the parks. Where emergent wetland vegetation exists, the zone extends waterward 400 feet beyond the vegetation. Within this zone, the park staff will enforce Division regulations.

Boat landings within this zone are discouraged in areas inhabited by nesting or resting shorebirds and wading birds, and in areas where other visitor uses, such as swimming or fishing, may pose a conflict. Pets are not allowed on beaches. Beach camping and campfires are prohibited, however campsites and campfire circles are provided in designated campground areas. Metal detecting is restricted along most of the beach shorelines to protect known and unknown cultural resource sites. Metal detecting is permitted on part of Little Talbot Island, within a designated zone.

Coastal erosion. Coastal erosion along the Atlantic coastline is an ongoing regional management issue facing several agency stakeholders. Changes in natural littoral drift patterns, erosion and accretion rates have come about as the result of long-term inlet stabilization, coastal armoring, and beach renourishment. Understanding sediment transport dynamics and managing coastlines to maintain beaches and prevent erosion in critical areas is now an issue facing all managers of coastal habitat.

Careful attention must be given to proposed dredge and fill, shoreline stabilization, or coastal armoring activities in the areas surrounding the parks, or any other area which could affect the barrier islands ecosystem associated with the parks. Division staff should participate in regional sediment management planning to ensure park resources are protected. Management actions such as periodic beach renourishment and shoreline armoring proposed for beaches within the parks should be carefully planned and implemented to prevent impacts to wildlife and other natural and cultural resources. To that end, the Division should work closely with the Bureau of Beaches and Coastal Systems, state and federal wildlife management agencies, and the Army Corps of Engineers to address the various issues associated with coastal management activities which will affect the parks' resources.

Shorebird protection. Nearly 50 shorebird species have been documented using the

Amelia and Talbot Islands as over wintering, feeding, or breeding sites, or as resting sites during migration. The region provides an important, protected resting site for numerous resident and migratory birds. Resting birds primarily congregate along the beach below the mean high water line on sand flats exposed when tides are low (i.e. emergent above the mean low water line). The beach areas are used extensively for resting by least terns, royal terns (*Sterna maxima*), pelicans (*Pelecanus occidentalis*), cormorants (*Phalacrocorax auritus*), other sea birds, and various shorebirds, including wintering populations of piping plovers and migratory flocks of red knots (*Calidris canutus rufa*). This subspecies of red knot is rapidly declining and is a candidate species for federal listing. A significant number of the remaining birds pass through and use the shorelines in this region as a feeding area during migration.

A total of ten species of shorebirds have been documented nesting within the region. Historically, nesting by shorebirds on south Amelia Island occurred almost entirely at the southern tip of the island, within the boundary of the state park. Least tern nesting on Little Talbot Island has been concentrated on the north end, with some nesting by other species on the north and south ends. The extent and relative quality of potential nesting habitat at the ends of the islands has varied among years as sand and other materials accreted or eroded away. Least terns typically nest on beaches above the mean high water line, along relatively flat areas where pieces of shell and bits of detritus mix with the sand. American oystercatchers (*Haematopus palliates*) and Wilson's plovers (*Charadrius wilsonia*) nest in similar areas.

The Nassau Sound Shoals (the Bird Islands) have historically supported the largest and most diverse shorebird nesting colonies in the region. Shorebird nesting efforts were highest in the 1970s and 1980s when thousands of black skimmers (*Rynchops niger*), gull-billed terns (*Sterna nilotica*), royal terns, least terns, and sandwich terns (*Sterna sandvicensis*) nested on the offshore islands. Smaller numbers of American oystercatchers, Wilson's plovers and laughing gulls (*Larus atricilla*) have also been recorded nesting on the shoals. Migration of the emergent shoals across the sound has altered their profiles and caused the southernmost shoal, Big Bird Island, to merge with the northern end of Little Talbot Island, effectively linking it to the mainland. Overwash of the nesting areas during storm events and spring tides has been a persistent problem for nesting colonies on the shoals.

Because of concerns raised during the evaluation of the permit application for the South Amelia Island Shore Stabilization Structures Project, a Shorebird Management Plan (SMP) for the region potentially affected by the construction of the shoreline protection structures was required as part of the Joint Coastal Permit. The main concern was the potential effects that the rock groins might have on the sediment transport system in the region. The sediment transport system moves sand from Amelia Island into the Nassau Sound and affects the sediment balance of the emergent shoals in the Sound.

The Nassau Sound Shorebird Management Plan (FDEP 2005) is intended to guide management activities to increase the protection and monitoring of shorebirds and their habitats. The area covered by the SMP extends from DEP range monument R-60 on Amelia Island to R-8 on Little Talbot Island and includes the Nassau Sound shoals east of the A1A bridge.

The Nassau Sound region provides important habitat for breeding, over-wintering and migrant shorebirds. Contained within the scope of the SMP are two Critical Wildlife Areas (CWA) designated by the FFWCC: the Amelia Island CWA and the Bird Islands CWA. Winter use of the shoals and islands in Nassau Sound and Fort George Inlet and the shorelines of Little Talbot Island by the federally threatened piping plover (*Charadrius melodus*) have been well documented. Banded piping plovers that over-winter in the region originate primarily from breeding populations in the Great Lakes and Canadian Maritime Provinces (Doonan et al. 2005, Leary and Leary 2005). The shorelines of Big Talbot Island, Little Talbot Island, and the entire Nassau Sound complex of emergent shoals, are part of a federally designated unit (FL-35) of critical wintering habitat for the piping plover. The designation recognizes the significance of these areas to overwintering populations of this endangered shorebird, and provides for review of any actions that may affect these areas, and are authorized, funded, or carried out by a Federal Agency (U.S. Fish and Wildlife Service 2001).

Two areas within the region have been nominated and accepted as Important Bird Areas of Florida (IBA). This international program is administered in the United States by the National Audubon Society with the assistance of state-based IBA programs. The Fort George and Talbot Islands IBA includes Big Talbot Island State Park, Fort George Island, and Little Talbot Island State Park. The Huguenot Park – Nassau Sound IBA includes Huguenot Memorial Park and the Nassau Sound Bird Islands. The IBA program seeks to identify sites that provide essential habitat for one or more bird species. Emphasis is placed on endangered or threatened species, endemic species, species that are restricted to certain habitats and species that congregate in large numbers, such as nesting shorebirds.

During the summer of 2002, the Talbot Islands State Parks Shorebird Survey, a volunteer-based shorebird monitoring program, was developed for Little Talbot Island State Park as a supplement to the intensive nesting surveys that have been in place since 1988. The primary objective of the Shorebird Survey is to establish baseline data on species diversity, abundance, and density. The survey originally covered Little Talbot Island, but was expanded to include the Nassau Sound Shoals in winter 2002, and then Amelia Island State Park in winter 2003. The Shorebird Survey is divided into separate summer and winter surveys, with an emphasis on breeding birds in the summer surveys.

The Division has a Standard Resource Management Procedure, Protection of Colonial

Breeding Birds (FDEP 1994), which guides protection efforts for both shorebird and wading bird nesting colonies. Shorebird nesting signs are posted on Little Talbot and Amelia Island on the margins of the traditional nesting areas and any other areas that appear to be suitable nesting habitat for least terns. Signs are posted before April 1 and removed after August 31. The signs are mounted on wooden stakes with surveyor's string strung between them. The nesting areas are discretely monitored, and if necessary, the signs are relocated to encompass any nests placed outside the original boundary. The recommended setback distance for posting signs around the periphery of the nesting sites is 180m (590 ft).

Management Needs and Problems

1. Significant numbers of designated species breed or over winter in Amelia and the Talbot Islands, or migrate through. These species require special protection measures.

- **A.** Three species of marine turtles—loggerhead, leatherback and green—are confirmed nesters on the beaches of Little Talbot Island. Loggerhead sea turtles also nest on Amelia Island. The parks participate in the marine turtle index nesting beach program. During nesting season, daily monitoring of beaches for turtle nesting attempts is required.
- **B.** Shorebirds intermittently establish nesting colonies on Amelia Island and the north end of Little Talbot Island. Every nesting season, the park must post stretches of high beach suitable for shorebird nesting and temporarily exclude the public from those areas.
- **C.** Numerous wading birds forage in the Talbot tidal marshes and several species use areas adjacent to the marshes as roosting or nesting sites. These species may often be intolerant of human intrusion, especially during breeding season. To provide better protection, there is a critical need to educate the public and to improve the interpretation of wildlife disturbance issues to visitors. The park may also need to supplement "Restricted Area" signage and increase enforcement efforts.
- **D.** Painted buntings, a neotropical migrant, utilize forest edges and various coastal upland habitats during the summer nesting period. This species is one of the most rapidly declining songbirds in the Eastern United States. Florida surveys indicate a 4-6% annual decrease in species numbers (FFWCC).
- **E.** The Nassau Sound Shoals (Bird Islands) are critical bird nesting and resting areas and require additional protection and management, but are not currently included in the Amelia or Talbot Islands State Parks. A portion of Big Bird Island that has fused onto the northern end of Little Talbot Island is owned by the City of Jacksonville and was purchased from a private owner for preservation purposes. Boats landing on the islands or anchoring just offshore during nesting season are becoming increasingly disruptive of the colonies and reducing reproductive success. FFWCC needs to redesignate the Bird Islands Critical Wildlife Area. Shorebird nesting habitat on the Nassau

Sound Shoals needs to be monitored on a periodic basis. Furthermore, a management plan is needed to guide shorebird protection efforts on the Nassau Sound Shoals.

F. Significant numbers of rare, threatened, or endangered shorebirds, including the piping plover, either over winter on islands or pass through the islands during migration. These shorebirds require periods of respite from human disturbance in order to maintain energy stores during harsh conditions and to replenish food reserves during migration stopovers. Shorebird nesting has declined in the region, and shorebirds are impacted year-round by recreational activities.

G. Beach driving and other recreational uses on the beaches of Amelia Island and Little Talbot Island may have impacts on shorebirds and requires monitoring.

H. Shorebirds accessing the retention ponds at the south end of Little Talbot Island adjacent to A1A and the Fort George Inlet are hit by vehicles as they fly across A1A.

2. Increased recreational use of estuarine areas within and adjacent to Big and Little Talbot Island State Parks is negatively affecting the estuarine tidal marshes and adjacent uplands within the parks as well.

A. Motorized watercraft operating within the Talbot Island estuarine tidal marshes create wakes that may cause increased erosion. The number of motorized watercraft navigating the narrow tidal creeks within the marshes has steadily increased. The general lack of regulation of the speed of these craft has generated concerns about public safety and aesthetics. Conflicts among various user groups have also arisen.

B. Unauthorized foot traffic within the estuarine tidal marsh tramples vegetation and may cause accelerated erosion and degradation of water quality. Much of this foot traffic stems from park visitors who park along Highway A1A to access tidal creeks in the marshes.

C. The parking of vehicles along road shoulders where Highway A1A passes through tidal marsh may increase erosion into the marsh, impact water quality, and create safety hazards.

D. Visitors to the Talbot Island tidal marshes and the beaches at the north tip of Little Talbot Island may be causing unacceptable levels of wildlife disturbance, and creating user group conflicts. Visitors to shoals and emergent islands adjacent to the Talbot Islands often disturb shorebird nesting areas, some of which the FFWCC has designated as Critical Wildlife Areas.

3. Moderate-to-severe levels of erosion and shoreline recession are occurring on Amelia Island, Big Talbot Island, and Little Talbot Island.

A. As detailed in the Topography section, various processes such as erosion, the recession and accretion of shorelines, and the migration of barrier islands and inlets are significantly altering the topography of Amelia Island, Big Talbot Island and Little Talbot Island. To a certain extent, these processes are natural, but there is unfortunately a lengthy history of human intervention in the

processes along the northeast coast of Florida. Major human-introduced disruptions include the jetties at the mouths of the St. Johns and St. Marys Rivers, the dredging of inlets and the Intracoastal Waterway to improve navigation, and the mining of offshore sands to renourish beaches. These disruptions have had direct, severe impacts on the natural and developed resources in all three parks.

B. The park staff constantly needs to monitor coastal construction and beach nourishment or armoring activities along the northeast Florida coast. This may be a difficult task at times because of the number of state, federal, and local agencies involved.

4. Undocumented cultural resources may exist within Talbot Islands State Parks. Undiscovered cultural sites may be subject to inadvertent disturbance and many of the known cultural sites lack interpretation.

A. None of the parks has been the subject of comprehensive cultural resources surveys.

B. Undocumented historic and aboriginal sites occur on Big Talbot Island and Long Island; undiscovered cultural sites may exist on Amelia and Little Talbot Islands. When cultural resource sites are located within the parks, their significance needs to be determined and guidelines for preservation established.

C. Known cultural sites require regular assessment and maintenance.

D. The two buildings associated with Rollins Bird and Plant Sanctuary need a final determination of their historic status and additional condition assessments. There is no listing of these resources yet in the Florida Master Site File. *Note: Rollins Sanctuary, though located on Fort George Island, is technically part of Little Talbot Island State Park.*

E. One site in the Rollins Bird and Plant Sanctuary, the Fort George Shell Ring, may have a sufficient assemblage of information to meet nomination criteria for the National Register of Historic Places.

F. Park staff needs training for cultural resource management at Talbot Island State Parks.

G. Sites on Nassau Sound shore, particularly DU16006, are in poor condition and decline with each high tide event.

H. The interpretive program for cultural resources at Talbot Islands State Parks needs expanding. The park staff needs to develop additional interpretive materials, highlighting the significant archaeological and historic resources of the region. Research into the settlement patterns and land use practices of aboriginal and European cultures on the islands would be particularly useful, and would assist staff in deciphering human influences on the present-day natural communities.

5. Human impacts have altered the natural hydrology of freshwater systems on Talbot Islands State Parks. Also affected are natural communities such as maritime hammock, scrubby flatwoods, and coastal grasslands.

A. Highway A1A and its associated swales and drainage ditches have altered the natural hydrology, such as the central swale on Big Talbot Island. Any reduction in the volume and duration of flooding in the depression marshes encourages invasion by woody species such as slash pine.

B. Mosquito ditching and road construction have disrupted the natural hydrology of depression marshes and coastal grasslands by causing excessive drainage or by creating artificial impoundments.

C. The initial phase of a hydrological restoration project is currently underway at Big and Little Talbot Islands. Included in the project are hydrological impact studies and the development of conceptual designs for future restoration work. Funds are lacking for research to address hydrological restoration at Amelia Island or the remaining restoration needed at Little Talbot Island.

6. Natural communities in Talbot Islands State Parks require additional monitoring, protection and restoration.

A. Historical and recent human activities have degraded the upland natural communities of the islands, particularly Big Talbot Island. Much of the maritime hammock on Big Talbot Island is recovering from historical disturbances, however old roads continue to slice through the hammock, fragmenting habitat. Human access to Long Island before its acquisition by the state also resulted in impacts to the maritime hammock.

B. On Little Talbot Island, foot traffic from the campground is causing erosion on the slopes of some stabilized sand dunes within the maritime hammock. On Amelia Island, foot traffic between the beach and parking area erodes the primary dune system.

C. Historic fire suppression on Amelia and Big Talbot Islands has caused some degradation of fire-dependent natural communities. Due to the lack of natural fire, portions of the scrubby flatwoods are succeeding to xeric hammock, and fuel loads in some of the mesic and wet flatwoods are higher than normal.

D. The parks (including Rollins Bird and Plant Sanctuary) contain a number of listed plant species, as well as plants that are growing at the limits of their geographic ranges. These plants and the communities in which they occur need constant protection from disturbance.

E. Wildlife mortality along Highway A1A and park roads depletes animal populations in the parks. Road kills are having an increasing impact on the wildlife of Amelia and the Talbot Islands as traffic increases and roadway improvements allow greater speeds. The park staff has documented significant numbers of species and individuals as road kills along the A1A corridor.

F. Floral and faunal surveys of Amelia and the Talbot Islands are incomplete. Although a University of Florida student has completed a floristic study on Little Talbot Island and park personnel have conducted herpetological surveys on Big Talbot Island, there are additional floral and faunal survey needs.

7. Significant private inholdings still exist on Big Talbot Island. Many of these are located in the maritime hammock on the southern end of Big Talbot Island and contain areas of natural and cultural resources of considerable value.
8. Federal, state, and local government responsibilities for regional natural, cultural and recreational resources often overlap, requiring careful communication and coordination to achieve effective land management. Close management coordination is needed between partners.

Management Objectives

The resources administered by the Division are divided into two principal categories: natural resources and cultural resources. The Division primary objective in natural resource management is to maintain and restore, to the extent possible, to the conditions that existed before the ecological disruptions caused by man. The objective for managing cultural resources is to protect these resources from human-related and natural threats. This will arrest deterioration and help preserve the cultural resources for future generations to enjoy.

1. Monitor and protect designated species breeding or over wintering in, or migrating through, Amelia and the Talbot Islands.
   - **A.** Continue to participate in the marine turtle index nesting beach program. Protect nesting marine turtles and hatchlings from human disturbance, light pollution and abnormal predation.
   - **B.** Continue to post areas of beach suitable for shorebird nesting, and exclude public access to those areas during pre-nesting and nesting seasons.
   - **C.** Continue to document all breeding sites for wading birds within Amelia and the Talbot Islands. Protect wading bird rookeries and roosts from human intrusion. Educate the public about the harm that human disturbance causes wildlife.
   - **D.** Continue to participate in monitoring of Painted Buntings. Consider impacts of habitat disturbance with new park development. Educate park visitors about the threats and declining numbers of neotropical migrants.
   - **E.** Develop a management agreement between the Trustees, FFWCC, DEP and other appropriate entities to establish each agency's responsibilities for managing shorebirds within Nassau Sound, east of the A1A Bridge. Transfer title of the City-owned portion of Big Bird Island to the Trustees or develop an alternative management agreement with the City of Jacksonville. Assist FFWCC in redesignating the Bird Islands CWA to include all the emergent shoals in Nassau Sound east of the A1A bridge. Monitor shorebird nesting habitat on the Nassau Sound Shoals using GIS and physical monitoring data on an annual basis.
   - **F.** Coordinate shorebird monitoring and protection efforts with other entities such as FFWCC, CAMA, COJ, NPS and private organizations managing lands and resources within the regional shorebird populations. Continue to monitor

shorebird populations throughout the year on Amelia and the Talbot Islands. Continue to exclude dogs and cats from park beaches and dune areas to protect resting, nesting, and foraging shorebirds. Educate park visitors about the critical need of many shorebirds for less human disturbance.

G. Evaluate the impacts on shorebirds created by recreational access and make recommendations to address any observed impacts.

H. Work with FDOT to develop a landscape design along A1A at the south end of Little Talbot Island to discourage shorebirds from flying across traffic lanes.

2. Document impacts from increased recreational use of estuarine areas, and seek ways to reduce, eliminate, or mitigate documented and predicted impacts.

A. In cooperation with the FFWCC and the Florida Park Patrol, consider designating idle speed zones in certain tidal creeks for resource protection and public safety.

B. To the extent possible, coordinate with other entities to identify and control impacts to the estuarine tidal marshes. Implement coordinated management strategies to enhance recreational access while reducing negative impacts. Discourage direct, unsupervised access to the marshes within the park's jurisdictional area along Highway A1A. Continue conservation of sensitive salt pans within the tidal marshes. Consider providing alternative public access that minimizes recreational disturbance. Utilize interpretive opportunities to educate the public on importance and sensitivity of the estuary.

C. Coordinate with the FDOT to reduce negative impacts from the A1A highway corridor to the estuary.

D. Continue cooperative efforts with the FFWCC, CAMA, COJ, NPS, BPP, and other private organizations to reduce wildlife disturbances and conflicts between recreational user groups in estuarine tidal marshes and emergent shoals adjacent to State Park lands.

3. Continue to monitor coastal sediment transport processes and coordinate with other agencies in developing and implementing erosion control projects and sediment management plans.

A. Monitor regional sediment transport patterns and trends for impacts to park properties. Specific regional bounds should be considered between the St. Marys River and the St. Johns River jetty systems. Monitor any projects affecting littoral drift patterns in this region.

B. Continue to use GPS and aerial photography to monitor coastal erosion rates within Talbot Islands State Parks. Adopt reasonable measures to protect park facilities, sensitive natural areas, and cultural resources within areas subject to erosion.

C. Continue to coordinate closely with the FDOT and the Army Corps of Engineers to monitor existing coastal armoring systems and provide technical review for proposed designs currently under consideration. Continue participation in the Army Corps of Engineers' Regional Sediment

Management working group. Provide technical support and comments for future studies and/or demonstration projects to address sand movement and shoaling. Seek notification of and provide appropriate comments regarding future dredging, sand mining, spoil disposal, and beach renourishment projects that might affect the parks.

4. Survey, document, protect, and interpret the cultural resources of Amelia and the Talbot Islands.

- **A.** Pursue funding to conduct comprehensive cultural resource surveys of Amelia, Big Talbot, Little Talbot and Long Islands.
- **B.** Identify and document the cultural resources of the parks and synthesize a comprehensive overview of them. Record additional cultural resources when discovered.
- **C.** Continue to protect the cultural resources of the parks from deterioration caused by natural or human forces, and implement periodic maintenance. Expand the already established cultural site visitation program, which includes documentation with fixed photo points, to include all known cultural sites. Develop a cyclical schedule for cultural site visitations based on conditions and maintenance needs of the sites. Expand the information gathering, filing, and retrieval routines for cultural resources.
- **D.** Determine the historic status and conduct additional condition assessments of the two buildings associated with the Rollins Bird and Plant Sanctuary on Fort George Island (the Sanctuary is technically part of Little Talbot Island State Park). Report findings to the Florida Master Site File.
- **E.** Make a final determination whether the Fort George Shell Ring, located in the Rollins Sanctuary, is eligible for listing on the National Register of Historic Places. If so, prepare a proposal for listing.
- **F.** Establish Talbot Islands State Parks Cultural Resources Management training program.
- **G.** Pursue salvage archaeology projects for sites threatened by erosion. Sites currently threatened include DU16006, DU13262, and DU106.
- **H.** Expand interpretation at Talbot Islands State Parks to include a more thorough treatment of the archaeological and historic resources of the region. Enhance the public's appreciation of cultural resources by developing innovative interpretive programs that are non-damaging to resources.

5. Evaluate impacts on surface water and groundwater systems. Develop and implement plans for restoration of natural hydrology.

- **A.** Seek funding for basic studies on Amelia Island to document hydrologic impacts of roads and ditches and to determine if restoration of natural hydrology is feasible. Depending on results of the studies, obtain additional funds to develop conceptual design and implementation for hydrologic restoration in areas altered by ditches and impoundments.
- **B.** Complete the already initiated, conceptual design study that will determine the feasibility of restoring natural drainage patterns on Big and Little Talbot

Islands.

C. In coordination with the Northeast District of DEP and the SJRWMD, seek mitigation funds to complete conceptual designs for needed hydrological restoration projects on Talbot Islands State Parks.

D. Continue cooperating with SJRWMD and USGS in monitoring groundwater.

6. Monitor, protect, and restore natural communities on Amelia Island and the Talbot Islands.

A. Protect the natural communities from disturbance and fragmentation. Carefully assess the need for roads and trails. If roads or trails are identified as unnecessary close them, and restore them to a natural state.

B. Continue to seek effective methods for reducing erosion of dunes caused by human activities. Limit visitor access to dunes and restore degraded areas. Regularly monitor dunes for abnormal erosion and for signs of unauthorized visitor access. Preserve the quality of the beach and dune systems, while permitting recreational use, by continuing to restrict traffic in dune areas and interpreting dune sensitivity.

C. Develop comprehensive fire management plans for Amelia and the Talbot Islands. Within the plans, incorporate specific recommendations for the establishment of additional firebreaks, both hard and soft, which should allow burning at appropriate fire return intervals, while maintaining safety and ecological standards. Conduct additional prescribed burns as needed to maintain fire-dependent communities on the islands. Continue to cooperate with other agencies to achieve fire management objectives.

D. Develop and implement a system to monitor populations of listed plant species and plant species growing at the limits of their range. Regulate visitor use in sensitive areas that contain these species, to prevent disturbance.

E. Continue to document wildlife mortality along Highway A1A and park roads, adding to the large data set of road kill information that already exists for the islands. When appropriate, request mitigation from the FDOT. Mitigation measures could include reducing speed limits, installing wildlife crossing signs, and erecting wildlife barriers and passages.

F. Pursue funding, partnerships, and academic research projects to complete floral and faunal surveys

7. Continue efforts to purchase the remaining undeveloped out parcels depicted within the Big Talbot Island Optimum Boundary, to protect the integrity of the park, and the surrounding Talbot Islands ecosystem.

8. Continue partnering efforts to achieve common resource management goals.

Management Measures for Natural Resources

Hydrology

The long-term effects of human alteration of natural hydrology within the parks will be evaluated in cooperation with other agencies and restoration measures will be initiated

as appropriate. Research is needed to determine if freshwater wetlands in interdunal swales have been significantly changed by human manipulation of local hydrology. Any hydrological restoration plan should consider past assessments of the wetlands, current water table conditions, and existing drainage patterns. If restoration activities are warranted for areas affected by mosquito ditches, roads or other impoundments, measures to restore the natural communities and hydrology may include plugging or back filling of ditches, and removal or redesign of roads.

The Division recently received $100,000 in FDOT wetland mitigation funds through the auspices of the Northeast District of DEP in Jacksonville, as mitigation for wetland impacts associated with the Fort George Inlet bridge replacement. Extensive alterations to the natural hydrology of freshwater wetlands in all three parks have occurred over time through the construction of roads, ditches or other impoundments. Recognizing this, the District 2 Office of the Division designed a hydrologic restoration feasibility study to address historic impacts at three locations on Fort George Island, one location on Little Talbot Island, and two locations on Big Talbot Island. The study identified and addressed the extent of hydrological impact of specific roads and ditches, and determined the feasibility of restoring the natural hydrology in impacted areas. Conceptual designs for restoration were developed for four of the impacted areas studied.

The target of the initial study on Little Talbot Island was the interdunal swale system intersected by the park entrance drive near the ranger station. The study assessed the impacts of the roadway on the local hydrology and provided a recommended strategy for restoring the hydrologic function of the natural drainage way. Staff will seek the funds necessary to complete the recommended restoration work, and to implement similar restoration work in other wetlands impacted by park roads east of Highway A1A. Staff will pursue additional hydrological studies in mosquito-ditched areas west of A1A to determine whether the reestablishment of natural hydroperiods in the coastal grassland, beach dune, and coastal strand natural communities is both beneficial and practical.

On Big Talbot Island, the hydrological restoration study focused on two ditches draining the Highway A1A corridor, which bisects the island. The road and its associated ditches significantly modify the natural hydrology of the wet flatwoods and depression marshes that occupy the linear depression along the central axis of the island. The study consultant concluded that a project designed to fill or plug ditches in the Big Talbot flatwoods along Highway A1A may not be feasible. The low elevation of the highway and its potential for flooding are major impediments to the successful restoration of natural hydroperiods in the flatwoods. There is also some question about the magnitude of impact the ditches may actually have on the local hydrology.

Hydrologic management activities in the parks will comply with best management

practices to maintain or improve existing water quality on site, and will take measures to prevent soil erosion or other impacts to water resources. Areas of the park where erosion is a potential problem will be monitored periodically. Monitoring could include a regularly scheduled series of photopoints. Beach erosion will be carefully monitored in cooperation with the DEP's Bureau of Beaches and Coastal Systems. Additional areas that will be monitored include pedestrian and equestrian trails. If problems arise, corrective measures will be taken.

In addition to active management of local park hydrology, park and district staffs will maintain regular liaison with appropriate regulatory agencies to facilitate monitoring of surface water and groundwater quality within the parks.

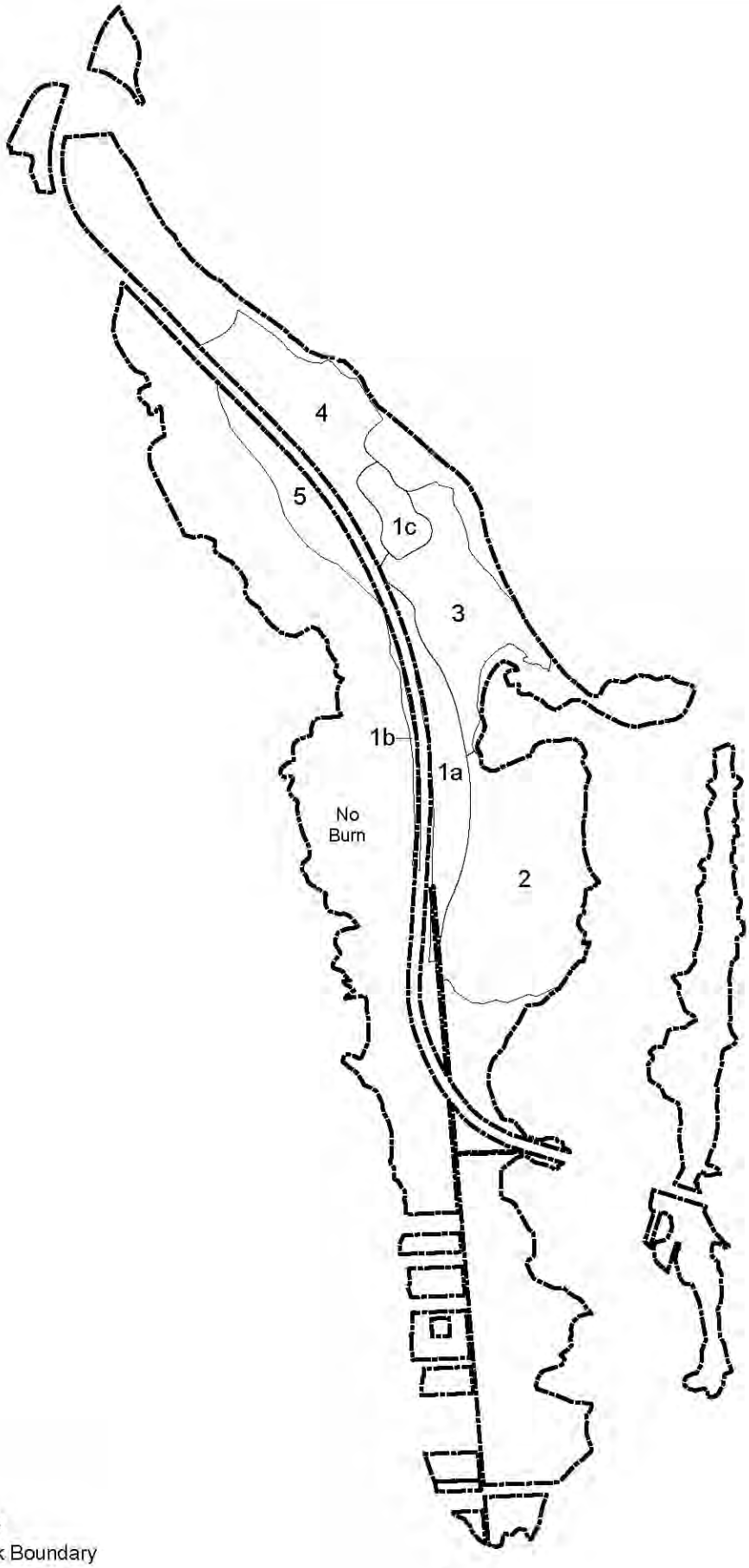
Prescribed Burning

The objectives of prescribed burning are to create those conditions that are most natural for a particular community, and to maintain ecological diversity within a unit's natural communities. To meet these objectives, parks are partitioned into burn zones, and burn prescriptions are implemented for each zone. Park burn plans are updated annually to meet current conditions. All prescribed burns are conducted with authorization from the Department of Agriculture and Consumer Services, Division of Forestry (DOF). Wildfire suppression activities will be coordinated between the Division and the DOF.

