

**COLLIER—SEMINOLE STATE PARK**

**UNIT MANAGEMENT PLAN**

**APPROVED**

**STATE OF FLORIDA**  
**DEPARTMENT OF ENVIRONMENTAL PROTECTION**  
**Division of Recreation and Parks**

**FEBRUARY 6, 2004**



# Department of Environmental Protection

Jeb Bush  
Governor

Marjorie Stoneman Douglas Building  
3900 Commonwealth Boulevard, MS 140  
Tallahassee, Florida 32399-3000

David B. Struhs  
Secretary

February 6, 2004

Ms. BryAnne White  
Government Operations Consultant II  
Office of Park Planning  
Division of Recreation and Parks

Re: Collier-Seminole State Park

Lease Number: #3612

Dear Ms. White:

On February 6, 2004, the Acquisition and Restoration Council recommended approval of the Land Management Plan for Collier-Seminole State Park. Therefore, the Office of Environmental Services, acting as agent for the Board of Trustees of the Internal Improvement Trust Fund approves this plan. Pursuant to Section 253.034 and 259.032, Florida Statutes, and Chapter 18-2, Florida Administrative Code the plan's 10-year update will be due in February 2014.

Approval of this land management plan does not waive the authority or jurisdiction of any governmental entity that may have an interest in this project. Implementation of any upland activities proposed by this management plan may require a permit or other authorization from federal and state agencies having regulatory jurisdiction over those particular activities.

Sincerely,

*Delmas T. Barber*

Delmas T. Barber, OMC Manager  
Office of Environmental Services  
Division of State Lands

*"More Protection, Less Process"*

*Printed on recycled paper.*

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## **INTRODUCTION**

Collier-Seminole State Park is located in Collier County about 15 miles south of Naples. Access to the park is from U.S. Highway 41, just south of its junction with State Road 92 (see Vicinity Map). The vicinity map also reflects significant land and water resources existing near the park.

For this plan, park acreage has been calculated based on the composition of natural communities, in addition to ruderal and developed areas. Currently the park contains approximately 6,759.40 acres.

Collier-Seminole State Park was acquired through a donation on March 8, 1944. The Division presently manages Collier-Seminole State Park under the Lease No. 3612; the lease will expire on January 22, 2067. Public outdoor recreation and conservation is the designated single use of the property. There are no legislative or executive directives that constrain the use of this park (see Addendum 1).

### **PURPOSE AND SCOPE OF THE PLAN**