Prescribed burning is not currently used as a management tool at Amelia Island State Park. However, it may be used within the narrow fringe of mesic flatwoods along Highway A1A and within the coastal grasslands natural community to control hardwood invasion.

Although fires occur naturally on barrier islands, the natural communities on Little Talbot Island do not appear to be fire-dependent. If lightning set fires do occur on Little Talbot Island, they are likely to be very small in scope and should not trigger large-scale suppression responses. Staff should monitor such fires and extinguish them immediately if they threaten visitors or facilities, or if smoke becomes a hazard to Highway A1A. According to park staff, lightning set fires on the island usually die out naturally without need for any suppression. Prescribed fires on Little Talbot Island may be used to maintain the coastal interdunal swales and coastal grasslands, but periodic flooding and saltwater overwash events probably serve the same purpose.

In contrast, Big Talbot Island contains over 500 acres of fire-maintained habitat, in natural communities such as wet flatwoods, scrubby flatwoods, and depression marsh. Due to the proximity of the fire-type communities to the ocean and the presence of Highway A1A in the center of the island, the prescribed burn program at Big Talbot demands careful attention to detail. District biologists and the park manager revise the Burn Plan for Big Talbot Island annually. The Burn Plan provides detailed descriptions of the prescribed burns planned for each upcoming year.



LEGEND

Park Boundary

Burn Zones

N

Feet

0 1,000 2,000 4,000

Florida Department of Environmental Protection
Division of Recreation and Parks
Office of Park Planning

BIG TALBOT ISLAND STATE PARK

BURN ZONE MAP

The fire-return interval recommended by FNAI for scrubby flatwoods is 8-25 years, while that for wet flatwoods is 3-10 years. Due to the mosaic-like distribution of these two communities on parts of Big Talbot Island and the difficulty in isolating burns within one community type, district biologists recommend a fire-return interval of 12-15 years for the flatwoods in general. The most recent prescribed burns on Big Talbot Island took place in 1990 and 1991. Staff applied prescribed fire to three zones totaling about 370 acres in March 1990 and two zones comprising about 150 acres in June 1991. The outer limit of the preferred fire-return interval for the Big Talbot flatwoods, 15 years, has been reached. Accordingly, district biologists and the park manager have scheduled at least one Big Talbot burn zone annually for prescribed burning.

A pressing need at Big Talbot is additional firebreaks in the scrubby flatwoods. More firebreaks would result in smaller burn zones with less smoke production and shorter fire duration than is possible with the zones as presently configured. Staff will develop a comprehensive long-range plan for Big Talbot that will include recommendations for the establishment of additional firebreaks where needed. These firebreaks, both hard and soft, should allow burning of the scrubby flatwoods at appropriate fire-return intervals while maintaining safety and ecological standards. The route surveyed for the soon to be constructed multi-use trail, the Timucuan Trail, runs east of and roughly parallel to Highway A1A. This will be a paved trail that, when completed, will serve as an additional firebreak on the island. The trail will separate some of the roadside depression marshes from the flatwoods to the east and should enhance the ability of staff to manage the amount of smoke drifting onto A1A during prescribed burns.

The prescribed burn program at Big Talbot Island follows these general guidelines:

1. To the extent possible, firebreaks on Big Talbot will follow existing roads or other disturbances. One factor that complicates prescribed burning on Big Talbot Island is the presence of numerous cultural sites, some of which could incur damage during the preparation of firebreaks or during the actual prescribed fires. Staff will exercise due caution when maintaining firebreaks located on historic roads. Staff will prevent or minimize ground disturbance in vicinity of cultural sites or historic roads and use soft fire breaks as an alternative to hard breaks where practical. Soft breaks may include mowed lines that are wet down or covered with foam.

2. Staff will attempt to avoid causing undue stress to slash pines and pond pines in areas of the wet flatwoods where fire suppression or hydrological alterations have promoted abnormal increases in fuel loading. Where feasible, staff will try to burn pine-dominated areas under milder conditions to reduce fuel loads before attempting burns in adjacent scrubby flatwoods. Ignition of prescribed fire in the scrubby flatwoods requires relatively severe fire-weather conditions, and burns are usually very intense with a rapid rate of spread. These factors combine to produce fires that can be very destructive to pines in adjacent wet flatwoods,

especially those that possess unnaturally high fuel loads.

3. Smoke management will be a primary concern of staff when planning prescribed burns on Big Talbot Island. The location of Highway A1A on the leeward side of the great majority of the Big Talbot burn habitat creates a major predicament in smoke management. During most of the year, the prevailing winds are easterly sea breezes that will direct smoke toward the highway during prescribed burns. When burning in zones located east of A1A, staff will take extra precautions to reduce smoke hazards on the highway. Staff will consult with the Jacksonville District of DOF in developing the best burn strategies available to accomplish burn goals yet keep Highway A1A safe. Staff will also coordinate closely with law enforcement agencies to develop effective procedures for maintaining safe traffic flow during times when smoke drifts across the highway during prescribed burns on Big Talbot. These procedures will include the posting of smoke warning signs during all burns and the use of law enforcement officers, as necessary, to convoy private vehicles safely through smoke-obscured areas. In the development of burn prescriptions for Big Talbot Island, staff will also take into consideration other nearby smoke sensitive areas, including private residences on Big Talbot Island and the Mayport Naval Station with its associated infrastructure and airstrips.

Designated Species Protection

The welfare of designated species is an important concern of the Division. In many cases, these species will benefit most from proper management of their natural communities. At times, however, additional management measures are needed because of the poor condition of some communities, or because of unusual circumstances that aggravate the particular problems of a species. To avoid duplication of efforts and conserve staff resources, the Division will consult and coordinate with appropriate federal, state and local agencies for management of designated species. Specifically, data collected by the FFWCC and USFWS as part of their ongoing research and monitoring programs will be reviewed periodically to inform management of decisions that may have an impact on designated species at the parks.

The continued survival of the parks' endangered and potentially endangered plants and animals is directly dependent on maintenance of habitat integrity. Management activities in the parks will avoid or minimize degradation or fragmentation of the remaining natural communities.

A number of designated vertebrate species occur on Amelia Island, Big Talbot Island, and Little Talbot Island, either within the uplands or in adjacent tidal waters and estuarine marshes. Gopher tortoises are particularly abundant in certain coastal areas of the islands. Park visitors may encounter tortoises or their burrows along roads and trails or in open spaces within ruderal and developed areas. Interpretive programs at the Talbot Islands inform visitors about the importance of protecting this "keystone" species. Gopher tortoise burrows are known to provide shelter, escape, feeding or

reproductive sites to dozens of invertebrates, frogs and toads, lizards and snakes, birds and mammals (Jackson and Milstrey 1989). The ongoing restoration of the Big Talbot scrubby flatwoods through the application of prescribed fire will further enhance the prospects of gopher tortoises in the islands.

Amelia Island and Little Talbot Island State Parks participate in the Marine Turtle Index Nesting Beach Survey and provide daily logs of the nesting activity of marine turtles to the FFWCC, Fish and Wildlife Research Institute (FWRI) from May 1 through August 31. The parks also provide a yearly nesting summary to the FFWCC through the coordinator for the Division marine turtle program. The FWRI issues a permit for all marine turtle activities conducted by the parks. The permit allows staff to conduct nesting surveys, conduct stranding and salvage activities, relocate nests, and maintain and display preserved specimens. The parks try to avoid relocating nests unless there is no alternative. Protective caging of nests is also discouraged. In most cases, staff members only disturb the nests when truly necessary. FDEP Marine Turtle Conservation Guidelines (FDEP 1996) provide direction for all marine turtle activities in the parks.

In addition to monitoring and protecting marine turtle nests, the parks must take measures to prevent disruptions to marine turtle nesting cycles. Any future development at the parks must implement proper lighting fixtures which do not deter marine turtle nesting or cause hatchling disorientation. Operation and maintenance of existing lighting, particularly along the George Crady Bridge Fishing Pier, should continue to employ appropriate lighting. Information on appropriate lighting for areas near beaches can be found in Witherington and Martin (1996).

For least terns, and many other species of shorebirds, the beaches of Amelia Island and the Talbot Islands serve as important resting and foraging sites. Least terns have traditionally established nesting colonies at the southern end of Amelia Island and the northern end of Little Talbot Island. In 2002, park staff and volunteers began formal implementation of shorebird surveys on Amelia Island, Little Talbot Island, and the Bird Islands to document the breeding success or failure of nesting colonies. During the pre-nesting season, park staff posts boundaries around the areas where the terns traditionally congregate and display their pre-nesting behavior. Beach driving is currently regulated on the southern end of Amelia Island year round to protect nesting least terns and marine turtles. The traditional least tern nesting areas on both islands are posted with no entry signs according to guidelines in the Division's Standard Resource Management Procedures Number 13, Protection of Colonial Breeding Birds. Despite posting of these areas, several incidences of vehicular and human trespass into the least tern colonies during the nesting season have been documented.

Nesting success of least tern colonies on Amelia and Little Talbot Islands has been relatively low in recent years due to overwash during extreme high tides and

disturbance from human visitors and their pets. The accelerated rate of erosion on the southern tip of Amelia Island State Park had resulted in the loss of the traditional least tern colony site there. Recent efforts to renourish and stabilize that beach have been rewarded by the return of nesting least terns to the Amelia Island. However, the erosion dynamics, and their potential effects on habitat availability for nesting shorebirds emphasizes the critical need to preserve the northern end of Little Talbot Island and the adjacent Bird Islands as potential colony sites for least terns. The FFWCC currently designates Big and Little Bird Islands as a Critical Wildlife Area (CWA). Recreational users are having undesirable impacts on shorebirds that nest within the CWA.

The exclusion of humans and their pets from least tern colonies during the prenesting and nesting seasons is essential for successful nesting. Recommended setback distances for protection of breeding bird colonies are found in the Division's Standard Resource Management Procedures Number 13 and in Rogers and Smith (1995). Staff should act to protect these species from disturbance. Disturbances during the prenesting period are more likely to cause least terns to abandon an area than disturbances that occur after egg laying or hatching (H. Smith pers. comm.).

Despite the posting of signs prohibiting entry into the colonies, human intrusion during the nesting season commonly occurs as evidenced by footprints and tire tracks in the sand. Furthermore, many park visitors access the north tip of Little Talbot Island and the Bird Islands by boat and allow dogs to run on the beaches. Dogs are perhaps the most destructive and disturbing influence possible on ground-nesting colonial birds. Unfortunately, the remote location of the least tern colonies on Little Talbot and the Bird Islands prevents staff from maintaining a meaningful presence in the area. Staff will pursue legal and interpretive strategies to prevent or minimize disturbances of the least tern colonies and other breeding shorebirds on the islands. Staff will coordinate enforcement of regulations with the FDEP Division of Law Enforcement and will enlist the help of the FFWCC Nongame Wildlife Biologist in protecting the colonies. One option that should be considered is the closing of portions of the park beaches to visitor access during the pre-nesting and nesting season, rather than just posting the colony boundaries.

Other designated shorebird and wading bird species also utilize the parks for resting and feeding activities. There is a high potential for wildlife disturbance where these species interact with humans, particularly in the wetland marshes and beach areas of the parks. These species would benefit from an active environmental education program aimed at informing park visitors about the impacts of disturbance on wildlife. Repeated disturbances by park visitors (and their pets) walking along the shoreline can, over time, be detrimental to designated species such as the black skimmer, least tern, Caspian tern (*Sterna caspia*), royal tern, and sandwich tern (H. Smith pers. comm.). Smith suggests that tangential approaches to bird colonies or flocks of resting shorebirds may be less disturbing than direct approaches. Park and district staffs will

investigate effective methods of educating the public about successful coexistence with colonial nesting species; consideration may be given to finding alternative routes for visitors to bypass resting shorebirds to minimize disturbances.

A growing concern in the estuarine tidal marshes and tidal creeks adjacent to the Talbot Islands is the disturbance of designated bird species and the endangered West Indian manatee by motorized vessels and personal watercraft or jet skis. The noise and wave action generated by boat engines can have serious impacts on the feeding and breeding success of certain wildlife species in these areas. Motorized watercraft are also a serious threat to the West Indian manatee. Collisions with motorized watercraft may seriously injure or kill manatees. The limited water depth and reduced visibility in the narrow, winding tidal creeks may make such collisions more likely. Staff will investigate legal and interpretive approaches to restricting these disturbances from sensitive areas and educating the user groups on how to avoid impacts to natural resources in estuarine areas. Staff will post manatee protection zone signs at boat ramps and canoe launches within the park. Staff will also consider approaching the proper authorities to establish idle speed zones within the narrower tidal creeks.

Designated species protection should include continuation of monitoring programs such as road kill surveys that can be accomplished as part of routine patrols by park staff. Data from these surveys can indicate the presence of otherwise unrecorded species or areas of particular concentrations of wildlife requiring special protection measures.

Protection of designated (listed) plant species means protecting suitable habitat from disturbance. For instance, interpretive or research activities conducted at the Fort George Shell Ring in the Rollins Bird and Plant Sanctuary need careful planning and monitoring due to the local presence of sensitive plants in the shell mound natural community. Populations of the sensitive plants could incur harm from trampling by visitors or the creation of artificial openings in the canopy. Prompt removal of feral hogs will help protect certain sensitive species such as ground orchids.

Exotic Species Control

Exotic species are those plants or animals that are not native to Florida, but were introduced because of human-related activities. Exotics have fewer natural enemies and may have a higher survival rate than do native species. They may also harbor diseases or parasites that significantly affect non-resistant native species. Consequently, it is the strategy of the Division to remove exotic species from native natural communities.

Amelia Island, Big Talbot Island, Little Talbot Island (including the Rollins Bird and Plant Sanctuary) and Long Islands have few exotic species. Confederate jasmine (*Trachelospermum jasminoides*) is invading the north boundary of Rollins Bird and Plant Sanctuary from the Chappelle parcel. The newly acquired Chappelle property should be inventoried for other invasive exotics that may grow into the Rollins Bird and Plant

Sanctuary. A plan should be developed and executed to carefully remove the invading confederate jasmine which is threatening listed plant species. The few Chinaberry trees (*Melia azedarach*) on the islands are widely scattered. Several mimosas (*Albizia julibrissin*) occur in the ruderal areas of Sawpit Island just north of Big Talbot. Treatment of exotic plants ensues immediately following discovery, and follow-up treatments are routinely scheduled. An exotic species of lantana (*Lantana camara*) may be present in the Talbot Islands parks. Since the endangered native lantana (*Lantana depressa*) occurs on Little Talbot Island, staff removing *Lantana camara* should be aware of the differences between these two species and be very cautious about removing any lantana specimens that are not flowering. Chinese tallowtree (*Sapium sebiferum*) and tropical soda-apple (*Solanum viarum)* recently recorded in the Talbot parks, are abundant on public rights of way approaching the parks. Frequent survey for this and other exotic species likely to cross park boundaries will enable park staff to discover new invaders promptly and implement control measures in a timely manner to avoid severe infestations.

A recent invasive insect , the Asian Ambrosia Beetle (*Xyleborus glabratus)*, has caused high rates of mortality to mature Red Bay trees in maritime hammocks by spreading Laurel Wilt disease. The park continues to monitor the spread of the disease, discourages transportation of firewood from infected areas and coordinates with entomologists from the Department of Forestry.

The nine-banded armadillo (*Dasypus novemcinctus*) occur in throughout the parks. Staff should monitor the abundance of armadillos and take steps to remove them when they become a problem. Feral hogs (*Sus scrofa*) are present on Big Talbot Island and evidenced on Little Talbot Island. Staff actively removes hogs from Big Talbot Island, although a population persists. Staff should continue to monitor and remove populations. European starlings (*Sturnus vulgaris*) and brown-headed cowbirds (*Molothrus ater*) also occur within the parks. These species can be detrimental to native fauna if allowed to become abundant. Their populations should be monitored and they should be removed by currently accepted methods if they become a problem. Exotic animal removal reports indicate that feral cats (*Felis domesticus*) and Norway rats (*Rattus norvegicus*) also occur within the parks. Staff members remove these animals when encountered, in accordance with Division procedural guidelines. Horses are kept at the park by a Visitor Services Provider for recreational purposes. Impacts of these animals should be periodically assessed.

Problem Species

Problem species are defined as native species whose habits create specific management problems or concerns. Occasionally, problem species are also a designated species, such as alligators. The Division will consult and coordinate with appropriate federal, state and local agencies for management of designated species that are considered a threat or problem.

The American alligator (*Alligator mississippiensis*) is sporadically present in ponds and swales throughout the parks. As development of park facilities continues, stormwater treatment requirements include the excavation of ponds that often mimic natural, freshwater wetland systems. These ponds often attract alligators and encourage their movement through the parks. The potential for conflicts between alligators and park visitors is a cause for concern. The park staff posts warning and interpretive signs to educate the public about the probable presence of alligators and about the ramifications of feeding alligators. When the park receives a report of a nuisance alligator, the park staff coordinates with FFWCC to capture and remove the animal. An effective environmental education program may help increase public tolerance of large alligators and reduce the number of complaints to the FFWCC. In all cases where the park manager perceives an individual alligator to be a threat, park staff will follow the nuisance alligator procedures recommended in the Division's Resource Management Policy #1, Nuisance and Exotic Animals.

Eastern diamondback rattlesnakes (*Crotalus adamanteus)* are occasionally found in visitor use areas. These are relocated by staff to an isolated natural area. Raccoon (*Procyon lotor)* populations in certain use areas tend to become elevated through opportunistic feeding behavior. When their behavior becomes problematic, they are removed by staff.

Management Measures for Cultural Resources

The management of cultural resources is often complicated because these resources are irreplaceable and extremely vulnerable to disturbances. The advice of historical and archaeological experts is required in this effort. 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, pre-testing of the project site by a certified archaeological monitor, 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 prepare for locating and evaluating historic resources, both archaeological sites and historic structures.

Specific measures to be taken for cultural resource management in Talbot Islands State Parks are outlined below.

1. Seek funding to conduct a professional comprehensive cultural resources survey to at least level I (literature survey and walkover, with limited shovel testing) of the parks. Ultimately, the base of knowledge of the parks' cultural resources can only be expanded or confirmed by professionally conducted survey. As other known sites are discovered, level II surveys may be warranted in case of predicted impacts to the sites.
1. Design and implement a standard database program to store and retrieve old and new cultural resource information. Management of cultural resources depends in large part on the ability to retrieve and use a body of commonly understood information about each resource while adding to that body of information for future reference.
2. Expand the already established cultural site visitation program, which includes documentation with fixed photo points and visit records, to include all known cultural sites. Develop a cyclical schedule for cultural site visitations based on conditions and maintenance needs of the sites. Regular visitation will foster development of knowledge about each resource and understanding how they are affected by visitors and natural impacts. Maintain notes from periodic visits and include them with the data for each resource.
3. Record additional cultural resources as they are encountered and identified.
4. Implement an ongoing cultural resource research program in conjunction with available training programs to build a reliable base of knowledge about the cultural resources. Library resources should be expanded and updated regularly, and training programs should be utilized as they become available. A trained park staff will better appreciate cultural resource management routines and be able to conduct the basic research necessary to identify and record new resources.

Research Needs

Natural Resources

Any research or other activity that involves the collection of plant or animal species on park property requires a collecting permit from the Department of Environmental Protection. Additional permits from the Florida Fish and Wildlife Conservation Commission, the Department of Agriculture and Consumer Services, or the U.S. Fish and Wildlife Service may also be required.

The following research or surveys will enhance the ability of staff to manage and interpret natural resources at Amelia Island, Big Talbot Island and Little Talbot Island:

1. Investigate potential measures for restoring the natural hydrology of impacted fresh water systems in the parks, as detailed in Management Measures,

Hydrology.

1. Determine natural fire regimes in barrier island communities such as wet flatwoods, depression marsh and scrubby flatwoods, to help define fire return intervals.
2. Identify integrated solutions to coastal erosion problems that threaten resources in the parks.
3. Document historical changes in the hydrography of the Fort George Inlet and the effects on associated island masses.
4. Conduct additional floral and faunal surveys to provide important baseline information about species occurrences in the Talbot Islands.

Cultural Resources

The following research or surveys will enhance the ability of staff to manage and interpret cultural resources at Amelia, Big Talbot and Little Talbot Islands:

1. Conduct salvage archaeology at Du16006.
2. Conduct research at Du1 to support future interpretive endeavors.
3. Conduct a Historic Structures Report for Du90.
4. Develop a comprehensive cultural resources survey plan for the parks.
5. Conduct research about agricultural and historic settlement activities in the Talbot Islands. An archaeological and historical survey of land use patterns in the Talbot Islands should also relate past land uses to existing conditions. Such a study should include Fort George Island Cultural State Park within its scope.
6. Conduct research into the lives of historically significant personalities associated with island history, including oral histories.

Resource Management Schedule

A priority schedule for conducting all management activities that is based on the purposes for which these lands were acquired, and to enhance the resource values, is contained in Addendum 6. Cost estimates for conducting priority management activities are based on the most cost effective methods and recommendations currently available.

Land Management Review

Section 259.036, Florida Statutes, established land management review teams to determine whether conservation, preservation, and recreation lands titled in the name of the Board of Trustees of the Internal Improvement Trust Fund (board) 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, the board of trustees, acting through the Department of Environmental Protection (department). The managing agency shall consider the findings and recommendations of the land management review team in finalizing the required update of its management plan.

Amelia Island State Park was subject to a land management review on April 19, 2002.

Big and Little Talbot Islands State Parks were subject to a land management review on August 7. 2003. During both land management reviews, the review teams made the following determinations:

1. The lands are being managed for the purpose for which they were acquired.

2. The actual management practices, including public access, complied with the management plan for these parks.

LAND USE COMPONENT

INTRODUCTION

Land use planning and park development decisions for the state park system are based on the dual responsibilities of the Division of Recreation and Parks. These responsibilities are to preserve representative examples of original natural Florida and its cultural resources, and to provide outdoor recreation opportunities for Florida's citizens and visitors.

The general planning and design process begins with an analysis of the natural and cultural resources of the unit, and then proceeds through the creation of a conceptual land use plan that culminates in the actual design and construction of park facilities. Input to the plan is provided by experts in environmental sciences, cultural resources, park operation and management, through public workshops, and environmental groups. With this approach, the Division objective is to provide quality development for resource-based recreation throughout the state with a high level of sensitivity to the natural and cultural resources at each park.

This component of the unit plan includes a brief inventory of the external conditions and the recreational potential of the unit. Existing uses, facilities, special conditions on use, and specific areas within the park that will be given special protection, are identified. The land use component then summarizes the current conceptual land use plan for the park, identifying the existing or proposed activities suited to the resource base of the park. Any new facilities needed to support the proposed activities are described and located in general terms.

EXTERNAL CONDITIONS

An assessment of the conditions that exist beyond the boundaries of the unit can identify any special development problems or opportunities that exist because of the unit's unique setting or environment. This also provides an opportunity to deal systematically with various planning issues such as location, regional demographics, adjacent land uses and park interaction with other facilities.

Most of the four parks collectively called Talbot Islands State Parks lie within the state’s most populous incorporated area, the City of Jacksonville, in Duval County. Amelia Island State Park and the northern segment of George Crady Bridge Fishing Pier State Park are located in Nassau County. The southern segment of George Crady Bridge Fishing Pier State Park, Big Talbot Island State Park and Little Talbot Island State Park are located in Duval County (see Vicinity Map).

Existing Use of Adjacent Lands

Talbot Islands State Parks are part of the Timucuan Trail State and National Parks; a unique partnership between the City of Jacksonville (COJ), the National Park Service

(NPS), and the State of Florida. The partnership develops management plans, access and marketing strategies for multiple park lands that encompass approximately 100 square miles. The collection of parks and preserves, one of the largest urban park systems in the nation, includes some of the last unspoiled coastal wetlands on the Atlantic Coast and preserves the area's rich historic and prehistoric sites.

Hiking, biking and kayak trails link the system of parks, giving visitors a rare view of the pristine marshland, coastal dunes and maritime hammocks. The estuary complex that includes marshes, rivers, the Intracoastal Waterway and the Atlantic Ocean that surrounding Talbot Islands State Parks is heavily used by recreational boating, fishing and personal watercraft. Hunting recreation is a traditional use of the marshes in the vicinity Talbot Islands State Parks, and is regulated by the Florida Fish and Wildlife Conservation Commission (FFWCC).

Southwest of Big Talbot and Little Talbot Islands is Fort George Island Cultural State Park. The park offers nature trails, bicycling and a visitor center that serves as a gateway to the Timucuan Trail State and National Parks. Fort George Island is also home to the Kingsley Plantation, the oldest plantation house remaining in Florida, which is managed by NPS. Additional state and city parks in the area include Pumpkin Hill Creek Preserve State Park, the westernmost of the state parks in Duval County, and Betz Tiger Point Preserve.

The Nature Conservancy (TNC) owns and manages the marsh directly to the east (Simpson Creek) and west (Sisters Creek / Intracoastal Waterway) of Big Talbot Island as part of the Machaba Balu Preserve. This area of the estuary is a component of the 10,000 acres of tidal salt marsh and 77 upland islands managed by TNC in partnership with the National Park Service. Machaba Balu Preserve is open to the public for passive recreation.

The 47,000-acre Timucuan Ecological and Historic Preserve managed by NPS protects and links most of the public lands within the Timucuan Trail State and National Parks partnership area including the western and southern boundaries of the Talbot Islands State Parks. Other lands managed by the NPS include the Theodore Roosevelt Area providing opportunities for hiking, bicycling, picnicking and fishing; The Nassau River-St. Johns River Marshes Aquatic Preserve includes the submerged lands surrounding the preserve and extends north to the Nassau River, south to the St. Johns River, and east to the Atlantic Ocean.

Huguenot Memorial Park operated by Duval County is located directly southeast of Little Talbot Island State Park. The park offers camping, shower facilities, restrooms, picnic shelters, swimming, and a boat launch area.

The Talbot Islands State Parks will be included within Segment 26 of the Florida

Circumnavigation Saltwater Paddling Trail. This canoe and kayak trail is part of the Florida Greenways and Trails Program and is made up of 26 segments that begins on the Gulf of Mexico at the Florida / Alabama border and ends at the Florida / Georgia border on Atlantic Ocean. Segment 26 will begin at the Sister's Creek Marina and end at Fort Clinch State Park for a total of 29-30 miles. This segment covers marshes, preserves, and overlaps the boundaries of five state parks: Fort George Island, Little Talbot Island, Big Talbot Island, Amelia Island and Fort Clinch.

The residential and resort development of Amelia Island extends to the northern boundary of Amelia Island State Park. Developed and undeveloped residential lots are present on the southern end of Big Talbot Island on Houston Avenue. High-density commercial parcels owned by the COJ are located directly south of Little Talbot Island on A1A on the southwest bank of the Fort George River. Mixed use, including residential, commercial, and manufacturing, is located south of the entrance to Fort George Island, along Heckscher Drive.

Mayport Naval Station, located just south of Huguenot Park and the St. Johns River, affects the state parks primarily by the sound of aircraft flying overhead. The 200 foot right of way and two-lane paved section of Highway AlA bisects Talbot Islands State Parks, creating the largest impact of adjacent land use on these parks. No major improvements to that highway are scheduled by the current Florida Department of Transportation (FDOT) Five Year Plan.

Planned Use of Adjacent Lands

Big Talbot Island State Park is insulated from direct impacts of adjacent land uses by its setting within the estuarine marsh. Land use and zoning restrictions on the residential lots within the state park will hold future development to densities that are not incompatible with the park's resources, although the acquisition of undeveloped lots is recommended to avoid new residential development, if possible. Little Talbot Island State Park is further insulated, since no out-parcels exist on that island. Development along Heckscher Drive south of the park is not expected to create appreciable impacts on the state park.

The primary effects of adjacent land uses on the state parks derive from the heavy and essentially unregulated recreational uses of the estuarine waterways for recreational boating, fishing, jet skiing, canoeing and kayaking. Huguenot Park, located on Ward's Bank in the Fort George River Inlet is an extremely active fishing and recreational boating area, providing direct access for boaters and jet skis to the water areas surrounding the park. Large numbers of boats and personal watercraft enter the area from points of access at Mayport, Huguenot Park, Sisters Creek and Amelia Island, and from more distant points in northern Duval County and Nassau County. Future increases in the recreational boating population should be expected. It is crucial to the success of the Division's efforts to manage natural and cultural

resources and recreation on these state parks that all aspects of management are planned and coordinated with activities by the City of Jacksonville in managing Huguenot Park and the Alimacani Property, and with the National Park Service and The Nature Conservancy in their management of adjacent marshlands and uplands . Division staff will continue to work through the Timucuan State and National Parks partnership to support this goal.

Modifications of Highway AlA have great potential effects on the resources and visitor experiences at the state parks. Coordination between the Division and the FDOT is needed to identify impacts of the state road on the state parks, and to integrate the planning and management of the highway with the needs of the state parks' visitors and management staff.

PROPERTY ANALYSIS

Effective planning requires a thorough understanding of the unit's natural and cultural resources. This section describes the resource characteristics and existing uses of the property. The unit's recreation resource elements are examined to identify the opportunities and constraints they present for recreational development. Past and present uses are assessed for their effects on the property, compatibility with the site, and relation to the unit's classification.

Recreation Resource Elements

This section assesses the unit's recreation resource elements those physical qualities that, either singly or in certain combinations, supports the various resource-based recreation activities. Breaking down the property into such elements provides a means for measuring the property's capability to support individual recreation activities. This process also analyzes the existing spatial factors that either favor or limit the provision of each activity.

Amelia Island State Park contains approximately 8,000 feet of beach on the Atlantic Ocean and Nassau Sound. Tidal currents along the park's shoreline can be quite strong, creating unsafe conditions for swimming. Fishing the Nassau Sound from the Amelia Island Point has been the predominant public attraction for generations. Motor vehicles are allowed on the beach via an access point located at the adjacent abutment of the State Road A1A bridge.

The management of the old Nassau Sound Bridge was transferred to the Division of Recreation and Parks from the Florida Department of Transportation (FDOT) when the bridge was replaced in 1999. The state renamed bridge the George Crady Bridge Fishing Pier State Park in honor of State Representative George Crady. The bridge is a two-lane highway structure connecting Amelia Island with Sawpit Island in Nassau Sound, and a shorter span connecting Sawpit Island with the northern end of Big Talbot Island. The bridge and upland roadbeds total approximately 8,000 feet in

length.

The George Crady Bridge Fishing Pier State Park is managed as a fishing facility and will function as a link in the Timucuan Trail, a proposed bicycle / pedestrian path connecting the four state park units, the Timucuan Preserve, and several City of Jacksonville parks located to the south.

Big Talbot Island State Park and Little Talbot Island State Park contain over 4,000 acres of natural landscapes. The forested upland landscapes of Big Talbot Island and Long Island follow the undulating patterns of dune and swale topography that is typical of the old barrier islands or "Sea Islands" found from here northward along the Atlantic coast.

The northern end of Little Talbot Island resembles a Sea Island, while the southern end is a new barrier island landform undergoing dynamic erosion and accretion. The diverse vegetated landscapes of these parks include maritime hammocks, depression marshes, beach dunes and coastal grasslands, shell mounds, scrub and flatwoods communities, beaches and estuarine tidal marshes. The parks contain approximately 7.5 miles of shoreline on the Atlantic Ocean and Nassau Sound, and over 17 miles of shoreline fronting on the tidal creeks and marshes and the Fort George River. These natural communities and features provide a broad array of recreational and educational opportunities for the parks' visitors including approximately 2 miles of wide swimming beach frontage along the Atlantic Ocean.

Loggerhead sea turtles, least terns, piping plovers and gopher tortoises are among more than 40 listed plant and animal species found in these parks. All designated species will be protected under established Division management policies, and visitor impacts to listed species are carefully monitored to identify potential impacts in advance. The diversity of listed and non-listed wildlife supported by the natural communities of the state parks provides for seasonal Watchable Wildlife activities at many locations. The most prominent areas for wildlife viewing are the marshes and the beach areas, which serve as resting and foraging sites for a variety of shorebirds.

The significant natural features in the parks include both geological and vegetative elements. The dynamics of coastal geology are evident along the ocean shorelines of both Talbot Islands. On Big Talbot Island and the north end of Little Talbot Island, natural erosion has created steep bluffs and littered the narrow beach with skeletons of trees from the maritime hammock. The scenic bluffs on Big Talbot Island, when contrasted with wide beach and beach dune community on the southern end of Little Talbot Island, make the natural processes of island formation and natural community succession visible for interpretation to the visiting public. Another significant natural feature of these parks is the surrounding estuarine marsh and creek systems, one of the earth's most diverse and productive ecological systems.

Seventeen sites of pre-historic and historic importance are included in the Florida Site File for Big Talbot Island State Park and Little Talbot Island State Park. These sites date from 800 -900 BP to 19th century American, and include shell middens, shell rings, plantation and habitation sites and a cemetery. The area south of the junction between AlA and Houston Road is the richest cultural area on Big Talbot Island. It contains the majority of the recorded cultural sites.

The visual resources of the state parks are exceptional. The experience of AlA winding through the two parks presents a rare opportunity to drive, walk or bicycle through mature maritime hammock and scrub communities on Big Talbot and Long Islands, and through the beach dune community along the southern half of Little Talbot Island. The interior of the parks offers outstanding opportunities for study of many of Florida's unique coastal plant communities. Viewpoints along the ocean and marsh shorelines of the parks provide expansive vistas, occasionally intruded upon by modern development, such as the Jacksonville Utilities Authority power plant and the ships and structures of Mayport Naval Station to the west and south. The visual character of these state parks provides a very high quality setting for nature observation, scenery appreciation and nature photography.

Assessment of Use

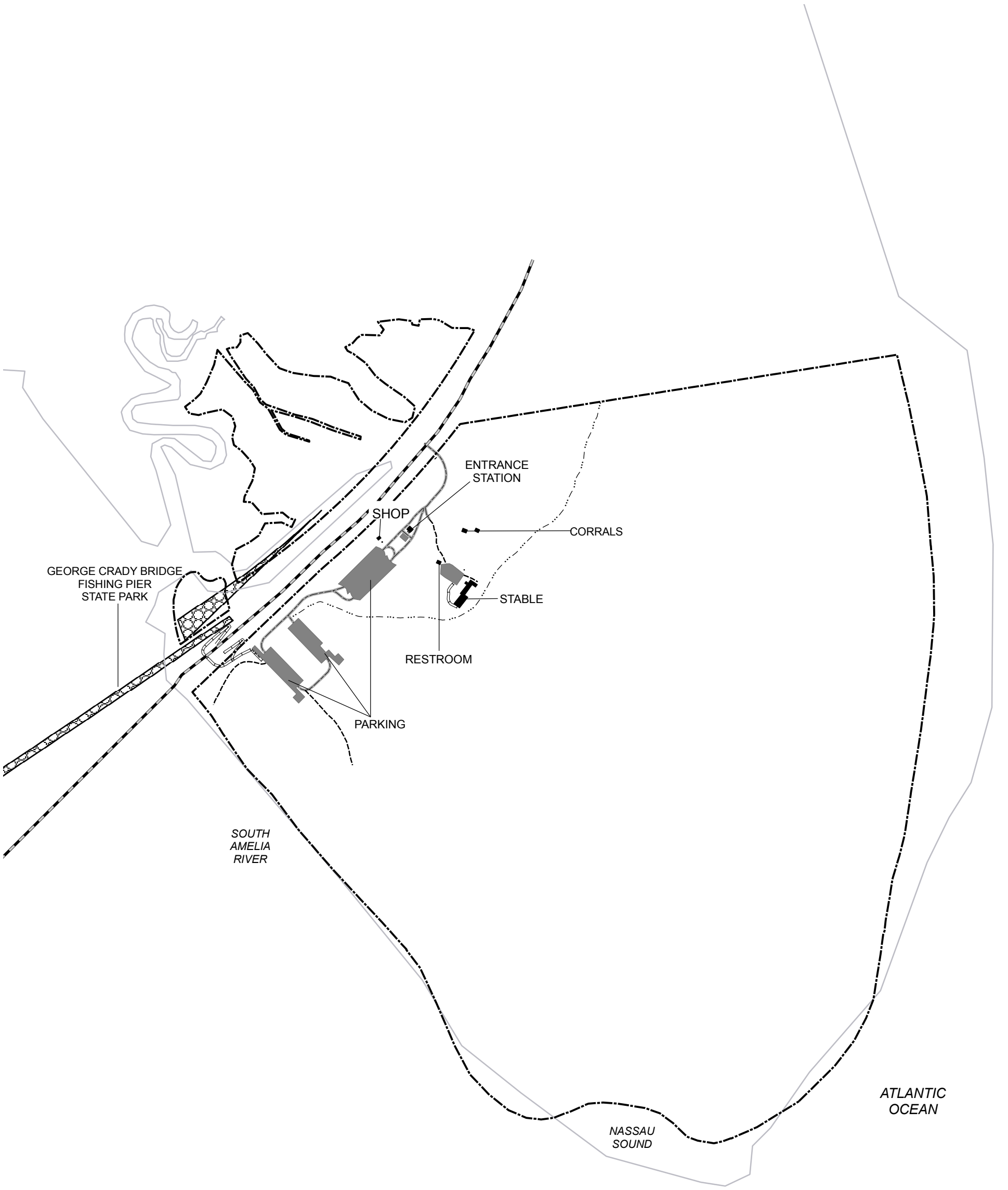
All legal boundaries, significant natural features, structures, facilities, roads and trails existing in the unit are delineated on the base map (see Base Map). Specific uses made of the unit are briefly described in the following sections.

Past Uses

Big Talbot Island State Park has been occupied since pre-historic times, and contains the remains of several pre-historic village sites. Among these is the Grand Site, which is listed on the National Register of Historic Places.

First knowledge of European occupation of the Talbot Islands dates from a 1702 Spanish map. Several sites with Spanish ceramics and other artifacts have been found. These may have been locations of the "vistas" administered from the Doctrina, San Juan del Puerto, the Spanish Mission located on Fort George Island.

According to the Spanish census, Amelia Island, the Talbot Islands and Fort George had plantations and farms where cotton, rice, sugar and subsistence crops were grown. Plantation owners Spicer Christopher and John Houston are frequently mentioned in the Spanish Land Grants records. In 1798, Little Talbot Island was included in a Spanish Land Grant to Spicer Christopher. The island was later inherited by John Houston. The land on Little Talbot Island was used primarily for timber and cattle pastures. Houston, who married into Christopher's family, received his first land grant in 1816, and developed an extensive plantation on Big Talbot Island.



LEGEND

- Park Boundary
- State Road
- Park Road Paved
- Park Road Unpaved
- Equestrian Trail
- Shore Lines
- Structures
- Parking Lots

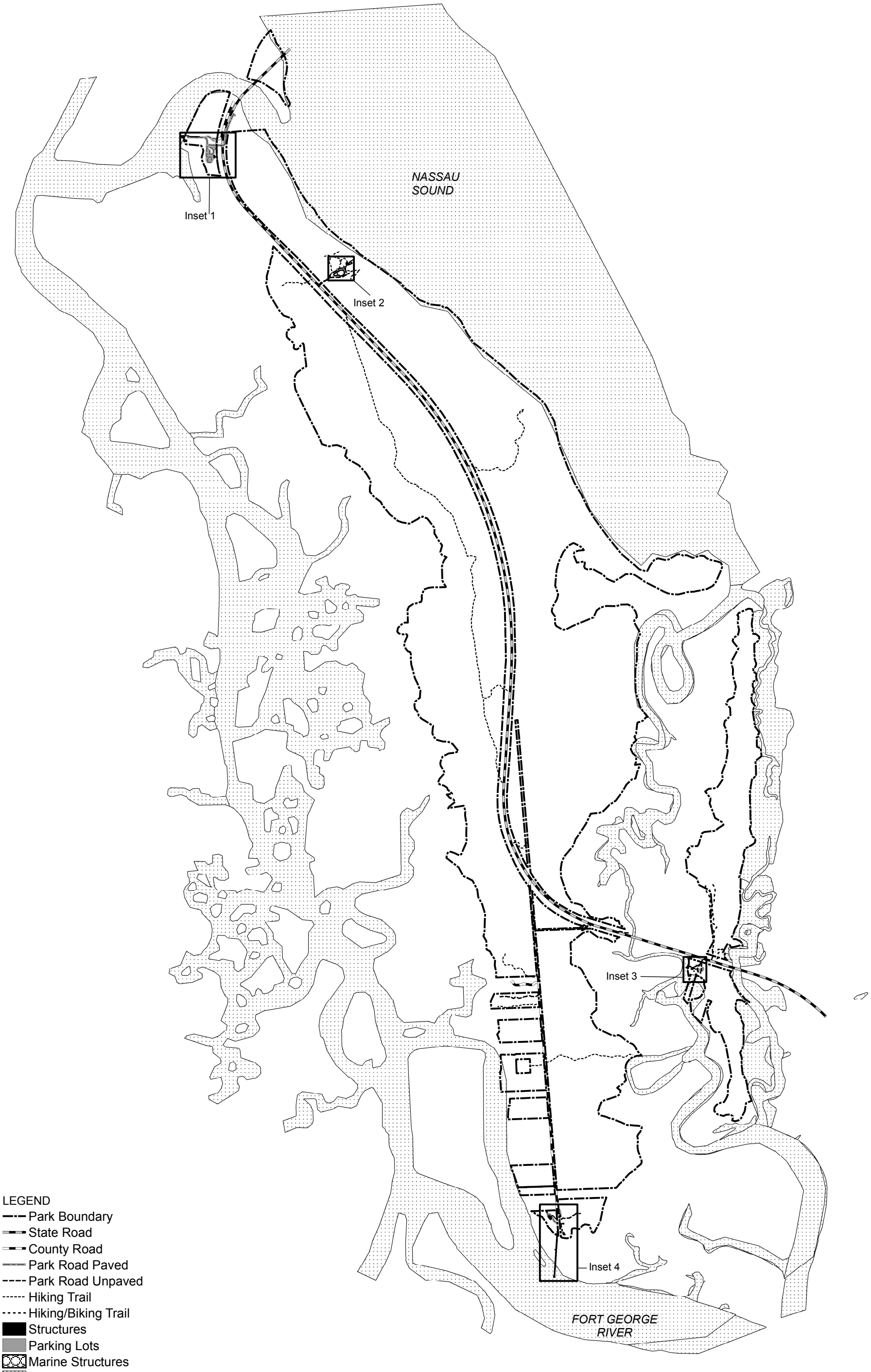
AMELIA ISLAND
STATE PARK

N

0 150 300 600 Feet

Florida Department of Environmental Protection
Division of Recreation and Parks
Office of Park Planning

BASE MAP



LEGEND

- Park Boundary
- State Road
- County Road
- Park Road Paved
- Park Road Unpaved
- Hiking Trail
- Hiking/Biking Trail
- Structures
- Parking Lots
- Marine Structures
- Water Bodies

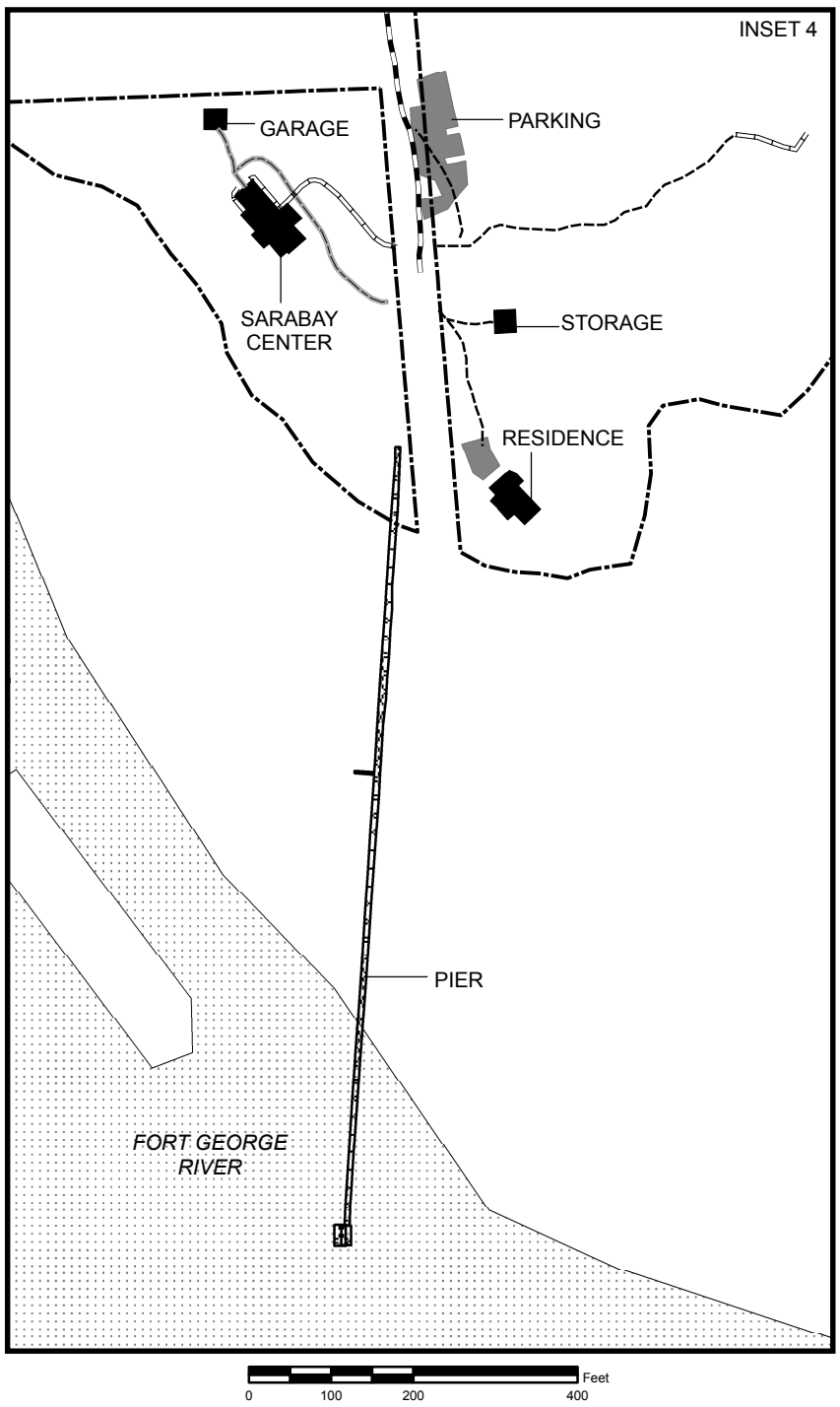
N

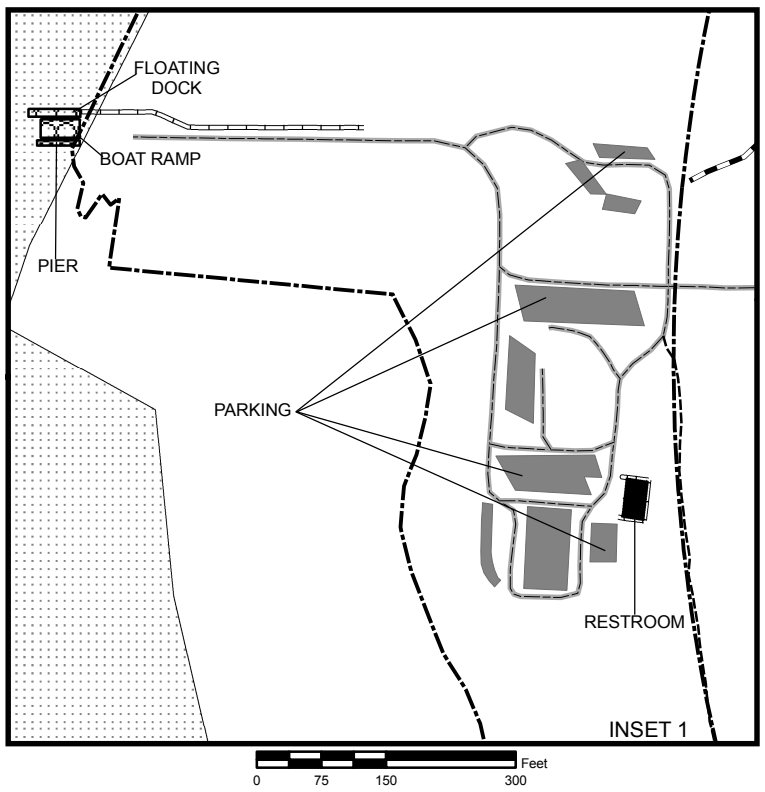
0 750 1,500 3,000 Feet

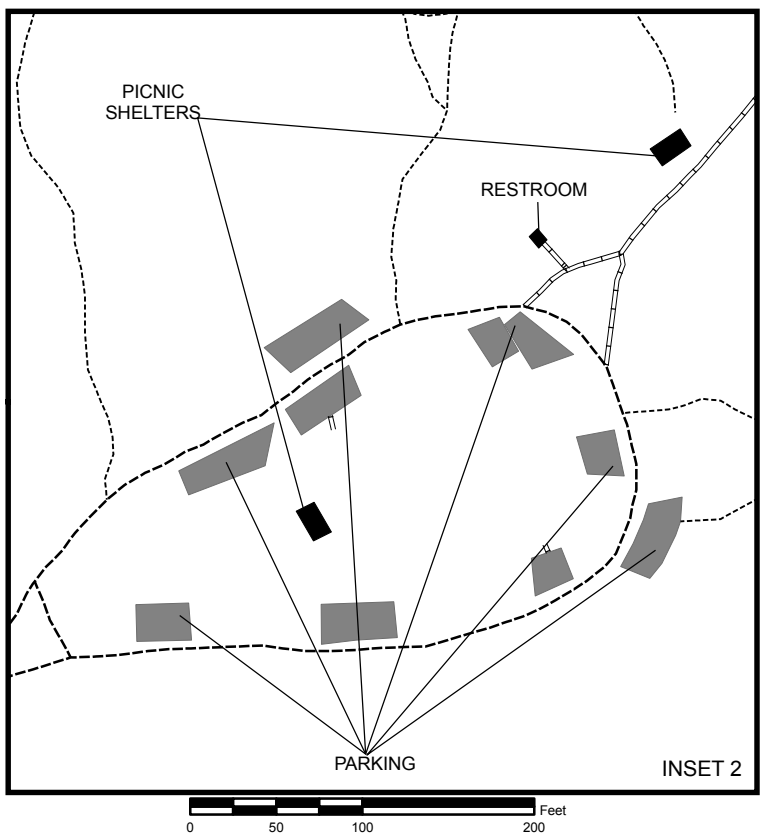
Florida Department of Environmental Protection
Division of Recreation and Parks
Office of Park Planning

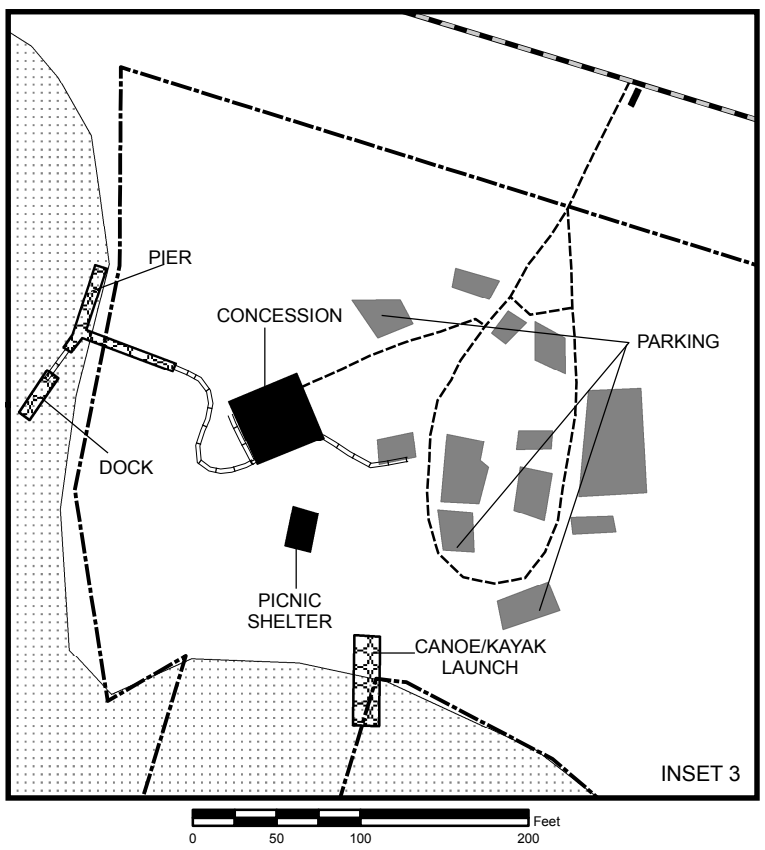
BIG TALBOT ISLAND STATE PARK

BASE MAP









LEGEND

- Park Boundary
- State Road
- County Road
- Park Road Paved
- Park Road Unpaved
- Hiking Trails
- Hiking/Biking Trails
- Structures
- Parking Lots
- Marine Structures
- Water Bodies

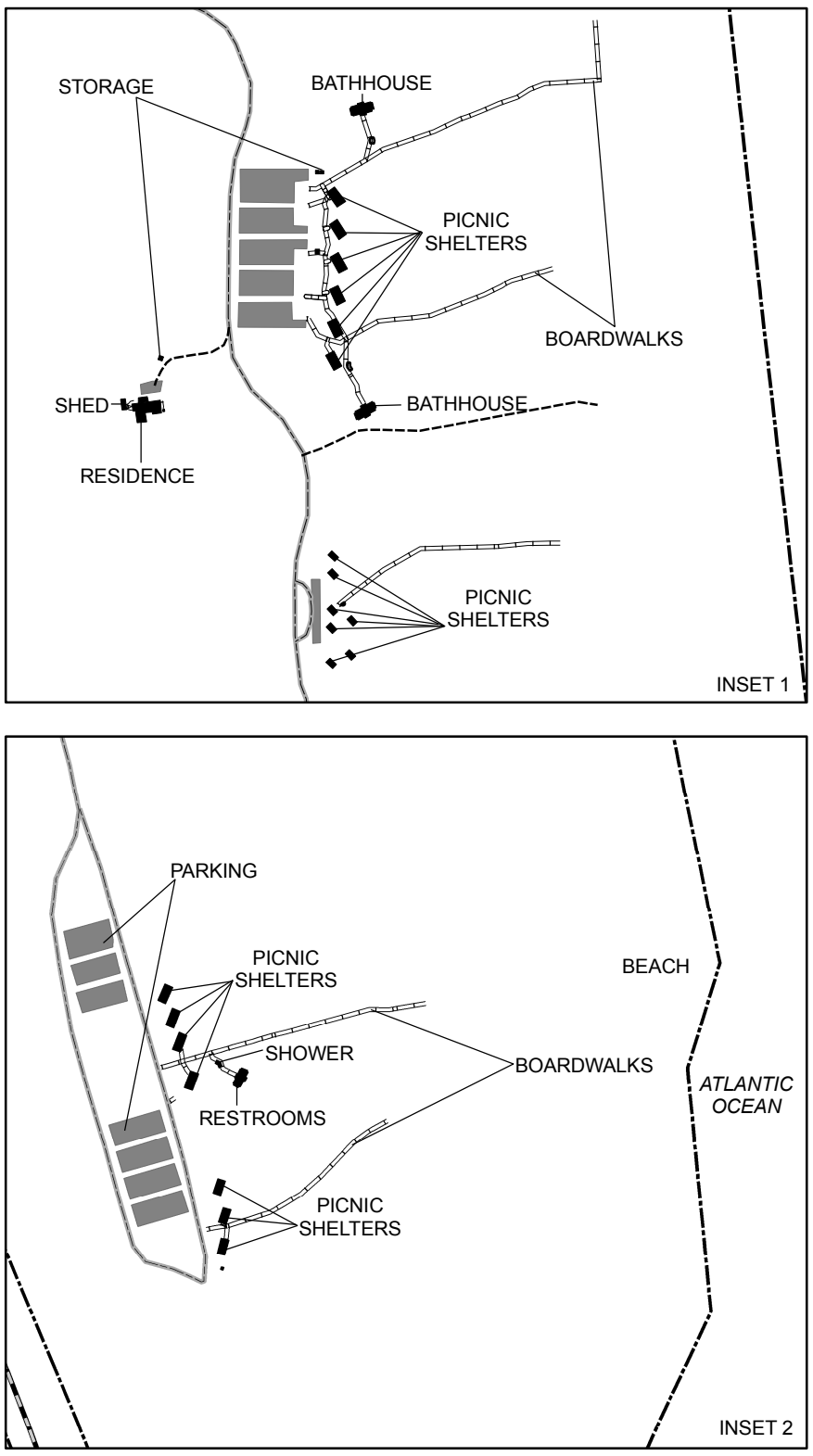
BIG TALBOT ISLAND STATE PARK

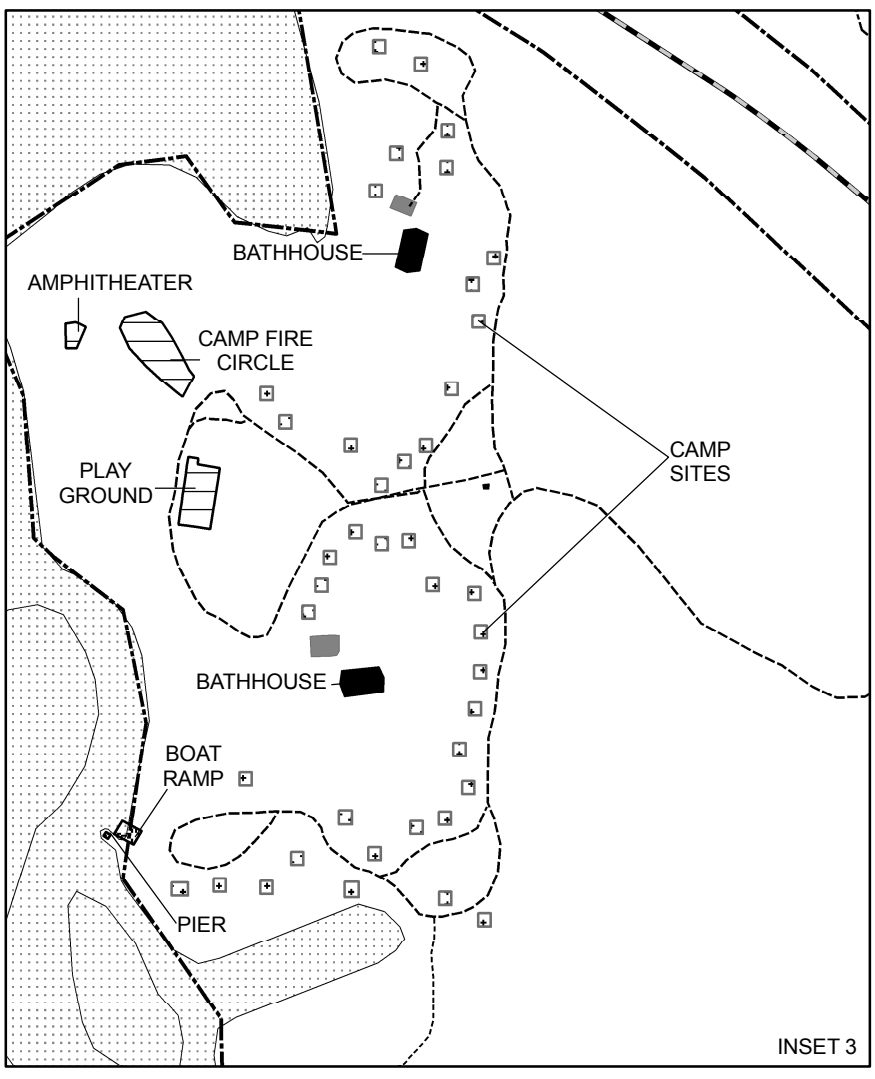
N

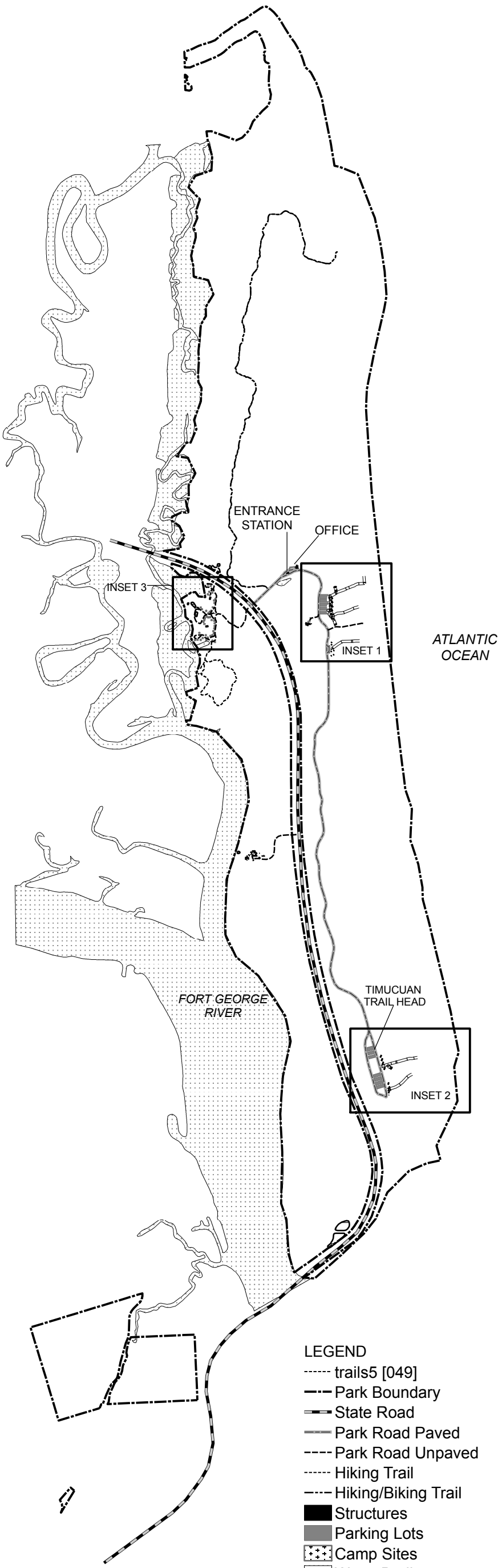
0 1,250 2,500 5,000 Feet

Florida Department of Environmental Protection
Division of Recreation and Parks
Office of Park Planning

BASE MAP







LITTLE TALBOT ISLAND
STATE PARK

N

0 750 1,500 3,000 Feet

Florida Department of Environmental Protection
Division of Recreation and Parks
Office of Park Planning

BASE MAP

Features of early historic-era occupation occur throughout Big Talbot Island State Park. These features include the "King's Highway" or "Old Public Road" mentioned in Spanish records, a large ditch, probably a boundary marker, located at mid-island, extending from the shoreline to shoreline across the island, several tabby and brick ruins, the remains of a Cabbage palm avenue near the bluffs, and a marker for the eastern extension of the baseline that intersects with the prime meridian, a major surveying point for early land description in Florida.

Little Talbot Island was undeveloped prior to acquisition by the State Road Department in the early 1940s, although the land had been subdivided for development. The State Road Department purchased the island in 1943 with the intent to build the road and deed the land to the Florida Board of Parks and Historic Memorials for development as a recreation area. The construction of the state road included excavation of borrow pits for road fill and the excavation of drainage ditches.

Recreational Uses

Fishing, hiking, sunning and bird watching are popular activities in Amelia Island State Park. Guided horseback rides are popular along the Atlantic beach and are offered through the Kelly Seahorse Ranch concessionaire. Nature study and a limited amount of picnicking also occur in the park. The beach is not considered suitable for swimming due to strong currents.

Beach use, picnicking, camping, hiking, fishing and nature study are the recreational activities of Big Talbot Island and Little Talbot Island State Parks. Shoreline fishing and bridge fishing is popular at the George Crady Fishing Pier State Park, Simpson Creek and the Fort George Inlet Bridge. Offshore fishing and boating recreation (including a considerable amount of personal watercraft use) are popular activities in the waters surrounding the parks. A fully developed boat ramp with parking is located near Nassau Sound at the north end of Big Talbot Island. A boat ramp in the Little Talbot Island State Park campground and unimproved boat launching area on the state road right of way at Simpson Creek provide additional boating access at these parks.

On Big Talbot Island, picnicking and beach access is provided at the Bluffs Picnic Area on the northeastern park shoreline. Two short nature trails are provided south of the Bluffs, the Black Rocks Trail and the Big Pine Trail. An unimproved roadside rest area, originally developed by the Florida Department of Transportation, is located at the south end of Big Talbot Island. The Kayak Amelia concessionaire is located on Long Island at Simpson Creek and A1A.

On Little Talbot Island, a developed campground, a primitive group camp, a beach use area and a 4-mile hiking trail are provided for recreational activities. The first

phase of the Timucuan Trail officially opened for public use on Little Talbot Island in 2005. The paved 10-foot wide multi-use trail provides visitors to 2.3 miles of access to park facilities along the park drive. Information kiosks at the trailhead located at the south end of the park drive provide area maps, bike safety guidelines and information about current events.

Other Uses

Non-park uses do not occur at Amelia Island State Park and the George Cady Fishing Pier State Park. Drainage facilities associated with the state road, power lines serving park facilities and adjacent residences, and Houston Avenue (a public right of way), are the permanent non-park uses within Big Talbot Islands State Park and Little Talbot Islands State Park.

Protected Zones

A protected zone is an area of high sensitivity or outstanding character from which most types of development are excluded as a protective measure. Generally, facilities requiring extensive land alteration or resulting in intensive resource use, such as parking lots, camping areas, shops or maintenance areas, are not permitted in protected zones. Facilities with minimal resource impacts, such as trails, interpretive signs and boardwalks are generally allowed. All decisions involving the use of protected zones are made on a case-by-case basis after careful site planning and analysis.

At Amelia Island State Park, Beach Dune and Salt Marsh Communities have been designated as Protected Zones. At Big Talbot Island State Park, the maritime hammock west of AlA and north of Houston Avenue and the major portion of the scrub community located east of AlA, and all of Long Island except for existing and proposed development areas have been designated as protected zones. At Little Talbot Island State Park, the northern end of the island has been designated. The estuarine tidal marsh and estuarine composite substrate communities within both Talbot Islands State Parks' boundaries are designated as protected zones (see Conceptual Land Use Plan).

Existing Facilities

The following is a comprehensive listing of existing recreation and support facilities.

Amelia Island State Park

Riding Stables Area

Kelly Seahorse Ranch concessionaire and stables
Parking (12 cars)
Interpretive signs (4)
Restroom (1)
Equestrian trail (.36 miles)
Access ramp for beach driving

Beach Use Area
Paved parking (163 cars, 6 trailers)

Support Facilities

Beach Use Area
Entrance booth (1)

George Crady Fishing Pier State Park

The Nassau Sound Bait and Tackle concessionaire
Paved parking (9)
Fishing pier (6000 lf.)

Big Talbot Island State Park

North Boat Ramp Area
Boat Ramp
Restroom (1)
Paved parking (35 trailer)

Bluffs Picnic Area
Stabilized parking (37 cars)
Composting restroom (1)
Small picnic shelters (2)
Interpretive sign (1)

Black Rock Hiking Trailhead Area
Stabilized parking (23 cars)
Interpretive sign (1)
Trail (.5 mi.)

Big Pine Hiking Trailhead Area
Stabilized parking (4 cars)
Trail (.5 miles)

Canoe/Kayak Concession Area (Long Island)
Kayak Amelia Concessionaire
Kayak / canoe hand launch (1)
Stabilized parking (12 cars)
Restroom (1)

Other Trails
Old Kings Highway hiking trail (2 mi.)
Jones Cut hiking trail (.75 mi.)

Other Use Areas
Sarabay Education Center (1)

Support Facilities
Residence (1)

Little Talbot Island State Park

Recreation Facilities
Hiking trail (3.25 mi.)
Interpretive signs (4)

Main Campground Area
Campsites (42)
Bathhouses (2)
Kayak / canoe hand launch (1)
Stabilized parking (4 trailer)
Nature trail (1 mi.)

Primitive Campground Area
Group camp sites (2)

North Beach Use Area
Paved parking (167 cars)
Bathhouses (2)
Outdoor shower (1)
Large picnic shelters (6)
Small picnic shelters (7)
Dune crossover (1)

South Beach Use Area
Large picnic shelters (7)
Bike pavilion (1)
Paved parking (182 cars)
Bathhouse (1)
Outdoor shower (1)
Paved multi-use trail (2 mi.)

Fort George Inlet Bridge Area
Paved parking (50 cars)
Port-o-lets restrooms (2)

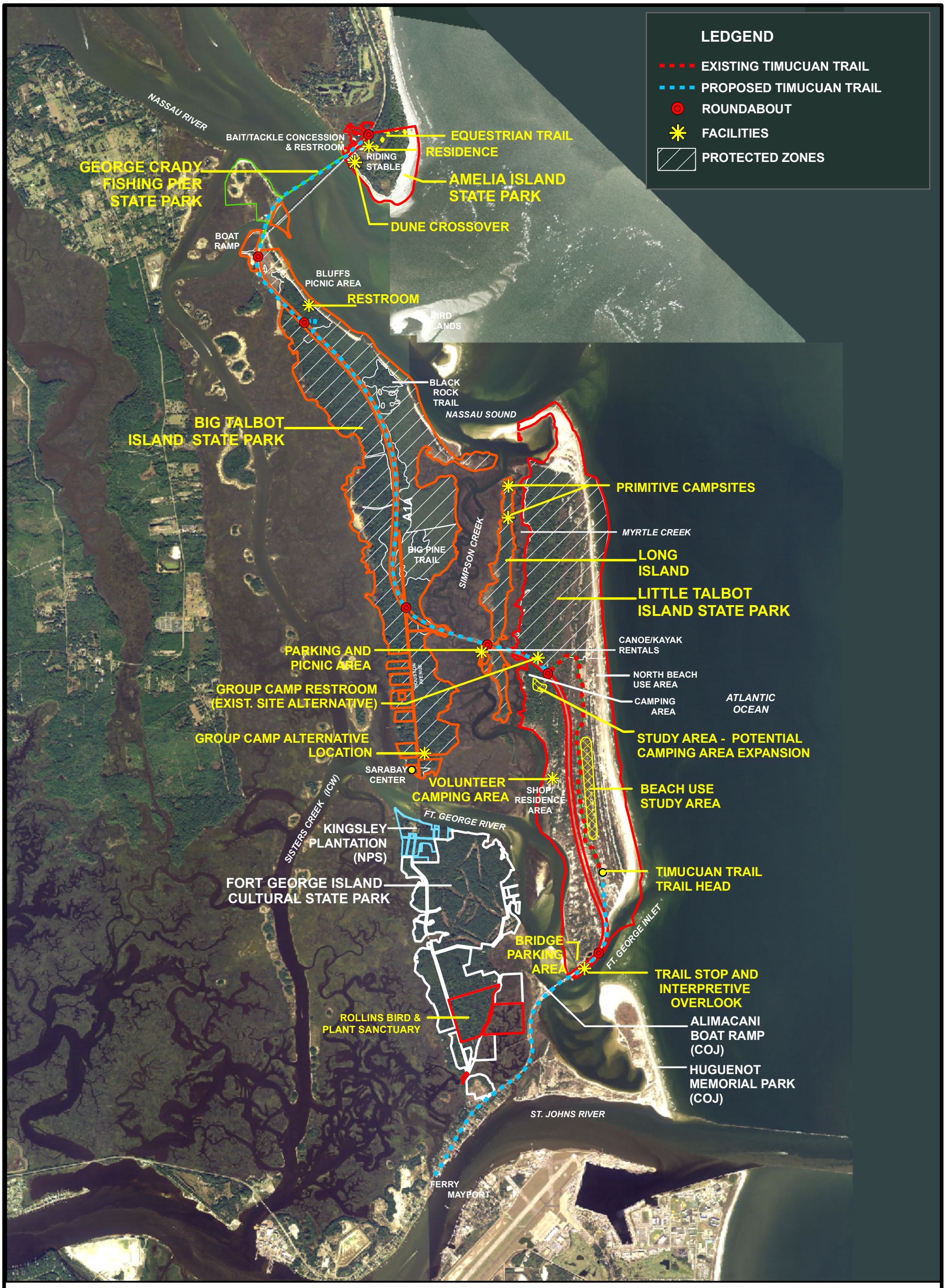
Support Facilities
Residence (1)
Volunteer camp sites (4)

Administrative office Area
Ranger Station (1)
Administrative office (1)
Paved parking (19)

Shop Area
Shop facility (1)
Outbuildings (7)
Residence (1)

CONCEPTUAL LAND USE PLAN

The following narrative represents the current conceptual land use proposal for the Talbot Islands State Parks. As new information is provided regarding the environment of the park, cultural resources, recreational use, and as new land is acquired, the conceptual land use plan may be amended to address the new conditions (see Conceptual Land Use Plan). A detailed development plan for the park and a site plan for specific facilities will be developed based on this conceptual land use plan, as funding becomes available.


LEDGEND
EXISTING TIMUCUAN TRAIL
PROPOSED TIMUCUAN TRAIL
ROUNDABOUT
FACILITIES
PROTECTED ZONES
NASSAU RIVER
BAIT/TACKLE CONCESSION & RESTROOM
EQUESTRIAN TRAIL
RESIDENCE
RIDING STABLES
GEORGE CRADY FISHING PIER STATE PARK
AMELIA ISLAND STATE PARK
DUNE CROSSOVER
BOAT RAMP
BLUFFS PICNIC AREA
RESTROOM
BIRD LANDS
BLACK ROCK TRAIL
NASSAU SOUND
BIG TALBOT ISLAND STATE PARK
PRIMITIVE CAMPSITES
A1A
MYRTLE CREEK
BIG PINE TRAIL
SIMPSON CREEK
LONG ISLAND
LITTLE TALBOT ISLAND STATE PARK
PARKING AND PICNIC AREA
HOUSTON NEAL
CANOE/KAYAK RENTALS
NORTH BEACH USE AREA
GROUP CAMP RESTROOM (EXIST. SITE ALTERNATIVE)
CAMPING AREA
ATLANTIC OCEAN
STUDY AREA - POTENTIAL CAMPING AREA EXPANSION
GROUP CAMP ALTERNATIVE LOCATION
SARABAY CENTER
VOLUNTEER CAMPING AREA
SHOP/ RESIDENCE AREA
BEACH USE STUDY AREA
SISTERS CREEK (ICW)
FT. GEORGE RIVER
KINGSLEY PLANTATION (NPS)
TIMUCUAN TRAIL TRAIL HEAD
FORT GEORGE ISLAND CULTURAL STATE PARK
FT. GEORGE INLET
BRIDGE PARKING AREA
TRAIL STOP AND INTERPRETIVE OVERLOOK
ROLLINS BIRD & PLANT SANCTUARY
ALIMACANI BOAT RAMP (COJ)
HUGUENOT MEMORIAL PARK (COJ)
ST. JOHNS RIVER
FERRY
MAYPORT
N
Feet
0 1,250 2,500 5,000
Department of Environmental Protection
Division of Recreation and Parks
Office of Park Planning
TALBOT ISLANDS STATE PARKS
CONCEPTUAL LAND USE PLAN

During the development of the unit management plan, the Division assesses potential impacts of proposed uses on the resources of the property. Uses that could result in unacceptable impacts are not included in the conceptual land use plan. Potential impacts are more thoroughly identified and assessed through the site planning process once funding is available for the development project. At that stage, design elements, such as sewage disposal and stormwater management, and design constraints, such as designated species or cultural site locations, are more thoroughly investigated. Advanced wastewater treatment or best available technology systems are applied for on-site sewage disposal. Stormwater management systems are designed to minimize impervious surfaces to the greatest extent feasible, and all facilities are designed and constructed using best management practices to avoid impacts and to mitigate those that cannot be avoided. Federal, state and local permit and regulatory requirements are met by the final design of the projects. This includes the design of all new park facilities consistent with the universal access requirements of the Americans with Disabilities Act (ADA). After new facilities are constructed, the park staff monitors conditions to ensure that impacts remain within acceptable levels.

Potential Uses and Proposed Facilities

Division staff has approached planning for Amelia Island State Park, George Crady Fishing Bridge Fishing Pier State Park and the Talbot Islands State Parks within the context of the operational entity that includes Fort George Island Cultural State Park and the Pumpkin Hill Creek Preserve State Park. In addition, a regional framework of publicly owned and managed landscapes that includes the Timucuan Ecological and Historic Preserve and the City of Jacksonville lands on Cedar Point, Wards Bank and the Fort George Inlet is considered in the development of this plan.

Interpretive Themes

The coastal geology, coastal ecosystem, the rich cultural associations and the recreational potential of these parks provide unique opportunities for public outdoor recreation, interpretation, environmental education and ecotourism. Four major interpretive themes have been formulated to organize the plans for the Talbot Islands State Parks:

1. **Geology.** The state park islands reveal the geological processes that created America's southeastern coastal landforms over the past 50 thousand years.
2. **Ecology.** The state park islands reveal the natural succession, in space and time, of coastal plant communities and habitats.
3. **Culture.** The state park islands contain physical evidence of continuous human occupation, culture and land use over the past 7 thousand years.
4. **Recreation.** The state parks create public benefits by providing quality outdoor recreation, expanding public awareness of Florida's natural and cultural resources, and inspiring environmental citizenship.

ALL PARKS

Recreation and Interpretation Facilities

Interpretive Kiosks. Environmental stewardship issues need to be brought to the attention of the park's recreational users to balance recreational uses with protection and management of the natural resources of the state parks. The education of recreational users will become an issue of critical importance in these state parks as population pressure increases the numbers of visitors to these parks in the future. To meet this need, interpretive kiosks are recommended at each of the existing and proposed water access facilities, trailheads and camping areas. Education of park visitors regarding the plight of shorebirds in Florida and interpretive graphics intended to modify visitor behavior to protect nesting and resting birds should be located in kiosks throughout the state, city and national park units in this vicinity, at each viable shorebird habitat area.

Trails. A continuation of the Timucuan Trail multi-use trail from Little Talbot Island through Amelia Island State Park is recommended within the right of way of Highway AlA and on park land. The path concept is intended to connect the regional parks from the City of Jacksonville's Kathryn Abby Hanna Park south of the St. John's River to Amelia Island State Park for non-vehicular movements of park visitors. The trail could potentially extend through Amelia Island to the City of Fernandina Beach to provide an even larger regional facility for hiking and bicycling recreation, in the future.

Interpretive stations are recommended at locations throughout the existing and proposed trail systems of these parks. The stations will inform the public regarding resource management activities; incorporating the larger preservation, stewardship, land use and natural and cultural resource themes of this plan. Trailside rest areas at appropriate scenic locations along the trails are also recommended.

A better system of information and signage is needed to inform the visiting public about the various locations and types of shared-use trails, single use trails, canoeing and kayaking launches, landings and paddling trails and other water-access facilities located throughout the Talbot Island state parks and on Fort George Island Cultural State Park.

Watchable Wildlife Facilities. Watchable wildlife initiatives are part of a cooperative, nationwide effort to help meet a growing national interest in wildlife and the outdoors. These initiatives provide opportunities for the public to enjoy wildlife on public and private lands, contribute to local economic development, promote learning about wildlife and habitat needs and enhance active public support for resource conservation by involving hundreds of cooperators from state and

federal agencies, private organizations, and business and industry. These programs promote the enjoyment of wildlife, and provide an understanding of its habits, its relation to the environment, and its management. The ultimate goal is to help maintain viable populations of all native animal species by building effective, well-informed public support for conservation. The presence on Big and Little Talbot Islands of many animal species, especially an abundance of wading and migratory birds, provides excellent opportunities for wildlife observation. Several viewing platforms at marsh, scrub and beach overlook locations and visually screened observation points along the trails are recommended for placement within the parks. Each observation point should provide interpretive panels for wildlife identification and environmental education programs, and inform the public on the "do's and don'ts" of non-intrusive observation of wildlife. The proposed facilities will be sited with the assistance of the Florida Fish and Wildlife Conservation Commission (FFWCC), park staff, and local Audubon Society members.

Support Facilities

Circulation. High-speed through-traffic poses serious threats to pedestrians and bicyclists along the A1A Timucuan Trail multi-use corridor. The installation of landscaped round-abouts along A1A at bisecting entrances to park recreation areas would slow vehicle speeds to benefit both traffic safety and pedestrian and bicycle safety. Round-abouts north of the Talbot Island State Parks at Amelia Island Plantation are currently used to address high-speed traffic and pedestrian safety and the City of Jacksonville is planning round-abouts at the entrances to Huguenot Memorial Park and Fort George Island. Round-abouts are recommended at the Amelia Island State Park entrance; at the Big Talbot Island State Park boat ramp, the Bluffs Picnic Area, at Houston Avenue, and at the canoe and kayak concession on Long Island. On Little Talbot Island State Park, round-abouts are proposed at the main park and camping area, and the Fort George Inlet Bridge parking area.

A Timucuan Trail crossover on A1A using the proposed round-about at the entry to the Bluffs Picnic Area will be studied for the purpose of improving safety for trail users and protecting foraging birds within the adjacent marsh at the northeast end of Big Talbot. Currently, the planned route for the trail is along the east side of the state road. With the proposed construction of a roundabout at the picnic area entrance, an opportunity to provide a safe crossing to the west side of the highway is created, avoiding a restricted stretch of right of way between the road and the marsh to the north.

Amelia Island State Park

Recreation Facilities

Trails. A 400-foot dune boardwalk separate from the existing beach access road for vehicles is proposed for Amelia Island State Park. The boardwalk will link the existing parking lot to the beach.

A new route for the equestrian trail, roughly a half of a mile in length, is proposed on Amelia Island. The trail will link riders to the beach, avoiding conflicts with vehicles on the existing route through the bridge parking lot.

Support Facilities

Amelia Island Riding Stables Residence. A residence area is recommended at the Kelly Seahorse Ranch. An on-site residence will provide the park and concessionaire with 24-hour security for the resident horses and facilities. The site will be located at an existing clearing at the southwest end of the parking area. The site will provide hookups for water, electric and wastewater services, resident parking and privacy fencing.

George Crady Fishing Pier State Park

No additional improvements are planned.

Big Talbot Island State Park

Recreation Facilities

Trails. Canoeing and kayaking are water-based recreational activities experiencing rapid growth in popularity in Florida. The Division is aware of the user conflicts between canoes and kayaks and the various forms of motorized watercraft using the navigable waters surrounding the state parks. Prohibition of motorized watercraft from waters of the State is not proposed by this plan. However, two sections of the tidal creeks around Long Island are too narrow to allow safe navigation by high-speed vessels in the presence of canoes and kayaks: a section of Simpson Creek immediately north and south of Highway AlA, and the entire length of Myrtle Creek. The Division recommends these areas to be designated as idle speed zones to allow the coexistence of the conflicting user groups. This recommendation will be implemented after approval of the unit management plan, through close coordination between the Division of Recreation and Parks and the Department's Division of Law Enforcement. Public notification and education at boating access points throughout northeastern Duval and Nassau County, and on-site notification and enforcement efforts will be important components of this effort.

A designated canoe trail is proposed around Long Island, following Myrtle and Simpson Creeks.

Primitive Campsites. Two primitive campsites, each designed for six to eight visitors, are proposed near the north end of Long Island. The sites will serve visitors paddling from access points on the adjacent city, state and national parks, and paddlers on the Florida Circumnavigational Saltwater Paddling Trail. The proposed campsites will each provide designated tent sites, a grill and a picnic tables. A composting toilet will be provided at an appropriate location to serve the two sites. The proposed location nearest to Myrtle Creek will require shoreline stabilization or

a boardwalk canoe landing for access by canoe or kayak to overnight camping opportunities.

Prior to work on developing the campsites, Division staff will conduct studies to determine if the development or the resulting recreational activity would create unacceptable impacts to vegetation or wildlife on Long Island. Of particular importance is habitat that supports breeding populations of Painted buntings. If studies predict unacceptable impacts from any recreational activity on Long Island, then the proposed new facilities will be deferred altogether.

Picnic Area Improvements. The Bluffs Picnic Area is a popular destination for visitors to Big Talbot Island State Park. A medium picnic shelter is recommended to replace an existing small shelter. Consideration should be given to screening the shelter so that it may be used for evening gatherings in conjunction with environmental education programs and by the public on a reservation basis.

A small picnic area with parking should be provided adjacent to the canoe/kayak concessionaire on Long Island for the public using both concessionaire and proposed primitive trail facilities. The proposed picnic area should provide visitors with a small shelter and parking for 6-8 cars

Support Facilities

A small picnic area restroom is recommended to replace the existing pre-fabricated composting restroom at the Bluffs Picnic Area.

Little Talbot Island State Park

Recreation Facilities

The south end of Little Talbot Island is an especially critical area because the elevated Fort George Inlet Bridge is a visual gateway to the state parks. Parking for 50 cars and drop-off facilities currently provide access to the fishing catwalks on the bridge. Due to shallow waters, launching facilities for motorized watercraft are not recommended from this facility. However, the area attracts a number of visitors who launch canoes and kayaks from the shoreline adjacent to the parking area. To accommodate that existing watercraft launching use and to improve the area within the state park for fishermen and other visitors, recommended improvements include a designated access route to allow canoe/kayak launch on the Fort George River, 2 medium picnic shelters, a restroom and interpretive kiosks adjacent to the parking area. No engineered and constructed launching ramp is proposed here due to the extremely dynamic nature of the sand shoals off the park's shoreline. A designated path with ramped sections as needed to allow users to carry canoes or kayaks to the water should be sufficient to provide safe public access and protect the park's resources.

As discussed above, education of park visitors regarding the sensitivity of shorebirds to human disturbance through interpretive graphics designed to manage visitor behavior should be provided in kiosks throughout the state, city and national park units north of Mayport, at each viable shorebird habitat area. The shoreline location proposed for canoe and kayak access and the picnic and convenience facilities at this parking area will be important locations for interpretive displays to inform park visitors about shorebird use of the adjacent shoals, and the importance of allowing the animals to feed and rest undisturbed.

Landscape improvements are also recommended for this high profile area to enhance the southern gateway to the park's resources, and to divert shorebirds that fly to the retention ponds on the west side of A1A above and away from the traffic lanes of the highway.

Trails. A trail stop on the Timucuan Trail with a picnic shelter and interpretive sign is needed East of A1A at the south end of the park near the Fort George Inlet Bridge, providing a scenic overlook on Ward's Bank (Huguenot Park). The trail stop will be constructed and funded in conjunction with the Timucuan Trail.

Facilities Renovation. Wastewater treatment facilities to the park's RV camping area, relocating the drainfield away from the salt marsh to an area adjacent to A1A have recently been completed. Renovations to campsite layouts and are proposed for the existing camping area. The renovation plan will address circulation problems and update a percentage of campsites to accommodate larger RVs, where feasible, while protecting natural resources and maintaining the quality of the camping experience. Consideration will be given to future development of a new campsite loop for up to 15 larger recreational vehicles, in the area immediately north and east of the existing camping area.

Restroom facilities for the park's primitive group camp need to be upgraded (currently, portable toilets are provided for the area.) Given the limited area available for development at the existing group campsite, and its close proximity to A1A that presents security concerns, relocation of the group camp may be more advisable than improving the current site. An area of maritime hammock located on the south end of Big Talbot Island that was degraded by clearing at some time in the past may be a more appropriate location for the primitive camp facilities. The site is more remote, yet is located a short distance from the Sarabay Center and dock on the Fort George River, providing opportunities for group activities not available at the current location. Appropriate site analysis and surveys for significant cultural or natural resources in this location will be conducted before a decision to relocate the camp is made.

Currently, beach access facilities are meeting public demand at Little Talbot Island

State Park with overflow conditions occurring only on summer holiday weekends. However, future growth of the regional population may lead to beach access demands that exceed the park's capacity. At that time, replacement for the south beach facilities may be needed, due to unsafe swimming conditions from strong currents at the former use area. The new location should be as far south of the northern beach use area as possible, but north of the area affected by migration of the Fort George Inlet. Since additional study is needed to determine this location, a zone for study, rather than a specific location, is identified on the conceptual land use plan. As part of that development study, potential impacts of new development and expanded beach recreation on nesting, feeding and resting shorebirds and on Painted bunting habitat in the affected area will be completed. If it is found that unacceptable impacts would occur to the resident and visiting bird populations, then development will be limited or deferred.

Support Facilities

Roadside Parking. Frequently, roadside parking, especially along A1A road shoulders across the salt marsh causeway between Big and Little Talbot Islands, causes public safety hazards and impacts to the adjacent natural areas. Division staff will organize and sign parking at the abandoned DOT rest area on Big Talbot Island just south of Houston Avenue to provide a suitable place for shoreline fishermen and others to leave their cars while recreating in this area of the park. The Division will work with DOT to establish appropriate signage to inform drivers that road shoulder parking along the state road is not allowed.

Volunteer Camp Sites. The location of campsites for the recreation vehicles of park volunteers will be moved from its current Little Talbot Island beach site to a site adjacent to the shop and residence area.

Facilities Development

Preliminary cost estimates for the following list of proposed facilities are provided in Addendum 6. These cost estimates are based on the most cost-effective construction standards available at this time. The preliminary estimates are provided to assist the Division in budgeting future park improvements, and may be revised as more information is collected through the planning and design processes.

All Parks

Recreation Facilities

Interpretive Kiosks (8)
Wildlife Blinds (5)
Timucuan Trail (9.35 mi.)

Amelia Island State Park

Recreation Facilities

Trails
Equestrian trail (2640 lf.)
Dune Crossover (400 ft. Elevated Boardwalk)

Support Facilities

No state-funded support facilities are proposed.

George Crady Fishing Pier State Park

No improvements are planned.

Big Talbot Island State Park

Recreation Facilities

Picnic Area Improvements
Bluffs Picnic Area
- Picnic shelter (medium)
- Restroom

Old Rest Area
- Parking (10-12 cars)

Canoe / kayak Concession (Long Island)
- Picnic shelter (small)
- Parking (6-8 cars)

Primitive Campsite
Long Island
- Primitive campsites (2 sites – 8-persons / site)
- Composting restroom

Primitive Group Camp
- Replace restroom facilities or relocate camp

Support Facilities

No support facilities are proposed.

Little Talbot Island State Park

Recreation Facilities

Fort George Inlet Bridge
- Picnic shelters (two medium)
- Canoe / Kayak Access Path
- Landscaping

Facilities Renovation

Camping Area
Layout Renovation

Beach Use Study Area
Engineering study

Support Facilities

Volunteer Camp Sites
Relocation

Fort George Island Bridge
Restroom

Existing Use and Optimum Carrying Capacity

Recreational carrying capacity is an estimate of the number of users a recreation resource or facility can accommodate and still provide a high quality recreational experience and preserve the natural values of the site. The carrying capacity of a unit is determined by identifying the land and water requirements for each recreation activity at the unit, and then applying these requirements to the unit's land and water base. Next, guidelines are applied which estimate the physical capacity of the unit's natural communities to withstand recreational uses without significant degradation. This analysis identifies a range within which the carrying capacity most appropriate to the specific activity, the activity site and the unit's classification is selected (see Table 1).

The recreational carrying capacity for this park is a preliminary estimate of the number of users the unit could accommodate after the current conceptual development program has been implemented. When developed, the proposed new facilities would approximately increase the unit's recreational carrying capacity.

Amelia Island State Park

Table 1--Existing Use And Optimum Carrying Capacity

	Existing Capacity		Proposed Additional Capacity		Estimated Optimum Capacity	
Activity/Facility	One Time	Daily	One Time	Daily	One Time	Daily
Trails						
Nature	20	160			20	160
Equestrian	30	160			30	160
Fishing						
Shoreline	300	600			300	600
TOTAL	**350**	**920**			**350**	**920**

George Crady Fishing Pier State Park

Table 2--Existing Use And Optimum Carrying Capacity

	Existing Capacity		Proposed Additional Capacity		Estimated Optimum Capacity	
Activity/Facility	**One Time**	**Daily**	**One Time**	**Daily**	**One Time**	**Daily**
Fishing						
Bridge	300	600			300	600
TOTAL	**300**	**600**	**0**	**0**	**300**	**600**

Big Talbot Island State Park

Table 3--Existing Use And Optimum Carrying Capacity

	Existing Capacity		Proposed Additional Capacity		Estimated Optimum Capacity	
Activity/Facility	**One Time**	**Daily**	**One Time**	**Daily**	**One Time**	**Daily**
Trails						
Nature	81	324			81	324
Camping						
Primitive			16	16	16	16
Boating						
Power	80	80			80	80
Canoe/Kayaking	24	48			24	48
Picnicking	32	64	40	80	72	144
Fishing						
Shoreline					20	40
TOTAL	**217**	**516**	**56**	**96**	**293**	**652**

Little Talbot Island State Park

Table 4--Existing Use And Optimum Carrying Capacity

	Existing Capacity		Proposed Additional Capacity		Estimated Optimum Capacity	
Activity/Facility	**One Time**	**Daily**	**One Time**	**Daily**	**One Time**	**Daily**
Trails						
Nature	40	160			40	160
Primitive	30	60			30	60
Shared Use	20	80			20	80
Camping						
Primitive	40	40		20	38	152
Standard	160	160		20	38	152
Boating						
Canoe/Kayaking	40	80	150	300	120	380
Beach Swimming/ Picnicking	632	1,264	48	96	680	1,360
Fishing						
Bridge	150	300			150	300
TOTAL	**1,112**	**2,144**	**198**	**436**	**1,116**	**2,644**

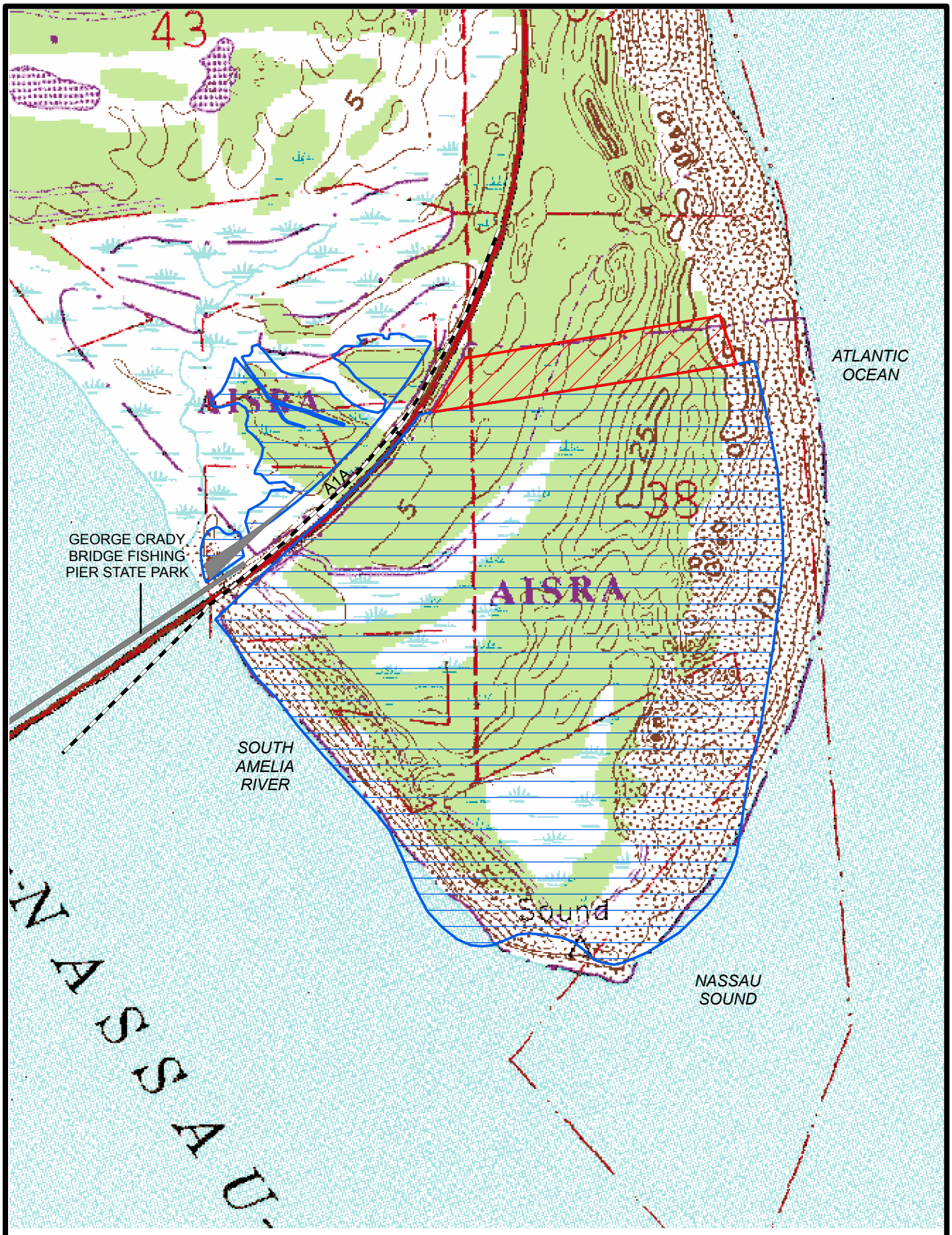
Optimum Boundary

As additional needs are identified through park use, development, research, and as adjacent land uses change on private properties, modification of the unit's optimum boundary may occur for the enhancement of natural and cultural resources, recreational values and management efficiency.

Identification of lands on the Optimum Boundary Maps is solely for planning purposes and not for regulatory purposes. A property's identification on the optimum boundary map is not for use by any party or other government body to reduce or restrict the lawful right of private landowners. Identification on the map does not empower or require any government entity to impose additional or more restrictive environmental land use or zoning regulations. Identification is not to be used as the basis for permit denial or the imposition of permit conditions.

The following optimum boundary maps reflect lands identified for direct

management by the Division as part of the park. These parcels may include public as well as privately owned lands that improve the continuity of existing park lands, provide additional natural and cultural resource protection, and/or allow for future expansion of recreational activities. Acquisitions of improved parcels will be reviewed on case-by-case basis in conjunction with the park residence and administration needs.


43
AISRA
AISRA
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GEORGE CRADY
BRIDGE FISHING
PIER STATE PARK
SOUTH
AMELIA
RIVER
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Florida Department of Environmental Protection
Division of Recreation and Parks
Office of Park Planning
LEGEND
Park Boundary
Optimum Boundary
OPTIMUM BOUNDARY MAP

BIG TALBOT ISLAND STATE PARK

OPTIMUM BOUNDARY MAP

LEGEND

Park Boundary

Optimum Boundary

N

0 650 1,300 2,600 Feet

Florida Department of Environmental Protection
Division of Recreation and Parks
Office of Park Planning

LITTLE TALBOT ISLAND STATE PARK

N

0 1,000 2,000 4,000 Feet

Florida Department of Environmental Protection
Division of Recreation and Parks
Office of Park Planning

LEGEND

- Park Boundary
- Optimum Boundary

OPTIMUM BOUNDARY MAP

Addendum 1 — Acquisition Histories and Advisory Group Report

Purpose of Acquisition

The State of Florida Board of Trustees of the Internal Improvement Trust Fund (Trustees) acquired Amelia Island State Park to manage the property in such a way as to protect and restore the natural and cultural values of the property and provide the greatest benefit to the citizens of the state.

Sequence of Acquisition

On September 15, 1983, the Trustees acquired undivided 46.6% title interest in a 215.9-acre property constituting the initial area of Amelia Island State Park. The Trustees, which now has 100 percent interest in this property, purchased the property from PLM Associates, Inc for $8, 581,950. The purchase was funded under the Save Our Coast Bonds. Since this initial purchase, the Trustees purchased several individual parcels under the same program and added them to Amelia Island State Park.

Title Interest

The Trustees hold fee simple title to Amelia Island State Park.

Lease Agreement

On November 19, 1984, the Trustees leased Amelia Island State Park to the State of Florida Department of Natural Resources, predecessor in interest to the Department of Environmental Protection, Division of Recreation and Parks (Division) under Lease No. 3377. This lease is for a period of fifty (50) years, which will expire on November 18, 2034.

According to Lease No. 3377, the Division manages Amelia Island State Park only for the conservation and protection of natural and historical resources and resource-based public outdoor recreation compatible with the conservation and protection of the property.

Special Conditions On Use

Amelia Island State Park is designated single-use to provide resource-based public outdoor recreation and other park related uses. Uses such as water resource development projects, water supply projects, stormwater management projects, linear facilities and sustainable agriculture and forestry (other than those forest management activities specifically identified in this plan) are not consistent with this plan.

Outstanding Reservations

Following is a listing of outstanding rights, reservations and encumbrances that apply to Amelia Island State Park.

Instrument: Easement
Instrument Holder: .....Trustees
Beginning Date:.....July 21, 1995
Ending Date:.....July 20, 2045
Outstanding Rights, Uses, Etc.: ...The easement allows the State of Florida Department of Transportation to construct and maintain State Road A1A. The easement is subject to automatic reversion if property is not used for purposes described in the easement.

Purpose of Acquisition

The State of Florida Board of Trustees of the Internal Improvement Trust Fund (Trustees) acquired Big Talbot Island State Park to manage the property in such a way as to protect and restore the natural and cultural values of the property and provide the greatest benefit to the citizens of the state.

Sequence of Acquisition

On August 20, 1982, the Trustees obtained title to a 1,344–acre property constituting the initial area of Big Talbot Island State Park. The Trustees purchased the property from Assets Transfer Company for $7,876,450. The purchase was funded under the Land Acquisition Trust Fund (LATF) program. Since this initial purchase, the Trustees acquired several individual parcels under LATF, P2000/A & I, and a lease and added them to Big Talbot Island State Park.

Title Interest

The Trustees and the SJRWMD hold fee simple title of Big Talbot Island State Park.

Lease Agreements

On May 31, 1983, the Trustees leased Big Talbot Island State Park to the State of Florida Department of Natural Resources, predecessor in interest to the Department of Environmental Protection, Division of Recreation and Parks (Division) under Lease No. 3283. This lease is for a period of fifty (50) years, which will expire on May 30, 2033.

On July 31, 1990, the Division leased a 24.16-acre property from the St. Johns River Water Management District (SJRWMD) to manage the property as part of Big Talbot Island State Park. This lease is for a period of forty-three (43) years, which will expire on July 30, 2033.

According to the Trustees and the SJRWMD leases, the Division manages Big Talbot Island State Park only for the development, conservation and protection of natural and cultural resources, and for resource-based public outdoor recreation compatible with the conservation and protection of the property.

Special Conditions On Use

The Big Talbot Island State Park is designated single-use to provide resource-based public outdoor recreation and other park related uses. Uses such as water resource development projects, water supply projects, stormwater management projects, linear facilities and sustainable agriculture and forestry (other than those forest management

activities specifically identified in this plan) are not consistent with this plan.

Outstanding Reservations

Following is a listing of outstanding rights, reservations and encumbrances that apply to Big Talbot Island State Park.

Instrument: .....Warranty Deed
Instrument Holder: .....Roxie Horne Merrill
Beginning Date:.....October 5, 1995
Ending Date:.....Forever
Outstanding Rights, Uses, Etc.: ...The deed is subject to use of a graded road as depicted on DEP survey dated April 7, 1995, and a Maintenance Agreement recorded in O.R. book 5678, page 353.

Instrument: .....Warranty Deed
Instrument Holder: .....Robert M. Price, Sr.
Beginning Date:.....December 22, 1994
Ending Date:.....Forever
Outstanding Rights, Uses, Etc.: ...The deed is subject to an easement for ingress and egress purposes recorded in O.R. book 2998, page 1140 and a chain link fence as shown on a survey by Northeast Florida Surveyors dated July 8, 1993.

Instrument: .....Warranty Deed
Instrument Holder: .....James G. Skipper, Audrey J. Skipper
Beginning Date:.....December 19, 1985
Ending Date:.....Forever
Outstanding Rights, Uses, Etc.: ...The deed is subject to power poles and power lines as shown on a survey dated July 13, 1985, made by Vernon N. Drake and Associates.

Instrument: .....Warranty Deed
Instrument Holder: .....Foster Kennedy
Beginning Date:.....March 14, 1984
Ending Date:.....Forever
Outstanding Rights, Uses, Etc.: ...The deed is subject to a road right-of-way for Houston Avenue and an 8-foot trail road as shown on a survey by Clary, Miller, and Associates dated February 4, 1984.

Purpose of Acquisition

The State of Florida acquired Little Talbot Island State Park to manage the property in such a way as to protect and restore the natural and cultural values of the property and provide the greatest benefit to the citizens of the state.

Sequence of Acquisition

On June 5, 1951, the Florida Board of Parks and Historic Memorials (FBPHM), predecessor in interest to the Florida Department of Environmental Protection, Division of Recreation and Parks (Division), obtained title to a 1,711.2-acre property constituting the initial area of Little Talbot Island State Park. The FBPHM acquired the property through donation from the Florida Department of Transportation. This donation and two parcels transferred from the Kingsley Plantation constitute the present area of the park, which is approximately 1,917 acres.

Title Interest

The Trustees hold fee simple title to Little Talbot Island State Park.

Lease Agreement

On January 23, 1967, FBPHM transferred and conveyed its title to Little Talbot Island State Park to the State of Florida's Trustees of the Internal Improvement Fund, now commonly known as the Board of Trustees of the Internal Improvement Trust Fund of the State of Florida (Trustees). On January 23, 1968, the Trustees leased Little Talbot Island State Park to FBPHM under Lease No. 2324. This lease is for a period of ninety-nine (99) years, which will expire on January 23, 2067.

In 1988, the Division of State Lands, Bureau of Uplands Management, assigned a new lease number, Lease No. 3632, to Little Talbot Island State Park without changing any of the terms and conditions of Lease No. 2324.

According to Lease No. 3632, the Division manages Little Talbot Island State Park only for the conservation and protection of natural, historical and cultural resources and for resource-based public outdoor recreation compatible with the conservation and protection of the property.

Special Conditions On Use

The Little Talbot State Park is designated single-use to provide resource-based public outdoor recreation and other park related uses. Uses such as water resource development projects, water supply projects, stormwater management projects, linear

facilities and sustainable agriculture and forestry (other than those forest management activities specifically identified in this plan) are not consistent with this plan.

Outstanding Reservations

Following is a listing of outstanding rights, reservations and encumbrances that apply to Little Talbot Island State Park.

Instrument: .....Indenture
Instrument Holder: .....Rollins College
Beginning Date:.....April 19, 1950
Ending Date:.....No specific ending date is given
Outstanding Rights, Uses, Etc.: ...The instrument holder reserves the right that if the property is not used as a bird and wildlife sanctuary, it will revert to the instrument holder.

Instrument: .....Easement
Instrument Holder: .....Division
Beginning Date:.....April 6, 1966
Ending Date:.....No specific ending date is given
Outstanding Rights, Uses, Etc.: ...The easement allows the City of Jacksonville to construct, operate and maintain an electric power line upon, over and across park property.

Instrument: .....Deed
Instrument Holder: .....State Road Department of Florida
Beginning Date:.....June 5, 1951
Ending Date:.....No specific ending date is given.
Outstanding Rights, Uses, Etc.: ...The deed states that if land is not used as state parkland, it will revert to instrument holder.

Instrument: .....Indenture
Instrument Holder: .....Division (FBPHM)
Beginning Date:.....June 25, 1953
Ending Date:.....No specific ending date is given
Outstanding Rights, Uses, Etc.: ...The indenture allows the City of Jacksonville a certain right-of-way and 20 ft. easement for transmitting electrical power.

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Bicycling Representative
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Curtis Siver, Commodore
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Represented by:
Lowell Hall
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The Advisory Group appointed to review the proposed unit management plan for Talbot Islands State Parks and Ft. George Island Cultural State Park met in the Sarabay Center at Big Talbot Island State Park, Jacksonville, Florida on October 24, 2007. Nathan Rezeau represented Kelly Boree (City of Jacksonville), Jennifer Hart represented Bruce Hill (FL Division of Forestry), Patrick Leary represented Carole A. Adams (Duval Audubon Society), Gil Langley represented Regina Duncan (Amelia Island Chamber of Commerce) and Lowell Hall represented Janie Thomas (Shrimp Producers). The Honorable John Peyton and The Honorable Ray Holt (City of Jacksonville), The Honorable Michael H. Boyle (Nassau County), Barbara Goodman (National Park Service), Doug Moore (Soil and Water Conservation District) and Emily Lisska (Jacksonville Historical Society) did not attend. All other appointed Advisory Group members were present. Attending observers included Kevin Crabtree (adjacent landowner) and Doris Leary (Duval Audubon & Audubon of Florida). Attending staff included William Cutts, Craig Parenteau, Dan Pearson, Anne Barkdoll, Brenna Daniels, Kathleen Kelso, Aaron Rodriguez, Kristin Ebersol, Tim Davis, Tera Meeks, Eric Steffey, Lew Scruggs and Jillaine DeBuono.

Mr. Scruggs began the meeting by explaining the purpose of the advisory group, and providing a brief overview of the Division's planning process He gave a brief review of the comments received at the October 23rd public workshop. He asked the Advisory Group members to comment on the plan first, followed by public comment.

Summary of Advisory Group Comments

Nathan Rezeau recommended continued coordination between the Division and the COJ regarding the Fort George Island road study. Mr. Rezeau informed the group that the city is in the process of writing the project scope for the road study and is awaiting the appointment of a contract consultant. Mr. Rezeau stated that the plans looked good overall.

Keith Ashley (Archeological and Cultural Consultant) stated that the plans looked good and the archeological and cultural resources were well covered. Mr. Ashley expressed concern about the road project on Ft. George Island and recommended careful archeological research and interpretation. He recommended a synthesis and incorporation of contemporary nomenclature for all previous research documenting the islands since the 1960s and for the parks to become proactive in the protection of cultural resources. He advised the Division to study eroding sites before they disappear. Mr. Ashley also recommended that an archeological survey be conduced in order to protect cultural resources during future development.

Warren Anderson (adjacent landowner) suggested improved access to overnight accommodations. Mr. Anderson stated he would like to see cabins but was concerned

about impacts during development.

Nancy Frashuer (adjacent landowner) recommended that the Division retain the original canopy and landscape of Ft. George Island. Regarding changes to road circulation, Ms. Frashuer agreed with the need to improve security, but also stated that the one-way road proposal would speed up traffic. She also recommended speed bumps and signage as a traffic-calming alternative. Ms. Frashuer stated that the proposed two-way road was too close to adjacent residential properties and needed buffering or use of old fairways. Ms. Frashuer expressed concerns about the build up of sedimentation in the Fort George River inlet. She also had concerns with accommodating RVs at the camping area on Little Talbot Island and agrees with the need to separate RV camping from tent camping. Ms. Frashuer asked the Division to post notices and mail/distribute flyers to Ft. George Island residents advertising future public meetings.

Lowell Hall (asked to be considered in the future as an Advisory Group representative for the Citizens for the Preservation of Public Beaches. He stated he would like continued public vehicle access to the beach at Amelia Island State Park. He expressed concern over language in the plan that seems to indicate that vehicle access to the beach would not be available. Staff informed Mr. Hall that the text in question was outdated and would be removed from the plan. Mr. Hall recommended the development of an access road to the beach along the park's north boundary. Bob Joseph explained that wetlands and dunes along the park's northern boundary pose obstacles for road development through the park. Mr. Joseph noted that the parcel north of the park would be considered for an access road if the land were acquired when the current owner is willing to sell. Mr. Hall also recommended a camping area developed on Amelia Island.

Jack Healan (Amelia Island Plantation) sited the use of Amelia Island State Park by guests of Amelia Island Plantation. Mr. Healan stated he liked the proposed improvements, but recommends an access road with shelter located near the northern boundary of the park. Mr. Healan cited the White Oaks developments covered facility as a good example because the facility accommodates large private and business gatherings.

Gil Langley stated that the plan did not thoroughly address the development of accessible programs, services and facilities for the disabled and suggested the parks look to the Open Doors Organization for innovative ideas. Mr. Joseph identified accessibility as a high priority with the Division and the parks and described current work towards further ADA compliance as well as innovative programming.

Curtis Siver (Seminole Canoe and Kayak Club) noted that the plan lacked emphasis on

the needs of canoe and kayak users, citing the need for improvements addressing ease of access for aging paddlers (short carries and calmer waters), signage for locating access points, services geared toward combined biking/paddling recreation. Mr. Siver also noted accommodations needed for trailered boats at Ft. George Island. Mr. Siver informed the group of the services preformed by paddlers, including the collection of garbage at remote sites along the waterways. Tom Larson explained that, regionally, parks were developing a number of paddling access points. Dan Pearson cited discussions of new access points in the Divisions draft management plans.

John Reyes (Jacksonville and the Beaches Convention and Visitors Bureau) stated that he attended the workshop and thought the plan was good. Mr. Reyes recommended balance of impacts with respect to Ft. George Island residence and public access. He supported the protection of resources for ecotourism, increased litter control, development of hiking, kayaking, and cycling tourism, as well as planning for shore excursions from cruise ships. Mr. Reyes recommended tent and RV camping areas, separated for optimal camping experiences.

J. B. Miller (St. Johns River Water Management District) offered the District's help in capping abandoned wells. He asked if the Timucuan Trail was to be a paved facility. Bob Joseph said the Division is closing wells and is making progress. He stated that the Timucuan Trail is to be a paved shared use facility.

Addressing the Talbot Islands, Mr. Miller asked about the proposed A1A round-abouts, management of the Rollins Bird Sanctuary as part of Little Talbot Island instead of Ft. George, and potential impacts of future beach day use facility development and burn management practices on the Painted bunting habitat. Mr. Joseph noted an increase in highway speed adjacent to the parks and thinks that the round-abouts are a solution that avoids stopping traffic at the park's intersections. Mark Middlebrook and Lowell Hall stated their support for proposed the round-abouts for the protection of cyclers and pedestrians. Mr. Scruggs explained that a deed restriction on the Rollins property requires it to be included in the boundary of Little Talbot Island State Park. Dan Pearson clarified the Division’s practice utilizing naturally occurring tidal and wind driven washovers for managing Painted bunting habitats. Mr. Pearson said the plan would be revised to include language that maintains options for prescribed burns.

Mr. Miller requested clarification in the UMP that no beach driving would take place on Little Talbot Island other than for management or emergency purposes. He also recommended that the plan mention Long Island as a protected zone.

Terry Doonan (Florida Fish and Wildlife Conservation Commission) stated he associated round-abouts with more urbanized areas and was curious how the traffic devices would work in a naturalized setting. Mr. Doonan said the parks did a good job

on managing listed species. He asked how the Division addresses decisions with multiple mandates or if there is a management criterion. Bob Joseph cited the park's use of monitoring and analysis of public and management impacts. Lew Scruggs stated that balancing decisions were made on a case-by-case basis with the understanding of the need for flexibility. Mr. Doonan recommended the Division to seek coordination with the partnership for regional approach towards conservation and for the Division to look broadly before acquiring parcels. He also advised the parks to move forward on the Nassau Shoals interagency management agreement with the involvement of the city and other groups that could help. Mr. Doonan stated he would like to see Beach tiger beetles mentioned in plan and ranked for protection in the FNAI species list. He recommended that the parks consider the U. F. Sea Grant Program in its search for funding sources.

Stan Sanford (Bicycling Representative) stated that he would like to see cycling improvements to include bicycle trail surface treatment that would harden the trails and widen trails beyond "minimum width" to accommodate a broader range of ages and skill levels. He would like the parks to provide at lease 50 miles of bicycle trails and possibly the use the park's service roads to make visiting the park worthwhile for cycling. He recommended that ferries be equipped to transport bicycles. Mr. Sanford would like the UMP to cite ferry points as "ADA and bicycle friendly" and clarify the definition of "multi-use" trail. He also expressed concerns about high-speed traffic on A1A, adding that an area resort did not include the parks for bicycling due to high risk and liability. Mr. Sanford also addressed canoe/kayak usage within the park and suggested increased signage for locating access points as well as type of launch; i.e.: natural/sand, ramp, etc.

Hallie Stevens (The Nature Conservancy) stated the UMP draft was an ambitious plan dealing with an incredible range of resources, but stressed that the Division should balance public use with protection of natural areas.

Nicole Robinson (Nassau River-St. Johns River Marshes Aquatic Preserve) recommended that the plan address sedimentation, erosion and corresponding land changes. Ms. Robinson stated that she would like the plans to allow for management flexibility due to continual changes of the land. She noted the Aquatic Preserve staff and the Three Rivers Conservation Coalition have concerns about impervious surfaces and runoff from stormwater. In addtion, Ms. Robinson expressed concerns about ferry stops. She would like to discuss the project and potential impacts with the participating parties.

Tom Larson (Northeast Florida Sierra Club) recommended that the plans develop long-term management plans (at least 50 years) for addressing future build-out, rising seas, global warming, and the effects of projected populations of urban areas on park lands.

Mr. Larson stated that the plans did not explain how analysis and objectives are defined, applied and tracked. He said the plan should define management priorities, scheduling and costs.

Regarding natural and cultural resources, he urged the Division to increase documentation, specify and define risks, management techniques and restoration and create greater accessibility because the public will appreciation the resources only if the resource is known and experienced. Mr. Larson recommended restoring Sabal palms along Palmetto Ave. He suggested that reoccurring problems identified in previous management plans be addressed or removed from the current or future plans. He said fire appears overdue and recommended that burns should be discussed in the plan with time frames and be put back on schedule. Mr. Larson stated he wanted to see policies and procedures for road kill and nuisance and exotic animal control. Regarding water quality, Mr. Larson said he would like the parks to include better waste management practices including more restrooms and boat pump-outs. He said the parks need ongoing assessments of water quality, including fish sampling, and solutions and plans regarding altered topography. Mr. Larson stated he would like to know how impacts of water vessels, including launch sites and ferry docking, will effect the shorelines and bottoms of waterbodies. He also recommended that ferry plans be circulated within the partnership. Mr. Larson would like to see a better integration and influence of the regional partnership. He advised the Division to aggressively target out parcels on the north end of Big Talbot Island.

Mr. Larson stated visitor surveys are needed to shape management and interpretation. He proposed that the plans address recreational impacts, including impacts from equestrian use. He recommended the tram proposal to include fuel cell or hybrid vehicles to reduce noise and emissions. He stated that the Timucuan Trail should be completed because it would be a high value improvement. Mr. Larson would like the Division to consider two additional campsites on Long Island. He advised the parks to isolate tent camping sites from the noise of A1A and from RV camping sites.

Mark Middlebrook (North Florida Land Trust) said the plans are good, and said that he would try to provide specific comments.

Patrick Leary (Duval Audubon Society) acknowledged the many demands on finite resources in these state parks. He stated he would like to see the plans incorporate and address non-traditional activities (wedding, filmmaking, organized events, etc.) and unregulated uses. He also mentioned the need for the plan to address unauthorized parking along A1A, because of existing visitor parking areas. He stated that roadside parking on A1A is adversely impacting resources by causing erosion on the road shoulders and making unintended areas accessible for hiking. Mr. Leary recommended additional design detail and impact assessment for the Timucuan Trail. He said he also

wants built portions of the trail to be mapped with GPS. Bob Joseph and Lew Scruggs explained that the Conceptual Land Use Plan map is not a site plan, and not intended to provide the level of design detail being requested.

Mr. Leary expressed concerns regarding the proposed primitive camping area and hiking trail on Long Island. He said Long Island has a unique habitat and the plan did not address impacts on Painted bunting habitats and unintended consequences of user groups having access and affecting the environment. Staff stated that the Division will use a discrete trail or access the island via canoe/kayak to monitor without creating high traffic access through the marsh and that cool season use of campers' verses the bunting's nesting season during hot weather months should be considered. Lew Scruggs responded that the Division would not develop a hiking trail if it were not appropriate to the habitat, and that mention of users potentially fording the creek would be removed.

Mr. Leary requested that setback distances for nesting shorebirds be addressed in the plan. He stated he was pleased to see required beach closures addressed in the plan. He questioned the beach use study area proposed for Little Talbot Island, and the need to consider not only shore nesting species but also migrating species; particularly plovers, and Painted buntings. Dan Pearson explained that the parks are studying solitary nesting species and found that closing off beaches is not always the best protective measures due to boat landings, adding that optimal protection includes education and interpretation. Bob Joseph noted that law enforcement patrols boat-landing areas, particularly during holidays, and enforces no camping rules. Mr. Scruggs explained that the protection of bird habitat, including migrating species and Painted buntings, would be included in the analysis of the beach use study area.

Due to the location of the Alimacani boat ramp, Mr. Leary considered the planned canoe/kayak launch site near the Ft. George Inlet Bridge to be redundant. He recommended screening the retention ponds in the bridge parking area. Mr. Leary identified the ponds as a source of freshwater for shorebirds and that traffic related bird fatalities could be alleviated with a vegetated screen that *influences the birds to fly higher above the traffic flow when going to and from the ponds.* Mr. Leary also sited unregulated use and access to the inlet sandbars by visitors with dogs. Staff explained that signs prohibiting dogs are posted at the park boundary on the inlet sandbar. Mr. Leary inquired if the volunteer host sites proposed for Little Talbot Island could be sited closer to the riverside boat landing area for increased enforcement.

In relation to nesting seasons of upland birds, Mr. Leary noted that the plans do not identify a time frame or season for prescribed fires. He also had concerns for species with longer nesting seasons, such as raptors. Staff explained that the Division tries to burn during the natural Spring and Summer burn seasons and that species nesting

seasons are taken into consideration.

Attached are written comments by Mr. Leary.

Jennifer Hart (Florida Division of Forestry) advised the Division to mention prescribed fire as part of timber management in the UMP. She noted that the regime is scheduled for mesic habitats, but would like to see how this is affecting flatwoods.

Jody Hetchka (Friends of Talbot Islands State Parks) stated that she would like to see more archeological research and protection in the parks. She supported the recommendation to designate idle zones for Myrtle Creek due to an increase of negative encounters between power boaters, jet skiers and paddlers. She sited instances of harassment by power boaters.

Comments by Non-Appointed Attendees

Doris Leary (Duval Audubon Society and Audubon of Florida) advised the park to consider buoy systems to control boat landings and impacts to the Nassau Sound shoal areas. She sees a need to coordinate with management of the City's Huguenot Park to avoid shifting impacts from one to the other, specifically bird impacts resulting from kite surfing activities.

Summary of Comments Submitted in Writing

Julie Brashears Wraithmell (Audubon of Florida) conveyed that she is pleased to see the plan include Nassau Sound and is grateful for Division's participation in creating a meaningful management for this critical resource. Ms. Wraithmell recommended the plan indicate the natural resource significances of these shoals, because they are becoming a significant wintering site for federally endangered Piping Plovers and nearly 10% of the world's population of Red Knot *rufa* subspecies use the islands as stopover habitat each spring and fall (*rufa* are a candidate species for federal listing under the USFWS). She recommended the plan address park and park activity influences adjacent natural resources because of their imperiled a status. She stated the park is a source of disturbance for these birds and has been linked to mortality in such long-distance migrants. Ms. Wraithmell sited boats launched from the park's potential new canoe launch sited at the south end of L. Talbot, as well as the Jacksonville Sheriff's Office exercises once permitted by park management to operate from the south end of the island. While the latter issue has been resolved with park management, she recommended that the plan to address these kinds of scenarios, because they had occurred. She suggested that the south end shoals be addressed because of their potential of joining the island and allowing pedestrian access to the shoals, posing a greater disturbance risk.

Attached are written comments by Ms. Wraithmell.

Staff Recommendations

A number of improvements in the text of the Introduction and Resource Management Component of the draft management plan will be made to address comments received from Advisory Group. The following specific changes will be made primarily to the Land Use Components of the draft plans:

All Parks

- Better interpretive signage for natural and cultural resources and more informative signage regarding location and types of canoe/kayak launches throughout all parks will be recommended. Educational kiosks will be proposed for all critical habitat areas to help manage potential visitor impacts to nesting and resting shorebirds.

Amelia Island State Park

- Text on page 74 describing vehicle access to the beach will be revised to make it clear that vehicle access is allowed on the beach.

Big Talbot Island State Park

- Long Island will be included in the protected zone. Text will be added recommending studies to determine if the proposed hiking trail would create unacceptable impacts to vegetation or wildlife, particularly in regards to Painted buntings. If studies indicate the need, the proposed campsites on the eastern end of Long Island will remain as paddle-in facilities only.
- Discussion of roadside parking problems along A1A as it crosses Myrtle and Simpson Creeks will be added, including a recommendation that Division staff organize parking facilities at the old rest area just south of Houston Ave, and work with DOT to install no parking signs along the affected road shoulders.

Little Talbot Island State Park

- Text recommending studies of potential impacts to Painted bunting and shorebird habitat will be included in the discussion of the beach-use study area.
- Division staff understands concerns by Mr. Leary and Ms. Wraithmell that park visitors using the proposed canoe/kayak launch at the Ft. George Inlet bridge parking area may disturb resting and feeding shorebirds on the adjacent shoals. This area is very accessible from A1A. It has historically been a public access route and will continue to attract visitors in the future. We do not believe an effort to prohibit public access here would be successful. It is the Division's mission to manage public access to protect natural resources and provide recreational opportunities. Staff recommends that the proposed launch facility should remain in

the plan, and that educational written and graphic displays and Park Service programs will be implemented with the development to address the wildlife protection issues, to fulfill that mission. Text of the management plan will be revised accordingly. Staff agrees with the comments that DRP and the City of Jacksonville must collaborate on management of Little Talbot Island State Park, Huguenot Park, Alimacani and Ft. George Island Cultural State Park to address impacts to shorebirds and other natural resources. Discussion on this topic will be added to all components of the draft management plan.

- A recommendation will be added to the Resource Management Component of the Talbot Islands plan that Division staff will work with DOT to develop a gateway landscape north of the Ft. George Inlet bridge to route shorebirds flying to the ponds away from the hazardous vehicular traffic along A1A.

Fort George Island Cultural State Park

- Improved signage and a drop-off loop for improved accessibility are recommended for the canoe/kayak launch located east of the Ribault Club.
- The conceptual plan will be revised to show changes to the proposed two-way crossroad to provide a greater buffer to adjacent residences. The plan's recommendations on altering directions of traffic flow on the island will be removed. A brief description of the City of Jacksonville traffic study, now in initial stages, will be added to the management plan. That discussion will include clear direction that the island's residents will be fully involved in the study and its final recommendations.

With these changes, Division staff recommends that the draft management plans be approved and submitted for review by the Acquisition and Restoration Council.

January 3, 2008

Written Comments Submitted by Mr. Patrick Leary

DEP, Division of Recreation and Parks October 24, 2007

Overview: The Unit Management Plan AGR draft is not comprehensive and lacks pertinent information re specs. support facilities, etc. for the Timucuan (multi-use) trail within park boundaries. The draft does not include or address "non-traditional" activities currently occurring and impacting park resources. These being: formal weddings, commercial film and photography "shoots," organized athletic/charity events and annual JSO emergency response and rescue training exercises.

Question: What are the frequencies of such activities, their impacts to resources and other park visitors, their impacts to sensitive habitats or designated species? What guidelines are established to regulate, monitor and control such events?

Itemized Concerns: (sequential)

Resource Management Program – Special Management Considerations – Shorebird Protection pg. 50 last sentence – set back recommendations

Concern: How is this recommendation being applied to/for Am. Oystercatchers and/or Wilson's Plovers on park properties? Does sufficient habitat (natural buffer) exist to establish such setbacks on Lt. Talbot Island or Bird Islands in Nassau Sound? What are the alternative management tools? (See pg 64 below for related topics)

Management Needs and Problems pg. 51 D Painted Bunting status and special considerations. This item directly relates to pg. 89 the Conceptual Land Use Plan – Big Talbot Island State Park, Recreational Facilities – Trails. Long Island Hiking Trail and Primitive Campgrounds

Concern: Given specie's status and documented occupation of habitats on Long Island and given this landform's restricted, narrow and linear character – what provisions are there for avoiding habitat fragmentation of critical nesting habitat and adverse impacts from trail users and incidental impacts? pg. 55 D" impacts" pg. 57 A What are the anticipated impacts from incidental access off the Timucuan Trail intersecting the proposed trail? (pg. 62 "avoiding fragmentation of natural communities") Recommend intense survey of PABU nesting habitats/pairs on Long Island and analyses of impacts from trail and related activities: prior, during and subsequent to any proposed development.

Management Needs and Problems – 2. B pg.52 – Regulation / prohibition of off-road parking/access off A1A

Concern: This item / issue was raised during prior MP meetings with no resolution. Adequate parking and facilities exist throughout the park to justify absolute prohibition of these adverse and traffic hazard activities along the A1A corridor and especially in high traffic and sensitive habitat areas (Simpson, Myrtle Creeks) such measures also support protection of saltpans adjoining A1A

Prescribed Burning pg. 59

Concern: Lack of mention/addressing of potential impacts to resources and the need to schedule burns to avoid adverse impacts to nesting birds in target areas. Is there an established (seasonal) closed period for controlled burns?

Designated Species Protection – pg. 64 closing of park beaches during pre-nesting and nesting seasons

Concern: How might this apply to the proposed joint development of a management plan for the Bird Islands in Nassau Sound? Does DEP recommend such measures for these sites?

Protected Zones pg. 82 what is the status of Long Island?

Concern: A unique landform, PABU habitat, vulnerability to impacts, regulation of impacts (direct and indirect from the proposed trail and intersecting multi-use trail) Managers should consider the high probability of shore anglers dominating the newly created trail to access sensitive and vulnerable marsh areas off the trail along its entire length to its terminus at the mouth of Simpsons Creek.

Recreation and Interpretation Facilities – Big Talbot Island State Park – Trails pg. 89
1.5 Hiking Trail

Concern: See pg. 51 above. In addition to those concerns above, consider the potential impacts to the adjoining vulnerable environments across the creek resulting from "willing" campers/hikers fording Myrtle Creek and impacting the highly restricted beach dune (1) on the NW tip of Lt. Talbot Island. How much foot traffic can that habitat absorb? Additional concerns for the high potential for adverse impacts to WIPL (WILL?) nesting habitat along the narrow, constricted, NW and N shore of Lt. Talbot Island. Proposed foot traffic will compound current impacts from unregulated vessel landings in the same area

Lt. Talbot Island State Park – Recreation Facilities pg. 90 – canoe / kayak launch on Ft. George River – Incidental factors

Concern I highly problematic under current circumstances with aggressive accretion and "choking off "of water access adjoining the bridge parking lot. Additionally, such a facility may be redundant with COJ's proposed plans to construct a similar facility at Camp Alimicani directly opposite the proposed site.

Concern II the two retention ponds at this site, seasonally attract high numbers of lairds (including Gull-billed Terns) all of which create a traffic hazard along adjoining A1A with birds passing low over the highway resulting in multiple road kills. In coordination with DOT, DEP might consider strategic plantings along one or both sides of A1A to screen the ponds from the highway and/or install some similarly affective devise to reduce or eliminate this condition.

Concern III Current impacts at this site include: unregulated access to the inlet sand bar and inlet shore running north from the parking lot with adverse impacts to vegetation and birds (on the inlet bar) and fostering littering. Some barrier(s) might be considered to prohibit / control this activity. This is a prime site for environmental education / stewardship kiosks.

Concern IV The plan omits: mention, consideration, regulation of the "traditional" vessel landings, picnicking, latrine "activities" affecting park resources along Lt. Talbot's leeward shore north of the Ft. George Bridge. (vicinity of new proposed volunteer campground)

pg. 91 beach facilities – zone for study

Concern: Impacts to designated species (PIPL) Survey data reveals this section(s) of beach (A ~ D) annually and seasonally supports the highest number of migrant and wintering PIPL. Furthermore, elements of the FWS recovery plan suggest a relationship between PIPL occupation of beaches and frequency of recreational use. Data for Lt. Talbot Island SP supports these findings with few plovers sighted/documented on the park's most impacted beaches (E ~ G) Additional beach accesses in the "beach study zone" are likely to have significant and highly adverse impacts on the park's vulnerable plover population. Continued expansion of regional coastal recreation will only increase the importance and value of undeveloped beaches like those of Lt. Talbot Island for PIPL. Such sites are likely to become the last refuges for many designated coastal bird species and their development is likely to threaten the health, welfare and survival of PIPL and other, beach-dependent, species.
Submitted: 10/22/07

Written Comments Submitted by Ms. Julie Wraithmell
From: WRAITHMELL, Julie [mailto:jwraithmell@audubon.org]
Sent: Thursday, November 01, 2007 3:55 PM
To: Scruggs, Lewis
Subject: Comments on Talbot Islands DMP

Lew:
Sorry I was not able to attend the Talbot meeting. I actually requested a copy of the management plan in advance but never received it. I made the request a second time to Bryanne on the day of the meeting and was told she sent it the week before (but I never received it). At that time when she requested a confirmation receipt, I obviously did not confirm for her, however she never checked back—must have slipped through the cracks.

At any rate, I just wanted to submit a few comments on behalf of Audubon of Florida and hope you'll be able to take them into consideration given I wasn't provided with the plan in advance of the meeting.

While I understand you heard concerns about the proposed exploratory beach access area (with which we agree—we are concerned about increased beach access and particularly the impacts on dwindling painted buntings that this site plan would require), I am most interested I addressing the plan's treatment of Ft George Inlet.

I was pleased to see the plan includes consideration of Nassau Sound—we've been very grateful for Drip's participation in the process seeking to create meaningful management for these critical resources. In the same way, the plan addresses the sedimentation of Ft. George Inlet but does not indicate just how significant of a natural resource these shoals really are. In fact, they are becoming a significant wintering site for federally endangered Piping Plovers and nearly 10% of the world's population of Red Knot *rufa* subspecies use the islands as stopover habitat each spring and fall (*rufa* are a candidate species for federal listing under the USFWS). In the same way that Drip's management plans consider the impacts of activities and properties outside of the park on park resources, it seems incumbent upon DRP to consider the impacts of the park and park activities on adjacent natural resources, particularly when they are of as imperiled a status as these are. In fact, the park is a source of disturbance for these birds, which has been linked to mortality in such long-distance migrants, both in the form of boats launched from the park's potential new canoe launch sited at the south end of L. Talbot, as well as Jacksonville Sheriff's Office exercises that have been permitted by park management to operate from the south end of the island. While the latter issue has been resolved with the leadership of park management, it seems appropriate to address these kinds of scenarios in the plan, since they have proven to not just be hypothetical, but in fact to be likely to occur. Similarly, I understand the

potential accretion of these shoals to join the south end of the island was discussed—this would allow pedestrian access to the shoals, posing an even greater disturbance risk.

DRP does a wonderful job of planning for potential contingencies in their management plans; I think this was just an oversight that could easily be corrected with the input of your regional biological staff that is well aware of the remarkable natural resource values in the inlet.

My apologies for the hurried email; I am actually at our annual conference this week/weekend, but wanted to dash off a comment to you quickly so that it could be included in your next draft. If you have any questions or concerns, I can be reached (albeit intermittently) on my cell phone at 850-527-0279.

Thanks so much—the plan is tremendously comprehensive and it is apparent how much effort and dedication you have invested in it! I hope to have a few comments for you on the Fort George Island plan in the next few days as well. Thanks in advance for your flexibility

Addendum 2—References Cited

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Addendum 3—Soils Descriptions

Duval County

* Indicates soil types which are identified only within the Rollins Bird and Plant Sanctuary.

* **(2) Albany fine sand, 0 to 5 percent** slopes - This is a nearly level to gently sloping, somewhat poorly drained soil on rises and knolls. It is an acidic soil formed in the Lower Coastal plain's thick deposits of sandy and loamy marine sediments. Slopes are smooth and convex. Individual areas are 3 to 50 acres.

Typically, the surface layer is very dark gray fine sand about 3 inches thick. The subsurface layer is fine sand about 47 inches thick. The upper 29 inches is light yellowish brown, and the lower 21 inches is light gray and finely mottled. The upper 13 inches of the subsoil is strong brown sandy loam that is coarsely mottled with light gray and red. Beneath that to 63 inches is strong brown fine sandy loam that is coarsely mottled with reddish yellow. Extending below this to a depth of 88 inches.

Under natural conditions, this soil has a water table at a depth of 12 to 30 inches. Permeability is moderate to moderately slow. Natural fertility is low, and organic matter content is low. Available water capacity is low.

(7) Arents, nearly level - These are nearly level, poorly drained sandy and loamy soils that have shell fragments, rocks, or muck. This soil type is in areas from 20 to 120 acres.

Typically, the soils consist of mixed soil material. This material is light gray, grayish brown, very pale brown, yellow, black, dark reddish brown, strong brown and red fine sand, sandy loam, and sandy clay loam. Sandy textures are dominant in most areas. The sandy loam and sandy clay loam part are fragments or pieces of subsoil material. Pieces of weakly cemented subsoil material are also present in most of these soils. Thickness of the material ranges from 2 to 20 feet. This soil does not have an orderly sequence of horizons.

Under natural conditions, these soils have a water table at a depth of 10 to 30 inches for 2 to 6 months during most years. Permeability is variable. Natural fertility is low, and organic matter content is variable. Available water capacity is variable.

* **(10) Beaches, very frequently flooded** - Beaches consist of narrow strips of nearly level poorly to very poorly drained fine sand along the Atlantic Ocean. These areas of sandy marine sediments are inundated with salt water daily at high tide and are in areas of 200 to 600 acres. This material is a mixture of quartz, sand, heavy minerals, principally rutile and ilmenite, and fragments of seashells. It is subject to movement by wind and tide and is bare of vegetation.

(18) Corolla fine sand, gently undulating to rolling, rarely flooded - This is a somewhat poorly drained to moderately well drained sandy soil occurring on coastal dunes and are affected by salt spray near the Atlantic Ocean. Slopes are concave to convex.

Typically, the surface layer is a slighty acidic, very pale brown fine sand to a depth of 6 inches. Below this is a neutral to mildly alkaline surficial layer to 80 inches which is made up of the following: very pale brown fine sand from 6 to 12 inches; light yellowish brown fine sand to 20 inches; pale brown sand to 26 inches; light gray sand to 80 inches.

This soil has a very rapid permeability and the high water table is around 18 to 42 inches.

(19) Cornelia fine sand, 0 to 5 percent slopes - This is a nearly level to gently sloping, excessively drained soil on broad upland ridges and high bluffs along the Atlantic Coast. Slopes are convex.

Typically, the surface layer is very dark gray fine sand about 7 inches thick. The subsurface layer is fine sand about 39 inches thick. The upper 6 inches is gray and the lower 32 inches is white. The subsoil extends to a depth of 106 inches. It is fine sand, and the sand grains are coated with organic matter. The upper 14 inches is dark reddish brown, the next 20 inches is dark yellowish brown, the next 19 inches is dark brown, and the lower 14 inches is reddish brown.

This soil has a water table at a depth of more than 72 inches. Permeability is moderate in the weakly cemented layers and rapid in all other layers. Natural fertility is very low, and organic matter content is medium to high. Available water capacity is low.

(22) Evergreen-Wesconnett complex, depressional, 0 to 2 percent slopes - This is nearly level to gently sloping, very poorly drained soil formed in depressions. Slopes are concave and are in areas of 3 to 125 acres.

Soil makeup of the Evergreen Series is as follows: organic horizon to 11 inches and is made up of black muck; to 14 inches is black loamy fine sand; to 17 inches is very dark gray fine sand; to 26 inches is light brownish gray fine sand; to 54 inches is dark reddish brown loamy fine sand; and to 80 inches is dark reddish brown fine sand.

Soil makeup of the Wesconnett Series is as follows: surface layer to 2 inches is fine sand; to 10 inches is black fine sand; to 26 inches is dark reddish-brown fine sand; to 32 inches is dark brown fine sand; to 44 inches is pale brown fine sand; to 72 inches is reddish black fine sand; and to 80 inches is very dusky red fine sand.

This extremely acid to strongly acid soil complex has a high water table that is at or near the surface for long periods and has moderately slow to rapid permeability.

(23) Fripp-Corolla, rarely flooded, complex, gently undulating to hilly - This is an excessively drained to somewhat poorly drained soil of the dunes and is made up of sandy marine sediments. Slopes are smooth to concave or convex and individual areas range from 5 to 300 acres.

In the Fripp series, typically the surface layer is grayish brown fine sand about 6 inches thick. Below this, to a depth of 90 inches or more, is very pale brown moderately acid to neutral fine sand that contains horizontal bands of black heavy minerals.

This soil complex has a water table at a depth of more than 72 inches. Permeability is rapid throughout. Available water capacity and organic matter content are very low.

*** (24) Hurricane and Ridgewood soils, 0 to 5 percent slopes** - These are nearly level to gently sloping soils of rises and knolls. They are somewhat poorly drained and are formed in thick deposits of marine sand. Slopes are convex and in areas of 3 to 150 acres.

Soil makeup of the Hurricane Series is as follows: surface layer to 5 inches is grayish brown fine sand; to 10 inches is yellowish brown fine sand; to 20 inches is light yellowish brown fine sand; to 39 inches is light gray fine sand; to 68 inches is dark brown fine sand; and to 80 inches is dark reddish brown fine sand.

Soil makeup of the Ridgewood Series is as follows: surface layer to 7 inches is gray fine sand; to 24 inches is light yellowish brown fine sand; to 29 inches is light yellowish brown fine sand; to 35 inches is pale brown fine sand; to 46 inches is light gray fine sand; and to 80 inches is light gray fine sand.

These are extremely to strongly acid soils that are rapidly to moderately slowly permeable and have a high water table at near surface to 42 inches. Acidity may be buffered in areas where limestone is present.

(29) Kureb fine sand, 2 to 8 percent slopes - This is a gently sloping to sloping, excessively drained soil on broad upland rises and dunes. These soils formed in thick beds of marine, fluvial, or eolian sand. Individual areas range in size from 3 to 600 acres. Slopes are convex.

Typically, the surface layer is dark gray fine sand about 4 inches thick. The next layer is white fine sand that extends to a depth of 16 inches. Below this, to a depth of 60 inches, is yellow fine sand that contains tongues of white fine sand from the layer above. Below

this, to a depth of 82, is very pale brown fine sand that contains tongues similar to those in the layer above.

This soil has a water table at a depth of more than 72 inches. Permeability is rapid. Natural fertility and organic matter content are low. Available water capacity is very low.

(32) Leon fine sand, 0 to 2 percent slopes - This is a nearly level, poorly drained soil in broad flatwood and tidal marsh areas. This soil is formed in thick beds of marine sand. Individual areas range from 3 to 75 acres in size.

Typically, the surface layer is fine sand about 8 inches thick. In the upper 5 inches it is very dark gray, and in the lower 3 inches it is dark gray. The subsurface layer is gray fine sand about 18 inches thick. The subsoil is fine sand that extends to a depth of more than 80 inches. The upper 8 inches of subsoil is black and weakly cemented, the next 11 inches is very dark gray and weakly cemented, the next 8 inches is dark reddish brown, and the lower 35 inches is dark reddish brown and weakly cemented.

Under natural conditions, this extremely to slightly acidic soil has a water table at a depth of 6 to 18 inches in the flatwoods and at or near the surface in tidal areas where they are flooded for very brief periods twice daily by fluctuating tides. Permeability is moderate to moderately rapid in the weakly cemented layers and rapid in all other layers. Natural fertility is low, and organic matter content is medium. Available water capacity is moderate.

(33) Leon fine sand, 0 to 2 percent slopes, very frequently flooded - This is a nearly level, very poorly drained soil in tidal marsh areas. This soil is formed in thick beds of marine sand. Individual areas range from 3 to 50 acres in size.

Typically, the surface layer is fine sand about 8 inches thick. In the upper 5 inches it is very dark gray, and in the lower 3 inches it is dark gray. The subsurface layer is gray fine sand about 18 inches thick. The subsoil is fine sand that extends to a depth of more than 80 inches. The upper 8 inches of subsoil is black and weakly cemented, the next 11 inches is very dark gray and weakly cemented, the next 8 inches is dark reddish brown, and the lower 35 inches is dark reddish brown and weakly cemented.

Under natural conditions, this extremely to slightly acidic soil has a water table at or near the surface. Permeability is moderate to moderately rapid in the weakly cemented layers and rapid in all other layers. Natural fertility is low, and organic matter content is medium. Available water capacity is moderate.

(35) Lynn Haven fine sand, 0 to 2 percent slopes - This is a nearly level and gently

sloping, very poorly drained sandy soil of the flats. Individual areas are from 3 to 75 acres and slopes are concave.

Typically, the surface layer is 13 inches thick. The upper 7 inches being black fine sand, the lower 6 inches being very dark gray very fine sand. The subsurface soil is mixed light gray and gray fine sand to 21 inches. Below this to 35 inches is black fine sand, to 48 inches is dark reddish brown fine sand, and to 62 inches is dark reddish brown fine sand. Underneath this to 80 inches is dark brown fine sand.

This extremely acid to strongly acid soil has moderate to moderately rapid permeability. The high water table is at or near the surface.

(36) Mandarin fine sand, 0 to 2 percent slopes - This is a nearly level, somewhat poorly drained soil on narrow to broad ridges slightly higher than the adjacent flatwoods. Individual areas range in size from 3 to 100 acres. Slopes are smooth to convex.

Typically, the surface layer is dark gray fine sand about 4 inches thick. The subsurface layer is fine sand about 22 inches thick. The upper 4 inches is light brownish gray, and the lower 18 inches is light gray. The subsoil is fine sand that extends to a depth of 46 inches. Except for the lower 6 inches, it is weakly cemented and well coated with organic matter. The upper 4 inches is very dark grayish brown, the next 5 inches is very dark brown, the next 5 inches is black, and the lower 6 inches is brown. Below this, to a depth of 56 inches, is light gray fine sand. The next 6 inches is white fine sand, and the next 11 inches is grayish brown fine sand. Between depths of 73 and 80 inches is weakly cemented, black fine sand, and the sand grains are coated with organic matter.

Under natural conditions, this extremely to moderately acid soil has a water table at a depth of 18 to 42 inches and permeability is moderate. Natural fertility is low, and organic matter content is low to medium. Available water capacity is low.

(42) Newhan-Corolla rarely flooded, complex, gently undulating to hilly, 2 to 20 percent slopes - These are excessively to somewhat poorly drained soils of dunes. Slopes are convex or concave and individual areas range from 5 to 300 areas.

The Newhan Series typically consist of a 7 inch thick surface layer of white fine sand and to 80 inches is very pale brown fine sand.

This extremely acidic to mildly alkaline complex of soils was formed in thick marine deposits that may have been reworked by action of wind and waves. Soils here are affected by salt spray and have very rapid permeability.

(46) Ortega fine sand, 0 to 5 percent slopes - This is a nearly level to gently sloping,

moderately well drained soil on narrow to broad rises and knolls. Individual areas range from 3 to 85 acres in size. Slopes are convex.

Typically, the surface layer is grayish brown fine sand about 5 inches thick. Below this to a depth of 48 inches is very pale brown fine sand. The next layer is white fine sand that extends to a depth of 63 inches or more and to 82 inches is very pale brown fine sand.

Under natural conditions, this extremely to slightly acid soil has a water table at a depth of 42 to 72 inches. Permeability is rapid to a depth of 80 inches. Natural fertility and organic matter content are low. Available water capacity is low.

(49) Pamlico muck, depressional, 0 to 1 percent slopes - This is a nearly level, very poorly drained organic soil in tributaries of major streams, in depressions, and in drainageways. Individual areas range in size from 3 to 100 acres. Slopes are smooth to concave.

Typically, the surface layer is 2 inches of decomposed organic matter. To 6 inches is black muck. Below this to 30 inches is very dusky red muck and to 35 inches is dark brown muck. The next layers are very dark grayish brown fine sand to 60 inches thick and dark brown fine sand that extends to a depth of 80 inches or more.

Under natural conditions, this extremely acid to strongly acid soil has a water table at or near the surface. Permeability is moderate. Natural fertility is moderate and organic matter content is very high. Available water capacity is high.

(68) Tisonia mucky peat, 0 to 1 percent slopes, very frequently flooded - This is a level to nearly level, very poorly drained soil of tidal marshes. Individual areas range in size from 10 to 1,000+ acres. Slopes range from 0 to 1 percent.

Typically, the surface layer is dark grayish brown mucky peat about 18 inches thick. It is underlain by dark olive-gray clay that extends to a depth of 65 inches or more.

Under natural conditions, this moderately acid to slightly alkaline soil has a water table at or near the surface. Tidal action inundates this soil twice daily for brief periods. Permeability is rapid in the surface layer and very slow in the clayey material. Natural fertility is low, and organic matter content is very high. Available water content is high.

Nassau County

(3) Beaches - Beaches consists of narrow strips of nearly level fine sand along the Atlantic ocean. They are inundated with salt water daily at high tide. The soil is a

mixture of quartz sand and shell fragments, is bare of vegetation, and is subject to movement by wind and tide.

(5) Fripp fine sand, rolling - This gently rolling to hilly, excessively drained soil is on narrow, dunelike ridges along the Atlantic coast. It is subject to flooding on rare occasions during prolonged, high-intensity storms. The mapped areas range from about 3 to 300 acres. Slopes are smooth, convex, or concave and range from 5 to 20 percent.

In 99 percent of the areas mapped as Fripp fine sand, rolling, the Fripp soil makes up 94 to 100 percent of the map unit. Dissimilar soils make up 0 to 6 percent. The generally are in areas less than 3 acres in size.

Typically, the surface layer is light brownish gray fine sand about 4 inches thick. The underlying material, to a depth of 80 inches or more, is very pale brown fine sand.

Included in this map unit are small areas of dissimilar soils. These are Kureb, Newhan, and Resota soils. Kureb and Resota soils are on broad, nearly level ridges. Newhan soils are between the Fripp soils and Beaches.

Permeability of this Fripp soil is rapid. The available water capacity is very low or low. The seasonal high water table is at a depth of about 72 to 80 inches or more during most of the year. The soil is very low in natural fertility.

(9) Leon fine sand - This nearly level, poorly drained soil is on flatwoods. The mapped areas range from about 3 to 75 acres. Slopes are smooth and are 0 to 2 percent.

In 94 percent of the areas mapped as Leon fine sand, Leon and similar soils make up 89 to 98 percent of the map unit. Dissimilar soils make up 2 to 11 percent. They generally are in areas less than 3 acres in size.

Typically, the surface layer is very dark gray fine sand about 7 inches thick. The subsurface layer, to a depth of about 18 inches is gray fine sand. The subsoil, to a depth of about 31 inches is black, and dark reddish brown fine sand. Separating the upper and lower parts of the subsoil, to a depth of about 37 inches, is a buried subsurface layer of yellowish brown fine sand. The lower part of the subsoil, to a depth of 80 inches or more, is dark brown and black fine sand.

Soils occurring in areas of this map unit that are similar to the Leon soils are Boulogne soils and some soils that have a black or very dark gray surface layer 8 to more than 10 inches thick. The thickness of the surface layer is caused by forestry bedding practices. There are also similar soils that have thin layers of loamy fine sand directly above the lower part of the subsoil.

Included in this map u=nit are small areas of dissimilar soils. These are Kingsferry, Pottsburg, Ridgewood, Sapelo, and Wesconnett soils. Sapelo soils are in positions on the landscape similar to those of the Leon soil. Kingsferry soils are lower on flatwoods than the Leon soil. Pottsburg and Ridgewood soils are on ridges and knolls. Wesconnett soils are in depressions.

Permeability of this Leon soil is rapid in the surface, subsurface, and buried subsurface layers and moderate or moderately rapid in the subsoil. The available water capacity is very low in the surface , subsurface, and buried subsurface layers and low in the subsoil. The seasonal high water table is at a depth of 6 to 18 inches for 1 to 4 months during periods of heavy rainfall and at a depth of 12 to 42 inches for 2 to 8 months of the year. The soul is very low in natural fertility. Root penetration is obstructed by the subsoil.

(12) Newhan-Corolla, rarely flooded, fine sands, rolling - These gently rolling to hilly, excessively drained, moderately well drained, and somewhat poorly drained soils are on narrow, dunelike ridges along the Atlantic coast. The Corolla soil is subject to flooding on rare occasions during prolonged, high-intensity storms. The mapped areas range from about 5 to 300 acres. Slopes are convex or concave and range from 2 to 20 percent.

In 100 percent of the areas mapped as Newhan-Corolla, rarely flooded, fine sands, rolling, Newhan and Corolla soils make up 98 to 100 percent of the map unit. Dissimilar soils make up 0 to 2 percent. They generally are in areas less than 3 acres in size.

Generally, the mapped areas are about 77 percent Newhan soils, 21 percent Corolla soils, and 2 percent dissimilar soils. The soils in this map unit are so intermingled that mapping them separately is not practical at the scale used. The proportions and patterns of the Newhan and Corolla soils, however, are relatively consistent in most areas.

The Newhan soil is excessively drained. It is at the higher elevations and has slopes that range from 5 to 20 percent. Typically, the surface layer is white fine sand about 8 inches thick. The underlying material, to a depth of about 80 inches, is very pale brown fine sand.

The Corolla soil is moderately well drained and somewhat poorly drained. It is in low positions on the landscape and has slopes of less than 6 percent. Typically, the surface layer is very pale brown fine sand about 6 inches thick. The underlying material, to a depth of about 80 inches, is fine sand. It is pale brown and light yellowish brown in the upper part and light gray in the lower part.

Included in this map unit are small areas of dissimilar soils. These are Fripp soils and Beaches. Fripp soils are in the western part of the areas.

The Newhan soil has a seasonal high water table at a depth of more than 72 inches during most years. The Corolla soil has a seasonal high water table at a dept of 18 to 36 inches for 2 to 6 months and at a depth of more than 36 inches for the rest of the year. The permeability of the Newhan and Corolla soils is very rapid. The available water capacity is very low. These soils are very low in natural fertility.

(19) Leon fine sand, tidal - This nearly level, very poorly drained soil is in narrow tidal marshes bordering flatwoods. It is subject to flooding by normal high tides. The mapped areas range from about 3 to 50 acres. Slopes are smooth and are 0 to 2 percent.

In 96 percent of the areas mapped as Leon fine sand, tidal, Leon soils make up 88 to 100 percent of the map unit. Dissimilar soils make up about 0 to12 percent. They generally are in areas less than 3 acres in size.

Typically, the surface layer is fine sand about 26 inches thick. It is dark gray in the upper part and very dark gray in the lower part. The upper part of the subsoil, to a depth of about 40 inches, is dark grayish brown and dark brown fine sand. Separating the upper and lower parts of the subsoil, to a depth of about 43 inches, is a buried subsurface layer of light gray fine sand. The lower part of the subsoil, to a depth of about 58 inches, is dark brown fine sand. The substratum, to a depth of 80 inches or more, is dark olive gray fine sand.

Included in this map unit are small areas of dissimilar soils. These are Tisonia soils and Arents. Arents are higher on the landscape than the Leon soils, and Tisonia soils are lower.

Permeability of this Leon soils is moderately rapid in the surface layer and moderate or moderately rapid in the subsoil and the substratum. The available water capacity is low to high. The seasonal high water table is at or near the surface during most of the year. The soil is low in natural fertility.

(27) Ridgewood fine sand, 0 to 5 percent slopes - This nearly level and gently sloping, somewhat poorly drained soil is on narrow to broad ridges and on elevated knolls. The mapped areas range from about 3 to 100 acres. Slopes are smooth or convex.

In 91 percent of the areas mapped as Ridgewood fine sand, 0 to 5 percent slopes, Ridgewood and similar soils make up 83 to 99 percent of the map unit. Dissimilar soils make up 1 to 17 percent. The generally are in areas less than 3 acres in size.
Typically, the surface layer is gray fine sand about 7 inches thick. The subsoil, to a

depth of about 24 inches, is light yellowish brown fine sand. The substratum, to a depth of 80 inches or more, is fine sand. It is light yellowish brown in the upper part, pale brown in the next part, and light gray in the lower part. Soils occurring in areas of this map unit that are similar to the Ridgewood soil are the Albany and Hurricane soils. These soils have a water table that is slightly higher than that of the Ridgewood soil where they are on the lower parts of the landscape.

Included in this map unit are smallareas of dissimilar soils. These are Centenary, Mandarin, Ortega, and Pottsburg soils. Centenary and Ortega soils are on the higher ridges. Mandarin and Pottsburg soils are on flatwoods.

Permeability of this Ridgewood soils is rapid. The available water capacity is very low or low. The seasonal high water table is at a depth of 18 to 42 inches for 2 to 4 months of the year. It rises to a depth of 15 to 24 inches for brief periods of less than 3 weeks. The soil is very low in natural fertility.

(28) Tisonia mucky peat, frequently flooded - This is nearly level, very poorly drained soil is in broad tidal marshes. It is subject to flooding daily during high tide. The mapped areas range from 10 to 1,000 or more acres. Slopes are smooth and are 0 to 1 percent.

In 98 percent of the areas mapped as Tisonia mucky peat, frequently flooded, Tisonia soils make up 95 to 100 percent of the map unit. Dissimilar soils make up 0 to 5 percent. They generally are in areas less than 5 acres in size.

Typically, the surface layer is very dark grayish brown mucky peat about 40 inches thick. The underlying material, to a depth of 65 inches, is dark olive gray clay.

Included in this map unit are small areas of dissimilar soils. These are Maurepas and Kingsland soils. They are in drainageways. Trees grow on these soils.

Permeability of this Tisonia soil is rapid in the upper part of the soil and very slow in the lower part. The available water capacity is very high. The seasonal high water table is at or near the surface during most of the year.

Addendum 4—Plant And Animal List

Common Name	*Scientific Name*	Primary Habitat Codes (for designated species)

PTERIDOPHYTES

Southern grape-fern	*Botrychium biternatum*	
Cinnamon fern	*Osmunda cinnamomea*	7,84
Royal fern	*Osmunda regalis* var. *spectabilis*	7,84
Resurrection fern	*Pleopeltis polypodioides* var. *michauxiana*	
Whisk-fern	*Psilotum nudum*	
Tailed bracken	*Pteridium aquilinum* var. *pseudocaudatum*	
Virginia chain fern	*Woodwardia virginica*	

GYMNOSPERMS

Golden polypody	*Phlebodium aureum*	
Red cedar	*Juniperus virginiana*	
Slash pine	*Pinus elliottii*	
Pond pine	*Pinus serotina*	
Loblolly pine	*Pinus taeda*	

ANGIOSPERMS

Monocots

Meadow garlic	*Allium canadense*	
Bushy bluestem	*Andropogon glomeratus*	
Elliott's bluestem	*Andropogon gyrans*	
Hairy bluestem	*Andropogon longiberbis*	
Chalky bluestem	*Andropogon virginicus* var. *glaucus*	
Greendragon	*Arisaema dracontium*	
Giant reed *	*Arundo donax*	
Ebony spleenwort	*Asplenium platyneuron*	
Capillary hairsedge	*Bulbostylis ciliatifolia*	
Southern sandbur	*Cenchrus echinatus*	
Sanddune sandsbur	*Cenchrus tribuloides*	
Whitemouth dayflower	*Commelina erecta*	
Spring coralroot	*Corallorhiza wisteriana*	
Bermuda grass *	*Cynodon dactylon*	
Baldwin's flatsedge	*Cyperus croceus*	
Swamp flatsedge	*Cyperus distinctus*	
Yellow nutgrass *	*Cyperus esculentus*	
Fragrant flatsedge	*Cyperus odoratus*	
Manyspike flatsedge	*Cyperus polystachyos*	

* **Non-native Species**

Common Name	*Scientific Name*	Primary Habitat Codes (for designated species)
Pinebarren flatsedge	*Cyperus retrorsus*	
Strawcolored flatsedge	*Cyperus strigosus*	
Tropical flatsedge	*Cyperus surinamensis*	
Fourangle flatsedge	*Cyperus tetragonus*	
Durban crowfootgrass *	*Dactyloctenium aegyptium*	
Saltgrass	*Distichlis spicata*	
Coast cockspur	*Echinochloa walteri*	
Sand spikerush	*Eleocharis montevidensis*	
Indian goosegrass *	*Eleusine indica*	
Florida butterfly orchid	*Encyclia tampensis*	7,17,24
Green-fly orchid	*Epidendrum conopseum*	7,17,24
Red lovegrass	*Eragrostis secundiflora*	
Purple lovegrass	*Eragrostis spectabilis*	
Pinewoods fingergrass	*Eustachys petraea*	
Carolina fimbry	*Fimbristylis caroliniana*	
Marsh fimbry	*Fimbristylis spadicea*	
Spiked crested coralroot	*Hexalectris spicata*	3,7,24,17
Toad rush	*Juncus bufonius*	
Forked rush	*Juncus dichotomus*	
Soft rush	*Juncus effusus* ssp. *solutus*	
Bog rush	*Juncus elliottii*	
Shore rush	*Juncus marginatus*	
Bighead rush	*Juncus megacephalus*	
Needle rush	*Juncus roemerianus*	
Little duckweed	*Lemna obscura*	
Valdiva duckweed	*Lemna valdiviana*	
Italian ryegrass *	*Lolium perenne*	
Hairgrass	*Muhlenbergia capillaris*	
Woodsgrass	*Oplismenus hirtellus*	
Bitter panicgrass	*Panicum amarum*	
Redtop panicum	*Panicum rigidulum*	
Switchgrass	*Panicum virgatum*	
Maidencane	*Panicum hemitomon*	
Bahiagrass *	*Paspalum notatum*	
Thin paspalum	*Paspalum setaceum*	
Vaseygrass	*Paspalum urvillei*	
Annual bluegrass *	*Poa annua*	
Starrush whitetop	*Rhynchospora colorata*	
Sandyfield beaksedge	*Rhynchospora megalocarpa*	
Cabbage palm	*Sabal palmetto*	
American cupscale	*Sacciolepis striata*	

*** Non-native Species**

Common Name	*Scientific Name*	Primary Habitat Codes (for designated species)
Threadleaf arrowhead	*Sagittaria filiformis*	
Saltmarsh bulrush	*Scirpus robustus*	
Tall nutgrass	*Scleria triglomerata*	
Saw palmetto	*Serenoa repens*	
Giant bristlegrass	*Setaria magna*	
Knotroot foxtail	*Setaria parviflora*	
Annual blueeyed grass *	*Sisyrinchium rosulatum*	
Earleaf greenbrier	*Smilax auriculata*	
Saw greenbrier	*Smilax bona-nox*	
Hogbrier	*Smilax tamnoides*	
Saltmarsh cordgrass	*Spartina alterniflora*	
Sand cordgrass	*Spartina bakeri*	
Saltmeadow cordgrass	*Spartina patens*	
Prairie wedgescale	*Sphenopholis obtusata*	
Greenvein ladiestresses	*Spiranthes praecox*	
Spring ladiestresses	*Spiranthes vernalis*	
Smutgrass *	*Sporobolus indicus*	
Ball-moss	*Tillandsia recurvata*	
Spanish moss	*Tillandsia usneoides*	
Purple sandgrass	*Triplasis purpurea*	
Southern cattail	*Typha domingensis*	
Broadleaf cattail	*Typha latifolia*	
Seaoats	*Uniola paniculata*	
Squirreltail fescue	*Vulpia elliotea*	
Sixweeks fescue	*Vulpia octoflora*	
Columbian watermeal	*Wolffia columbiana*	
Spanish bayonet	*Yucca aloifolia*	
Adam's needle	*Yucca filamentosa*	
Moundlily yucca	*Yucca gloriosa*	1
Coontie	*Zamia pumila*	7,13,16

Dicots

Three-seeded mercury	*Acalypha gracilens*	
Red maple	*Acer rubrum*	
Pineland false foxglove	*Agalinis divaricata*	
False foxglove	*Agalinis fasciculata*	
Mimosa *	*Albizia julibrissin*	
Common ragweed	*Ambrosia artemisiifolia*	
Peppervine	*Ampelopsis arborea*	
Chaffweed	*Anagallis minima*	

* **Non-native Species**

Common Name	*Scientific Name*	Primary Habitat Codes (for designated species)
Devil's walkingstick	*Aralia spinosa*	
Spreading sandwort	*Arenaria lanuginosa*	
Smallflower pawpaw	*Asimina parviflora*	
Crested saltbush	*Atriplex cristata*	
Sea myrtle	*Baccharis halimifolia*	
Saltwort	*Batis maritima*	
Tarflower	*Bejaria racemosa*	
Rattan vine	*Berchemia scandens*	
Florida greeneyes	*Berlandiera subacaulis*	
Crossvine	*Bignonia capreolata*	
Bog hemp	*Boehmeria cylindrica*	
Red spiderling	*Boerhavia diffusa*	
Bushy seaside oxeye	*Borrichia frutescens*	
American bluehearts	*Buchnera americana*	
American searocket	*Cakile edentula* ssp.*harperi*	
American beautyberry	*Callicarpa americana*	
Pignut hickory	*Carya glabra*	
Sugarberry	*Celtis laevigata*	
Spadeleaf	*Centella asiatica*	
Spurred butterfly pea	*Centrosema virginianum*	
Mouse-ear chickweed *	*Cerastium glomeratum*	
Florida rosemary	*Ceratiola ericoides*	
Spiny hornwort	*Ceratophyllum echinatum*	
Patridge pea	*Chamaecrista fasciculata*	
Dixie sandmat	*Chamaesyce bombensis*	
Spotted sandmat	*Chamaesyce maculata*	
Florida hammock sandmat	*Chamaesyce ophthalmica*	
Seaside sandmat	*Chamaesyce polygonifolia*	
Mexican tea *	*Chenopodium ambrosioides*	
Purple thistle	*Cirsium horridulum*	
Nuttall's thistle	*Cirsium nuttallii*	
Virginsbower	*Clematis virginiana*	
Atlantic pigeonwings	*Clitoria mariana*	
Tread-softly	*Cnidoscolus stimulosus*	
Canadian horseweed	*Conyza canadensis*	
Stiff dogwood	*Cornus foemina*	
Low rattlebox	*Crotalaria pumila*	
Rabbitbells	*Crotalaria rotundifolia*	
Vente conmigo	*Croton glandulosus*	
Beach tea	*Croton punctatus*	
Bigseed alfalfa dodder	*Cuscuta indecora*	

* **Non-native Species**

Common Name	***Scientific Name***	**Primary Habitat Codes (for designated species)**
Gulf coast swallowwart	*Cynanchum angustifolium*	
Western tansymustard	*Descurainia pinnata*	
Dillenius' ticktrefoil	*Desmodium glabellum*	
Carolina ponysfoot	*Dichondra caroliniensis*	
Poor joe	*Diodia teres*	
Virginia buttonweed	*Diodia virginiana*	
Common persimmon	*Diospyros virginiana*	
American burnweed	*Erechtites hieraciifolius*	
Oakleaf fleabane	*Erigeron quercifolius*	
Button rattlesnakemaster	*Eryngium yuccifolium*	
Coralbean	*Erythrina herbacea*	
American strawberry bush	*Euonymus americanus*	
Dogfennel	*Eupatorium capillifolium*	
Godfrey's swampprivet	*Forestiera godfreyi*	17
Upland swampprivet	*Forestiera ligustrina*	
Plains snakecotton	*Froelichia floridana*	
Firewheel	*Gaillardia pulchella*	
Elliott's milkpea	*Galactia elliottii*	
Downy milkpea	*Galactia volubilis*	
Coastal bedstraw	*Galium hispidulum*	
Stiff marsh bedstraw	*Galium tinctorium*	
Pennsylvania everlasting *	*Gamochaeta pensylvanica*	
Southern beeblossom	*Gaura angustifolia*	
Dwarf huckleberry	*Gaylussacia dumosa*	
Blue huckleberry	*Gaylussacia frondosa* var. *tomentosa*	
Yellow jessamine	*Gelsemium sempervirens*	
Carolina cranesbill	*Geranium carolinianum*	
Loblolly bay	*Gordonia lasianthus*	
Pinebarren frostweed	*Helianthemum corymbosum*	
Georgia frostweed	*Helianthemum georgianum*	
East coast dune sunflower	*Helianthus debilis*	
Camphorweed	*Heterotheca subaxillaris*	
Innocence	*Houstonia procumbens*	
Large leaf marshpennywort	*Hydrocotyle bonariensis*	
Manyflower marshpennywort	*Hydrocotyle umbellata*	
Whorled marshpennywort	*Hydrocotyle verticillata*	
Pineweeds	*Hypericum gentianoides*	
St. Andrew's-cross	*Hypericum hypericoides*	
Fourpetal St.John's-wort	*Hypericum tetrapetalum*	
Carolina holly	*Ilex ambigua*	
Dahoon	*Ilex cassine*	

* **Non-native Species**

Common Name	***Scientific Name***	**Primary Habitat Codes (for designated species)**
American holly	*Ilex opaca*	
Yaupon	*Ilex vomitoria*	
Hairy indigo *	*Indigofera hirsuta*	
Trailing indigo *	*Indigofera spicata*	
Morning glory	*Ipomoea cordatotriloba*	
Beach morning-glory	*Ipomoea imperati*	
Railroad vine	*Ipomoea pes-caprae* ssp. *brasiliensis*	
Saltmarsh morning-glory	*Ipomoea sagittata*	
Standingcypress	*Ipomopsis rubra*	
Juba's bush	*Iresine diffusa*	
Bigleaf sumpweed	*Iva frutescens*	
Seaciast marshelder	*Iva imbricata*	
Virginia saltmarsh mallow	*Kosteletzkya virginica*	
Virginia dwarfdandelion	*Krigia virginica*	
Lantana *	*Lantana camara*	
Hairy pinweed	*Lechea mucronata*	
Virginia pepperweed	*Lepidium virginicum*	
Gopher apple	*Licania michauxii*	
Carolina sealavendar	*Limonium carolinianum*	
Canadian toadflax	*Linaria canadensis*	
Sweetgum	*Liquidambar styraciflua*	
Bay lobelia	*Lobelia feayana*	
Coral honeysuckle	*Lonicera sempervirens*	
Seaside primrosewillow	*Ludwigia maritima*	
Mexican primrosewillow	*Ludwigia octovalvis*	
Creeping primrosewillow	*Ludwigia repens*	
Christmasberry	*Lycium carolinianum*	
Rusty staggerbush	*Lyonia ferruginea*	
Coastalplain staggerbush	*Lyonia fruiticosa*	
Southern magnolia	*Magnolia grandiflora*	
Sweetbay	*Magnolia virginiana*	
Angle pod	*Matelea gonocarpos*	7
Black medick *	*Medicago lupulina*	
Chinaberrytree *	*Melia azedarach*	
White sweetclover *	*Melilotus albus*	
Indian sweetclover *	*Melilotus indicus*	
Creeping cucumber	*Melothria pendula*	
Noyau vine *	*Merremia dissecta*	
Climbing hempvine	*Mikania scandens*	
Patridgeberry	*Mitchella repens*	
Spotted beebalm	*Monarda punctata*	

*** Non-native Species**

Common Name	***Scientific Name***	**Primary Habitat Codes (for designated species)**
Red mulberry	*Morus rubra*	
Southern bayberry	*Myrica cerifera*	
American white waterlily	*Nymphaea odorata*	
Seabeach eveningprimrose	*Oenothera humifusa*	
Cutleaf eveningprimrose	*Oenothera laciniata*	
Clustered mille graines	*Oldenlandia uniflora*	
Flattop mille graines *	*Oldenlandia corymbosa*	
Pricklypear	*Opuntia humifusa*	
Cockspur pricklypear	*Opuntia pusilla*	
Shell-mound pricklypear	*Opuntia stricta*	1,10
Wild olive	*Osmanthus americanus*	
Eastern hophornbean	*Ostrya virginiana*	
Common yellow woodsorrel	*Oxalis corniculata*	
Florida pellitory	*Parietaria floridana*	
Baldwin's nailwort	*Paronychia baldwinii*	
Virginia creeper	*Parthenocissus quinquefolia*	
Purple passionflower	*Passiflora incarnata*	
Yellow passionflower	*Passiflora lutea*	
Low peperomia	*Peperomia humilis*	17
Red bay	*Persea borbonia*	
Annual phlox *	*Phlox drummondii*	
Oak mistletoe	*Phoradendron leucarpum*	
Turkey tangle fog fruit	*Phyla nodiflora*	
Drummond's leafflower	*Phyllanthus abnormis*	
Walter's groundcherry	*Physalis walteri*	
American pokeweed	*Phytolacca americana*	
Southern plantain	*Plantago virginica*	
Sweetscent	*Pluchea odorata*	
Paintedleaf	*Poinsettia cyathophora*	
Fourleaf manyseed *	*Polycarpon tetraphyllum*	
Procession flower	*Polygala incarnata*	
Climbing false buckwheat	*Polygonum scandens* var. *cristatum*	
Rustweed	*Polypremum procumbens*	
Paraguayan purslane *	*Portulaca amilis*	
Little hogweed *	*Portulaca oleracea*	
Pink purslane	*Portulaca pilosa*	
Combleaf mermaidweed	*Proserpinaca pectinata*	
Carolina laurelcherry	*Prunus caroliniana*	
Black cherry	*Prunus serotina*	
Flatwoods plum	*Prunus umbellata*	
Wafer ash *	*Ptelea trifoliata*	

* **Non-native Species**

Common Name	***Scientific Name***	**Primary Habitat Codes (for designated species)**
Mock Bishopsweed	*Ptilimnium capillaceum*	
Carolina desertchicory	*Pyrrhopappus carolinianus*	
Chapman's oak	*Quercus chapmanii*	
Sand live oak	*Quercus geminata*	
Laurel oak	*Quercus laurifolia*	
Myrtle oak	*Quercus myrtifolia*	
Water oak	*Quercus nigra*	
Live oak	*Quercus virginiana*	
Carolina buckthorn	*Rhamnus caroliniana*	
Winged sumac	*Rhus copallinum*	
Tropical Mexican clover *	*Richardia brasiliensis*	
Sawtooth blackberry	*Rubus argutus*	
Southern dewberry	*Rubus trivialis*	
Wild petunia	*Ruellia caroliniensis*	
Heartwing dock	*Rumex hastatulus*	
Rose-of-Plymouth	*Sabatia stellaris*	
Smallflower mock buckthorn	*Sageretia minutiflora*	
Trailing pearlwort	*Sagina decumbens*	
Carolina willow	*Salix caroliniana*	
Prickly Russian thistle *	*Salsola kali* ssp. *pontica*	
Tropical sage	*Salvia coccinea*	
Lyreleaf sage	*Salvia lyrata*	
Elderberry	*Sambucus nigra* ssp. *canadensis*	
Pineland pimpernel	*Samolus valerandi* ssp. *parviflorus*	
Soapberry	*Sapindus saponaria*	
Chinese tallowtree *	*Sapium sebiferum*	
Perennial glasswort	*Sarcocornia perennis*	
Lizard's tail	*Saururus cernuus*	
Shoreline seapurslane	*Sesuvium portulacastrum*	
Chinese box orange *	*Severinia buxifolia*	
Indian hemp	*Sida rhombifolia*	
Tough bully	*Sideroxylon tenax*	
Sleepy catchfly	*Silene antirrhina*	
Hairy leafcup	*Smallanthus uvedalia*	
Black nightshade	*Solanum chenopodioides*	
Tropical soda apple *	*Solanum viarum*	
Sweet goldenrod	*Solidago odora*	
Seaside goldenrod	*Solidago sempervirens*	
Spiny sow thistle *	*Sonchus asper*	
Common sow thistle *	*Sonchus oleraceus*	
Roughfruit scaleseed	*Spermolepis divaricata*	

*** Non-native Species**

Common Name	*Scientific Name*	Primary Habitat Codes (for designated species)
Bristly scaleseed	*Spermolepis echinata*	
Seashore dropseed	*Sporobolus virginicus*	
Trailing fuzzybean	*Strophostyles helvola*	
Sea blite	*Suaeda linearis*	
Climbing aster	*Symphyotrichum carolinianum*	
Horse sugar	*Symplocos tinctoria*	
Canadian germander	*Teucrium canadense*	
Eastern poison ivy	*Toxicodendron radicans*	
Puncturevine *	*Tribulus terrestris*	
Forked bluecurls	*Trichostema dichotomum*	
Clasping Venus's lookingglass	*Triodanis biflora*	
Clasping Venus's lookingglass	*Triodanis perfoliata*	
American elm	*Ulmus americana*	
Caesarweed *	*Urena lobata*	
Sparkleberry	*Vaccinium arboreum*	
Highbush blueberry	*Vaccinium corymbosum*	
Shiny blueberry	*Vaccinium myrsinites*	
Deerberry	*Vaccinium stamineum*	
Brazil vervain *	*Verbena brasiliensis*	
Texas vervain	*Verbena officinalis* ssp. *halei*	
Harsh vervain	*Verbena scabra*	
White crownbeard	*Verbesina virginica*	
Ironweed	*Vernonia gigantea*	
Fourleaf vetch	*Vicia acutifolia*	
Common vetch *	*Vicia sativa*	
Common blue violet	*Viola sororia*	
Summer grape	*Vitis aestivalis*	
Muscadine	*Vitis rotundifolia*	
Southern rockbell *	*Wahlenbergia marginata*	
Hercules'-club	*Zanthoxylum clava-herculis*	

* **Non-native Species**

Common Name	*Scientific Name*	Primary Habitat Codes (for designated species)

* Non-native Species

Common Name	*Scientific Name*	Primary Habitat Codes (for all species)

INVERTEBRATES

Blue crab	*Callinectes sapidus*	66
Ladder hornsnail	*Cerithidea scalariformis*	66
Ladderhorn shell	*Chthalamus fragilis*	66
Ocean beach tiger beetle	*Cicindela dorsalis media*	1
Tiger beetle	*Cicindela hirtilabris*	1
Eastern oyster	*Crassostrea virginica*	66
Lion's mane jellyfish	*Cyanea capillata*	80
Orange striped sea anemone *	*Diadumene lineata*	66
Ribbed mussel	*Geukensia demissa*	66
Mud snail	*Illyanassa obsoleta*	66
Saltmarsh periwinkle	*Littoraria irrorata*	66
Saltmarsh coffeebean snail	*Melampus bidentatus*	66
Northern quahog	*Mercenaria mercenaria*	66
Common Clam Worm	*Nereis succinea*	66
Saltmarsh amphipod	*Orchestia grillus*	66
Asian Green Mussel *	*Perna viridis*	66
Hermit crab	*Pagurus longicarpus*	66
Grass shrimp	*Palaemonetes pugio*	66
Carolina marsh clam	*Polymesoda caroliniana*	66
Wharf crab	*Sesarma cinereum*	66
Purple marsh crab	*Sesarma reticulatum*	66
Cannonball jellyfish	*Stomolophus meleagris*	80
Stout razorclam	*Tagelus plebius*	80
Red-jointed fiddler crab	*Uca minax*	66
Sand fiddler crab	*Uca pugilator*	66
Atlantic marsh fiddler crab	*Uca pugnax*	66

FISH

Bull shark	*Carcharhinus leucas*	80
Blacktip shark	*Carcharhinus limbatus*	80
Sand Shark	*Odontaspis taurus*	80
Great Hammerhead	*Sphyrna mokarran*	80
Bonnethead	*Sphyrna tiburo*	80
Atlantic sturgeon	*Acipenser oxyrinchus*	80
Seargeant major	*Abudefduf saxatilis*	80
Cowfish	*Acanthostracion quadricornis*	80
Striped anchovy	*Anchoa hepsetus*	66
Sheepshead	*Archosargus probatocephalus*	80

*** Non-native Species**

Common Name	*Scientific Name*	Primary Habitat Codes (for all species)
S. stargazer	*Astroscopus y-graecum*	80
Gafftopsail catfish	*Bagre marinus*	80
Triggerfish	*Balistes* spp.	80
Atlantic menhaden	*Brevoortia tyrannus*	80
Crevalle jack	*Caranx hippos*	80
Snook	*Centropomus undecimalis*	80
Black sea bass	*Centropristis striata*	80
Atlantic spadefish	*Chaetodipterus faber*	80
Florida blenny	*Chasmodes saburrae*	80
Common Dolphin	*Coryphaena hippurus*	80
Spotted sea trout	*Cynoscion nebulosus*	80
Atlantic weakfish	*Cynoscion regalis*	80
Ladyfish	*Elops saurus*	80
Groupers	*Epinephelus* spp.	80
Mummichog	*Fundulus heteroclitus*	80
Western mosquitofish	*Gambusia affinis*	30
Darter goby	*Gobionellus boleosoma*	80
Naked goby	*Gobiosoma bosc*	80
Grunts	*Haemulon* spp.	80
Pinfish	*Lagodon rhomboides*	80
Spot	*Leiostomus xanthurus*	66
Red Snapper	*Lutjanus campechanus*	80
Atlantic Manta	*Manta birostris*	80
Tarpon	*Megalops atlanticus*	80
Silverside	*Menidia* spp.	80
Whiting	*Menticirrhus americanus*	80
Atlantic croaker	*Micropogonias undulatus*	80
Filefish	*Monacanthus* spp.	80
Striped mullet	*Mugil cephalus*	66
Summer flounder	*Paralichthys dentatus*	80
Sea lamprey	*Petromyzon marinus*	80
Mollies	*Poecilia* spp.	30
Blackdrum	*Pogonias cromis*	80
Bluefish	*Pomatomus saltatrix*	80
Cobia	*Rachycentron canadum*	80
Red drum	*Sciaenops ocellatus*	66
King Mackeral	*Scomberomorus cavalla*	80
Spanish mackerel	*Scomberomorus maculatus*	80
Lookdown	*Selene vomer*	80
Amberjack	*Seriola dumerili*	80
Great barracuda	*Sphyraena barracuda*	80

* **Non-native Species**

Common Name	*Scientific Name*	Primary Habitat Codes (for all species)
Inshore lizardfish	*Synodus foetens*	80
FL. Pompano	*Trachinotus carolinus*	80
Permit	*Trachinotus falcatus*	80

AMPHIBIANS

Salamanders

Mole salamander	*Ambrystoma talpoideum*	7,43
Dwarf salamander	*Eurycea quadridigitata*	43
Central newt	*Notophthalmus viridescens louisianensis*	43
Southern slimy salamander	*Plethodon grobmani*	7

Frogs and Toads

Florida cricket frog	*Acris gryllus dorsalis*	31
Southern toad	*Bufo terrestris*	7,16
Eastern narrow-mouthed toad	*Gastrophryne carolinensis*	7,16
Green treefrog	*Hyla cinerea*	7,17
Squirrel treefrog	*Hyla squirella*	7,31
Cuban tree frog *	*Osteopilus septentrionalis*	7
Southern spring peeper	*Pseudacris crucifer bartramiana*	7,17
Southern chorus frog	*Pseudacris nigrita nigrita*	31
Southern leopard frog	*Rana sphenocephala*	7,31
Eastern spadefoot toad	*Scaphiopus holbrookii holbrookii*	7,31

REPTILES

Crocodilians

American alligator	*Alligator mississippiensis*	31,66

Turtles

Atlantic loggerhead	*Caretta caretta caretta*	72,80
Green turtle	*Chelonia mydas*	72
Snapping turtle	*Chelydra serpentina*	31
Leatherback	*Dermochelys coriacea*	72
Gopher tortoise	*Gopherus polyphemus*	1,7,10
Striped mud turtle	*Kinosternon baurii*	31
Eastern mud turtle	*Kinosternon subrubrum*	7
Kemp's ridley seaturtle	*Lepidochelys kempi*	72
Carolina diamondback terrapin	*Malaclemys terrapin centrata*	66
Florida red-bellied turtle	*Pseudemys nelsoni*	31
Florida box turtle	*Terrapene carolina bauri*	7,17,84

* **Non-native Species**

Common Name	*Scientific Name*	Primary Habitat Codes (for all species)

Lizards

Green anole	*Anolis carolinensis*	1,7
Six-lined racerunner	*Cnemidophorus sexlineatus sexlineatus*	1,16,84
Southeastern five-lined skink	*Eumeces inexpectatus*	1,7
Broad-headed skink	*Eumeces laticeps*	7
Eastern slender glass lizard	*Ophisaurus attenuatuslongicaudus*	10,16
Eastern glass lizard	*Ophisaurus ventralis*	1,7
Southern fence lizard	*Sceloporus undulatus undulatus*	10,16
Ground skink	*Scincella lateralis*	7

Snakes

Scarlet snake	*Cemophora coccinea*	7,16
Southern black racer	*Coluber constrictor priapus*	1,7
Eastern diamondback rattlesnake	*Crotalus adamanteus*	1,7,16
Eastern indigo snake	*Drymarchon corias couperi*	7
Corn snake	*Elaphe guttata guttata*	7
Yellow rat snake	*Elaphe obsoleta quadrivittata*	7
Eastern hog-nosed snake	*Heterodon platirhinos*	1,84
Southern hog-nosed snake	*Heterodon simus*	16,84
Eastern kingsnake	*Lampropeltis getula*	7,31
Eastern coachwhip snake	*Masticophis flagellum flagellum*	1,7,16
Eastern coral snake	*Micrurus fulvius*	7
Rough green snake	*Opheodrys aestivus aestivus*	7,17
Dusky pygmy rattlesnake	*Sistrurus miliarus barbouri*	1,7
Florida ribbon snake	*Thamnophis sauritus sackenii*	7
Eastern garter snake	*Thamnophis sirtalis sirtalis*	7,43,84

BIRDS

Ducks and Geese

Green-winged Teal	*Anas crecca*	66
Blue-winged Teal	*Anas discors*	66
Lesser Scaup	*Aythya affinis*	66,80
Greater Scaup	*Aythya marila*	66,80
Fulvous Whistling-Duck	*Dendrocygna bicolor*	66
Harlequin Duck	*Histrionicus histrionicus*	80
Hooded Merganser	*Lophodytes cucullatus*	66
White-winged Scoter	*Melanitta fusca*	72
Black Scoter	*Melanitta nigra*	72,80
Surf Scoter	*Melanitta perspicillata*	66
Red-breasted Merganser	*Mergus serrator*	66

* **Non-native Species**

Common Name	*Scientific Name*	Primary Habitat Codes (for all species)
Turkeys		
Northern Bobwhite	*Colinus virginianus*	7,16
Wild Turkey	*Meleagris gallopavo*	7,16
Loons		
Common Loon	*Gavia immer*	80
Red-throated Loon	*Gavia stellata*	72
Grebes		
Horned Grebe	*Podiceps auritus*	68,80
Pied-billed Grebe	*Podilymbus podiceps*	68
Petrels and Shearwaters		
Leach's Storm-Petrel	*Oceanodroma leucorhoa*	72
Greater Shearwater	*Puffinus gravis*	72,80
Gannets		
Northern Gannet	*Morus bassanus*	72,80
Brown Booby	*Sula leucogaster*	72
Pelicans		
Brown Pelican	*Pelecanus occidentalis*	66
Cormorants		
Double-crested Cormorant	*Phalacrocorax auritus*	66
Darters		
Anhinga	*Anhinga anhinga*	68
Herons and Bitterns		
Great Egret	*Ardea alba*	66
Great Blue Heron	*Ardea herodias*	66
American Bittern	*Botaurus lentiginosus*	66
Cattle Egret	*Bubulcus ibis*	66,84,85
Green Heron	*Butorides virescens*	66
Little Blue Heron	*Egretta caerulea*	66
Reddish Egret	*Egretta rufescens*	66
Snowy Egret	*Egretta thula*	66
Tricolored Heron	*Egretta tricolor*	66
Least Bittern	*Ixobrychus exilis*	66
Yellow-crowned Night-Heron	*Nyctanassa violacea*	66
Black-crowned Night-Heron	*Nycticorax nycticorax*	66
Ibises and Spoonbills		
White Ibis	*Eudocimus albus*	66
Roseate Spoonbill	*Platalea ajaja*	66
Glossy Ibis	*Plegadis falcinellus*	66
Storks		
Wood Stork	*Mycteria americana*	66
Vultures		

* **Non-native Species**

Common Name	*Scientific Name*	Primary Habitat Codes (for all species)
Turkey Vulture	*Cathartes aura*	MTC
Black Vulture	*Coragyps atratus*	MTC
Hawks,Eagles,and Kites		
Cooper's Hawk	*Accipiter cooperii*	7,16,84
Sharp-shinned Hawk	*Accipiter striatus*	7,16,84
Red-tailed Hawk	*Buteo jamaicensis*	MTC
Red-shouldered Hawk	*Buteo lineatus*	7,16
Broad-winged Hawk	*Buteo platypterus*	7, 16
Northern Harrier	*Circus cyaneus*	66
Bald Eagle	*Haliaeetus leucocephalus*	MTC
Osprey	*Pandion haliaetus*	66
Falcons		
Merlin	*Falco columbarius*	1,10,66
Peregrine Falcon	*Falco peregrinus*	1,10,66
American Kestrel	*Falco sparverius*	1,7,10
Rails,Gallinules,and Coots		
American Coot	*Fulica americana*	66
Common Moorhen	*Gallinula chloropus*	31
Purple Gallinule	*Porphyrio martinica*	66
Sora	*Porzana carolina*	66
Virginia Rail	*Rallus limicola*	66
Clapper Rail	*Rallus longirostris*	66
Plovers		
Piping Plover	*Charadrius melodus*	66,72
Semipalmated Plover	*Charadrius semipalmatus*	66,72
Snowy Plover	*Charadrius alexandrinus*	66, 72
Killdeer	*Charadrius vociferus*	10,66
Wilson's Plover	*Charadrius wilsonia*	66,72
Black-bellied Plover	*Pluvialis squatarola*	66,72
Oystercatchers		
American Oystercatcher	*Haematopus palliatus*	63,66
Snipes and Sandpipers		
Spotted Sandpiper	*Actitis macularius*	31,66
Ruddy Turnstone	*Arenaria interpres*	66,72
Sanderling	*Calidris alba*	66,72
Dunlin	*Calidris alpina*	66,72
Red Knot	*Calidris canutus*	66,72
Stilt Sandpiper	*Calidris himantopus*	66
Purple Sandpiper	*Calidris maritima*	69
Western Sandpiper	*Calidris mauri*	66
Least Sandpiper	*Calidris minutilla*	66

* **Non-native Species**

Common Name	*Scientific Name*	Primary Habitat Codes (for all species)
Semipalmated Sandpiper	*Calidris pusilla*	66
Willet	*Catoptrophorus semipalmatus*	1,66,72
Common Snipe	*Gallinago gallinago*	31
Short-billed Dowitcher	*Limnodromus griseus*	66
Marbled Godwit	*Limosa fedoa*	72
Long-billed Curlew	*Numenius americanus*	72
Whimbrel	*Numenius phaeopus*	72
Lesser Yellowlegs	*Tringa flavipes*	66
Greater Yellowlegs	*Tringa melanoleuca*	66
Solitary Sandpiper	*Tringa solitaria*	31,66
Gulls,Terns,and Skimmers		
Black Tern	*Chlidonias* niger	66
Herring Gull	*Larus argentatus*	66
Laughing Gull	*Larus atricilla*	66
Ring-billed Gull	*Larus delawarensis*	66
Great Black-backed Gull	*Larus marinus*	66,72
Bonaparte's Gull	*Larus philadelphia*	66
Black Skimmer	*Rynchops niger*	66
Least Tern	*Sterna antillarum*	66
Caspian Tern	*Sterna caspia*	66
Forster's Tern	*Sterna forsteri*	66
Common Tern	*Sterna hirundo*	66
Royal Tern	*Sterna maxima*	66
Gull-billed Tern	*Sterna nilotica*	66
Sandwich Tern	*Sterna sandvicensis*	66
Doves		
Common Ground-Dove	*Columbina passerina*	1,7,16
Mourning Dove	*Zenaida macroura*	7,16
Cuckoos		
Yellow-billed Cuckoo	*Coccyzus americanus*	7,16
Owls		
Short-eared Owl	*Asio flammeus*	10
Great Horned Owl	*Bubo virginianus*	7,17
Eastern Screech-Owl	*Megascops asio*	7,16,84
Barred Owl	*Strix varia*	7,17,84
Goatsuckers		
Chuck-will's-widow	*Caprimulgus carolinensis*	7,16,84
Common Nighthawk	*Chordeiles minor*	1,7
Swifts		
Chimney Swift	*Chaetura pelagica*	1,7,17
Hummingbirds		

* **Non-native Species**

Common Name	*Scientific Name*	Primary Habitat Codes (for all species)
Ruby-throated Hummingbird	*Archilochus colubris*	1,7
Kingfishers		
Belted Kingfisher	*Ceryle alcyon*	66
Woodpeckers		
Northern Flicker	*Colaptes auratus*	7,16,84
Pileated Woodpecker	*Dryocopus pileatus*	7,16,84
Red-bellied Woodpecker	*Melanerpes carolinus*	7,16,84
Red-headed Woodpecker	*Melanerpes erythrocephalus*	7,17
Downy Woodpecker	*Picoides pubescens*	7,16,84
Hairy Woodpecker	*Picoides villosus*	7,16
Yellow-bellied Sapsucker	*Sphyrapicus varius*	7,16,84
Flycatchers		
Eastern Wood-Pewee	*Contopus virens*	7,84
Great Crested Flycatcher	*Myiarchus crinitus*	7,16,84
Eastern Phoebe	*Sayornis phoebe*	7,84
Eastern Kingbird	*Tyrannus tyrannus*	7,17,84
Western Kingbird	*Tyrannus verticalis*	9
Shrikes		
Loggerhead Shrike	*Lanius ludovicianus*	1,7,10,84
Vireos		
Yellow-throated Vireo	*Vireo flavifrons*	7,17,84
White-eyed Vireo	*Vireo griseus*	7,16,84
Red-eyed Vireo	*Vireo olivaceus*	7,17,84
Blue-headed Vireo	*Vireo solitarius*	7,17
Jays and Crows		
American Crow	*Corvus brachyrhynchos*	MTC
Fish Crow	*Corvus ossifragus*	MTC
Blue Jay	*Cyanocitta cristata*	7,16,84
Martins and Swallows		
Barn Swallow	*Hirundo rustica*	10,84,85
Purple Martin	*Progne subis*	7,84
Northern Rough-winged Swallow	*Stelgidopteryx serripennis*	10,84
Tree Swallow	*Tachycineta bicolor*	MTC
Titmice		
Tufted Titmouse	*Baeolophus bicolor*	7,16,84
Carolina Chickadee	*Poecile carolinensis*	7,16,84
Nuthatches		
Red-breasted Nuthatch	*Sitta canadensis*	7,17
Wrens		
Worthington's Marsh Wren	*Cistothorus palustris* ssp. *griseus*	66
Sedge Wren	*Cistothorus platensis*	66

* **Non-native Species**

Common Name	*Scientific Name*	Primary Habitat Codes (for all species)
Carolina Wren	*Thryothorus ludovicianus*	1,7,16
House Wren	*Troglodytes aedon*	7,16,84
Kinglets		
Ruby-crowned Kinglet	*Regulus calendula*	7,17,84
Golden-crowned Kinglet	*Regulus satrapa*	7,16
Gnatcatchers		
Blue-gray Gnatcatcher	*Polioptila caerulea*	7,16,84
Thrushes		
Veery	*Catharus fuscescens*	7,17
Hermit Thrush	*Catharus guttatus*	7,17,84
Gray-cheeked Thrush	*Catharus minimus*	7,17
Swainson's Thrush	*Catharus ustulatus*	7,17
Wood Thrush	*Hylocichla mustelina*	7,17
Eastern Bluebird	*Sialia sialis*	7
American Robin	*Turdus migratorius*	7,16,84
Mimids		
Gray Catbird	*Dumetella carolinensis*	7,16,84
Northern Mockingbird	*Mimus polyglottos*	1,7,16
Brown Thrasher	*Toxostoma rufum*	7,16,84
Starlings		
European Starling *	*Sturnus vulgaris*	MTC
Pipits		
Water Pipit	*Anthus spinoletta*	31
Waxwings		
Cedar Waxwing	*Bombycilla cedrorum*	7,16,84
Warblers		
Black-throated Blue Warbler	*Dendroica caerulescens*	7,16,84
Yellow-rumped Warbler	*Dendroica coronata*	1,7,16
Prairie Warbler	*Dendroica discolor*	7,84
Yellow-throated Warbler	*Dendroica dominica*	7,17,84
Palm Warbler	*Dendroica palmarum*	1,7,16
Yellow Warbler	*Dendroica petechia*	31
Pine Warbler	*Dendroica pinus*	7,17
Blackpoll Warbler	*Dendroica striata*	7,17
Cape May Warbler	*Dendroica tigrina*	7,17
Common Yellowthroat	*Geothlypis trichas*	7,17,84
Worm-eating Warbler	*Helmitheros vermivorum*	7,17
Yellow-breasted Chat	*Icteria virens*	7,17
Black-and-white Warbler	*Mniotilta varia*	7,17,84
Northern Parula	*Parula americana*	7,17
Prothonotary Warbler	*Protonotaria citrea*	31

* **Non-native Species**

Common Name	*Scientific Name*	Primary Habitat Codes (for all species)
Ovenbird	*Seiurus aurocapilla*	7,17,84
Louisiana Waterthrush	*Seiurus motacilla*	7,17
Northern Waterthrush	*Seiurus noveboracensis*	7,17
Orange-crowned Warbler	*Vermivora celata*	7,17
Tanagers		
Summer Tanager	*Piranga rubra*	7,17
Sparrows,Towhees,and Juncos		
Saltmarsh Sharp-tailed Sparrow	*Ammodramus caudacutus*	66
Seaside Sparrow	*Ammodramus maritimus*	66
Dark-eyed Junco	*Junco hyemalis*	10,84
Swamp Sparrow	*Melospiza georgiana*	10,84
Song Sparrow	*Melospiza melodia*	7,84
Savannah Sparrow	*Passerculus sandwichensis*	1,10,84
Fox Sparrow	*Passerella iliaca*	7,17
Eastern Towhee	*Pipilo erythrophthalmus*	1,7,16
Vesper Sparrow	*Pooecetes gramineus*	10
American Redstart	*Setophaga ruticilla*	7,16,84
Chipping Sparrow	*Spizella passerina*	1,10,84
Field Sparrow	*Spizella pusilla*	1,10,84
White-throated Sparrow	*Zonotrichia albicollis*	7,17,84
White-crowned Sparrow	*Zonotrichia leucophrys*	7,10
Cardinals,Grosbeaks,and Buntings		
Northern Cardinal	*Cardinalis cardinalis*	1,7,16
Pine Siskin	*Carduelis pinus*	31
American Goldfinch	*Carduelis tristis*	7,17
Purple Finch	*Carpodacus purpureus*	10
Blue Grosbeak	*Guiraca caerulea*	7,17,84
Painted Bunting	*Passerina ciris*	1,7,17
Indigo Bunting	*Passerina cyanea*	7,17,84
Rose-breasted Grosbeak	*Pheucticus ludovicianus*	7,16
Meadowlarks,Blackbirds,and Orioles		
Red-winged Blackbird	*Agelaius phoeniceus*	1,10,66
Bobolink	*Dolichonyx oryzivorus*	1,10,84
Rusty Blackbird	*Euphagus carolinus*	31
Northern Oriole	*Icterus galbula*	7,17
Orchard Oriole	*Icterus spurius*	7,17,84
Brown-headed Cowbird *	*Molothrus ater*	7,16
Boat-tailed Grackle	*Quiscalus major*	1,10,66,84
Common Grackle	*Quiscalus quiscula*	7,84
Eastern Meadowlark	*Sturnella magna*	10,84
Finches		

* **Non-native Species**

Common Name	*Scientific Name*	Primary Habitat Codes (for all species)
American Goldfinch	*Carduelis tristis*	84,85

MAMMALS

Carnivores		
River otter	*Lutra canadensis*	66
Bobcat	*Lynx rufus*	MTC
Mink	*Mustela vison*	MTC
Raccoon	*Procyon lotor*	MTC
Didelphids		
Opossum	*Didelphis virginiana*	MTC
Edentates		
Nine-banded armadillo *	*Dasypus novemcinctus*	7
Insectivores		
Eastern mole	*Scalopus aquaticus*	1,7,17
Lagomorphs		
Eastern cottontail	*Sylvilagus floridanus*	7,10
Marsh rabbit	*Sylvilagus palustris*	1,7,17
Rodents		
Southern Flying Squirrel	*Glaucomys volans*	7
Cotton mouse	*Peromyscus gossypinus*	1,7,10
Gray squirrel	*Sciurus carolinensis*	7,84
Hispid cotton rat	*Sigmodon hispidus*	1,7,10
Trichechids		
West Indian manatee	*Trichechus manatus*	66
Whales		
Northern Atlantic right whale	*Eubalaena glacialis*	Beached
Pilot whale	*Globicephala melaena*	Beached

* **Non-native Species**

Common Name	*Scientific Name*	Primary Habitat Codes (for all species)

* Non-native Species

Terrestrial

1. Beach Dune
2. Bluff
3. Coastal Berm
4. Coastal Rock Barren
5. Coastal Strand
6. Dry Prairie
7. Maritime Hammock
8. Mesic Flatwoods
9. Mesic Hammock
10. Coastal Grasslands
11. Pine Rockland
12. Prairie Hammock
13. Rockland Hammock
14. Sandhill
15. Scrub
16. Scrubby Flatwoods
17. Shell Mound
18. Sinkhole
19. Slope Forest
20. Upland Glade
21. Upland Hardwood Forest
22. Upland Mixed Forest
23. Upland Pine Forest
24. Xeric Hammock

Palustrine

25. Basin Marsh
26. Basin Swamp
27. Baygall
28. Bog
29. Bottomland Forest
30. Coastal Interdunal Swale
31. Depression Marsh
32. Dome
33. Floodplain Forest
34. Floodplain Marsh
35. Floodplain Swamp
36. Freshwater Tidal Swamp
37. Hydric Hammock
38. Marl Prairie
39. Seepage Slope
40. Slough
41. Strand Swamp
42. Swale
43. Wet Flatwoods
44. Wet Prairie

Lacustrine

45. Clastic Upland Lake
46. Coastal Dune Lake
47. Coastal Rockland Lake
48. Flatwood/Prairie Lake
49. Marsh Lake
50. River Floodplain Lake
51. Sandhill Upland Lake

Lacustrine—Continued

52. Sinkhole Lake
53. Swamp Lake

Riverine

54. Alluvial Stream
55. Blackwater Stream
56. Seepage Stream
57. Spring-Run Stream

Estuarine

58. Estuarine Algal Bed
59. Estuarine Composite Substrate
60. Estuarine Consolidated Substrate
61. Estuarine Coral Reef
62. Estuarine Grass Bed
63. Estuarine Mollusk Reef
64. Estuarine Octocoral Bed
65. Estuarine Sponge Bed
66. Estuarine Tidal Marsh
67. Estuarine Tidal Swamp
68. Estuarine Unconsolidated Substrate
69. Estuarine Worm Reef

Marine

70. Marine Algal Bed
71. Marine Composite Substrate
72. Marine Consolidated Substrate
73. Marine Coral Reef
74. Marine Grass Bed
75. Marine Mollusk Reef
76. Marine Octocoral Bed
77. Marine Sponge Bed
78. Marine Tidal Marsh
79. Marine Tidal Swamp
80. Marine Unconsolidated Substrate
81. Marine Worm Reef

Subterranean

82. Aquatic Cave
83. Terrestral Cave

Miscellaneous

84. Ruderal
85. Developed
MTC Many Types of Communities
OF Over Flying

Addendum 5—Designated Species List

The Nature Conservancy and the Natural Heritage Program Network (of which FNAI is a part) define an element as any exemplary or rare component of the natural environment,such as a species,natural community,bird rookery,spring,sinkhole,cave,or other ecological feature. An element occurrence (EO) is a single extant habitat that sustains or otherwise contributes to the survival of a population or a distinct,self-sustaining example of a particular element.

Using a ranking system developed by The Nature Conservancy and the Natural Heritage Program Network,the Florida Natural Areas Inventory assigns two ranks to each element. The global rank is based on an element's worldwide status; the state rank is based on the status of the element in Florida. Element ranks are based on many factors,the most important ones being estimated number of Element occurrences,estimated abundance (number of individuals for species; area for natural communities),range,estimated adequately protected EOs,relative threat of destruction,and ecological fragility.

Federal and State status information is from the U.S. Fish and Wildlife Service; and the Florida Game and Freshwater Fish Commission (animals),and the Florida Department of Agriculture and Consumer Services (plants),respectively.

FNAI GLOBAL RANK DEFINITIONS

G1	=	Critically imperiled globally because of extreme rarity (5 or fewer occurrences or less than 1000 individuals) or because of extreme vulnerability to extinction due to some natural or man-made factor.
G2	=	Imperiled globally because of rarity (6 to 20 occurrences or less than 3000 individuals) or because of vulnerability to extinction due to some natural or man-made factor.
G3	=	Either very rare and local throughout its range (21-100 occurrences or less than 10,000 individuals) or found locally in a restricted range or vulnerable to extinction of other factors.
G4	=	apparently secure globally (may be rare in parts of range)
G5	=	demonstrably secure globally
GH	=	of historical occurrence throughout its range,may be rediscovered (e.g.,ivory-billed woodpecker)
GX	=	believed to be extinct throughout range
GXC	=	extirpated from the wild but still known from captivity or cultivation
G#?	=	tentative rank (e.g.,G2?)
G#G#	=	range of rank; insufficient data to assign specific global rank (e.g.,G2G3)
G#T#	=	rank of a taxonomic subgroup such as a subspecies or variety; the G portion of the rank refers to the entire species and the T portion refers to the specific subgroup; numbers have same definition as above (e.g.,G3T1)
G#Q	=	rank of questionable species - ranked as species but questionable whether it is species or subspecies; numbers have same definition as above (e.g.,G2Q)
G#T#Q	=	same as above,but validity as subspecies or variety is questioned.
GU	=	due to lack of information,no rank or range can be assigned (e.g.,GUT2).
G?	=	not yet ranked (temporary)
S1	=	Critically imperiled in Florida because of extreme rarity (5 or fewer occurrences or less than 1000 individuals) or because of extreme vulnerability to extinction

		due to some natural or man-made factor.
S2	=	Imperiled in Florida because of rarity (6 to 20 occurrences or less than 3000 individuals) or because of vulnerability to extinction due to some natural or man-made factor.
S3	=	Either very rare and local throughout its range (21-100 occurrences or less than 10,000 individuals) or found locally in a restricted range or vulnerable to extinction of other factors.
S4	=	apparently secure in Florida (may be rare in parts of range)
S5	=	demonstrably secure in Florida
SH	=	of historical occurrence throughout its range,may be rediscovered (e.g.,ivory-billed woodpecker)
SX	=	believed to be extinct throughout range
SA	=	accidental in Florida,i.e.,not part of the established biota
SE	=	an exotic species established in Florida may be native elsewhere in North America
SN	=	regularly occurring,but widely and unreliably distributed; sites for conservation hard to determine
SU	=	due to lack of information,no rank or range can be assigned (e.g.,SUT2).
S?	=	not yet ranked (temporary)
N	=	Not currently listed,nor currently being considered for listing,by state or federal agencies.

LEGAL STATUS

FEDERAL (Listed by the U. S. Fish and Wildlife Service - USFWS)

LE	=	Listed as Endangered Species in the List of Endangered and Threatened Wildlife and Plants under the provisions of the Endangered Species Act. Defined as any species that is in danger of extinction throughout all or a significant portion of its range.
PE	=	Proposed for addition to the List of Endangered and Threatened Wildlife and Plants as Endangered Species.
LT	=	Listed as Threatened Species. Defined as any species that is likely to become an endangered species within the near future throughout all or a significant portion of its range.
PT	=	Proposed for listing as Threatened Species.
C	=	Candidate Species for addition to the list of Endangered and Threatened Wildlife and Plants. Defined as those species for which the USFWS currently has on file sufficient information on biological vulnerability and threats to support proposing to list the species as endangered or threatened.
E(S/A)	=	Endangered due to similarity of appearance.
T(S/A)	=	Threatened due to similarity of appearance.

STATE

Animals **(Listed by the Florida Fish and Wildlife Conservation Commission - FFWCC)**

LE = Listed as Endangered Species by the FFWCC. Defined as a species,subspecies,or isolated population which is so rare or depleted in number or so restricted in range of habitat due to any man-made or natural factors that it is in immediate danger of extinction or extirpation from the state,or which may attain such a status within the immediate future.

LT = Listed as Threatened Species by the FFWCC. Defined as a species,subspecies,or isolated population which is acutely vulnerable to environmental alteration,declining in number at a rapid rate,or whose range or habitat is decreasing in area at a rapid rate and as a consequence is destined or very likely to become an endangered species within the foreseeable future.

LS = Listed as Species of Special Concern by the FFWCC. Defined as a population which warrants special protection,recognition,or consideration because it has an inherent significant vulnerability to habitat modification,environmental alteration,human disturbance,or substantial human exploitation which,in the foreseeable future,may result in its becoming a threatened species.

Plants **(Listed by the Florida Department of Agriculture and Consumer Services - FDACS)**

LE = Listed as Endangered Plants in the Preservation of Native Flora of Florida Act. Defined as species of plants native to the state that are in imminent danger of extinction within the state,the survival of which is unlikely if the causes of a decline in the number of plants continue,and includes all species determined to be endangered or threatened pursuant to the Federal Endangered Species Act of 1973,as amended.

LT = Listed as Threatened Plants in the Preservation of Native Flora of Florida Act. Defined as species native to the state that are in rapid decline in the number of plants within the state,but which have not so decreased in such number as to cause them to be endangered.

Amelia Island, Big Talbot Island and Little Talbot Island State Parks—Designated Species

(Plants)

Common Name/ *Scientific Name*	Designated Species Status FDACS	USFWS	FNAI
*Florida butterfly orchid *Encyclia tampensis*	CE		
Green-fly orchid *Epidendrum conopseum*	CE		
*Godfrey's swampprivet *Forestiera godfreyi*	LE		G2,S2
Spiked crested coralroot *Hexalectris spicata*	LE		
Angle pod *Matelea gonocarpos*	LT		
Shell-mound pricklypear *Opuntia stricta*	LT		
Cinnamon fern *Osmunda cinnamomea*	CE		
Royal fern *Osmunda regalis* var. *spectabilis*	CE		
*Low peperomia *Peperomia humilis*	LE		G5,S2
Coontie *Zamia pumila*	CE		

*Occurrence documented only at Rollins Bird and Plant Sanctuary

Amelia Island, Big Talbot Island and Little Talbot Island State Parks—Designated Species (Plants)

Common Name/ *Scientific Name*	Designated Species Status		
	FDACS	USFWS	FNAI

Amelia Island, Big Talbot Island and Little Talbot Island State Parks—Designated Species

(Animals)

Common Name/ *Scientific Name*	Designated Species Status FFWCC	USFWS	FNAI
FISHES			
Atlantic sturgeon *Acipenser oxyrinchus*	LS		G3T3,S1
REPTILES			
American alligator *Alligator mississippiensis*	LS	LT(S/A)	G5,S4
Atlantic loggerhead *Caretta caretta caretta*	LT	LT	G3,S3
Green seaturtle *Chelonia mydas*	LE	LE	G3,S2
Eastern diamondback rattlesnake *Crotalus adamanteus*			G4,S3
Leatherback seaturtle *Dermochelys coriacea*	LE	LE	G2,S2
Eastern indigo snake *Drymarchon corias couperi*	LT	LT	G3,S3
Gopher tortoise *Gopherus polyphemus*	LT		G3,S3
Southern hog-nosed snake *Heterodon simus*			G2,S2
Kemp's ridley seaturtle *Lepidochelys kempii*	LE	LE	G1,S1
BIRDS			
Cooper's Hawk *Accipiter cooperii*			G5,S3
Snowy Plover *Charadrius alexandrinus*	LT		G4,S4
Piping Plover *Charadrius melodus*	LT	LT	G3,S2
Little Blue Heron *Egretta caerulea*	LS		G5,S4
Reddish Egret *Egretta rufescens*	LS		G4,S2
Snowy Egret *Egretta thula*	LS		G5,S3
Tricolored Heron			

Common Name/ *Scientific Name*	Designated Species Status FFWCC	USFWS	FNAI
Egretta tricolor	LS		G5,S4
White Ibis			
Eudocimus albus	LS		G5,S4
Merlin			
Falco columbarius			G5,S2
Peregrine Falcon			
Falco peregrinus	LE		G4,S2
American Oystercatcher			
Haematopus palliatus	LS		G5,S2
Bald Eagle			
Haliaeetus leucocephalus	LT		G5,S3
Wood Stork			
Mycteria americana	LE	LE	G4,S2
Yellow-crowned Night-Heron			
Nyctanassa violacea			G5,S3
Black-crowned Night-Heron			
Nycticorax nycticorax			G5,S3
Osprey			
Pandion haliaetus			G5,S3S4
Brown Pelican			
Pelecanus occidentalis	LS		G4,S3
Hairy Woodpecker			
Picoides villosus			G5,S3
Roseate Spoonbill			
Platalea ajaja	LS		G5,S2
Glossy Ibis			
Plegadis falcinellus			G5,S3
Black Skimmer			
Rynchops niger	LS		G5,S3
Least Tern			
Sterna antillarum	LT		G4,S3
MAMMALS			
North Atlantic right whale			
Eubalaena glacialis	LE	LE	G1,S1
West Indian manatee			
Trichechus manatus	LE	LE	G2,S2

Addendum 6—Priority Schedule And Cost Estimates

Estimates are developed for the funding and staff resources needed to implement the management plan based on goals, objectives and priority management activities. Funding priorities for all state park management and development activities are reviewed each year as part of the Division's legislative budget process. The Division prepares an annual legislative budget request based on the priorities established for the entire state park system. The Division also aggressively pursues a wide range of other funds and staffing resources, such as grants, volunteers, and partnerships with agencies, local governments and the private sector for supplementing normal legislative appropriations to address unmet needs. The ability of the Division to implement the specific goals, objectives and priority actions identified in this plan will be determined by the availability of funding resources for these purposes.

Resource Management

1. Develop and implement programs to stabilize historic and archaeological sites and provide cyclical monitoring and maintenance. 0-10 years. Estimated Cost: $50,000.

2. Obtain a Historic Structures Report for site Du90. 0-10 years. Estimated Cost: $35,000.

3. Stabilize site Du90. 0-10 years. Estimated Cost: $45,000.

4. Survey listed species, monitor biota and designate protected zones. 0-10 years. Estimated Cost: $80,000.

5. Contract studies of coastal littoral processes on Amelia and the Talbot Islands and vicinity to understand, for management and interpretive purposes, expected erosion and accretion patterns, rates and their causes. 0-10 Years. Estimated Cost: $200,000.

6. Continue to survey the hydrological impact of mosquito and drainage ditches and other impoundments, and determine what restoration measures are needed. 0-10 years. Estimated Cost: $200,000.

7. Continue an active prescribed burn program. 1-10 years. Program cost of $10,000 (500 acres @ $20/acre) and equipment costs of $110,000. Estimated Cost: $120,000.

8. Partner with one or more institutions to present formal public and academic environmental education opportunities. 1-10 years. Estimated Cost: $160,000.

9. Manage public access, through education, interpretive programs, and enforcement of rules and regulations, to protect natural and cultural resources. 0-10 years. Estimated Cost: $80,000.

10. Pursue grant funding for a Level 1 survey of cultural resources and for development of a regional cultural site overview of Amelia and the Talbot Islands State Parks and surrounding public lands, for use in educational programs. 0-10 years. Estimated Cost: $50,000 (match).

11. Cooperative activities with governmental agencies, support groups, and private corporations. 0-10 years. Estimated Cost: $20,000.

12. Upgrade existing educational and interpretive programs to comply with Sunshine State Standards. 0-10 years. Estimated Cost: $50,000.

13. Research and development of interpretive trail for site Du1. 0-10 years. Estimated Cost: $130,000.

14. Integrate Amelia and Talbot Islands State Parks resource management, interpretive, and recreational programs with other state parks in the area. 0-10 years. Estimated Cost: $30,000.

TOTAL ESTIMATED COST: $1,250,000

Capital Improvements

Amelia Island State Park

Development Area or Facilities	Estimated Cost
Beach Boardwalk	$80,000.00
Trails and Interpretation	$12,000.00

Total Cost with Contingency:.....$110,400.00

Big Talbot Islands State Park

Development Area or Facilities	Estimated Cost
Bluffs Picnic Area	$315,600.00
Long Island Area	$92,000.00
Trails and Interpretation	$52,900.00

Total Cost with Contingency:.....$788,400.00

Little Talbot Islands State Park

Development Area or Facilities	Estimated Cost
Camping Area	$260,000.00
Ft. George Inlet Bridge Parking Area	$230,000.00
North Beach Area	$50,000.00
Shop Area	$33,000.00
Trails and Interpretation	$92,000.00

Total Cost with Contingency:.....$746,000.00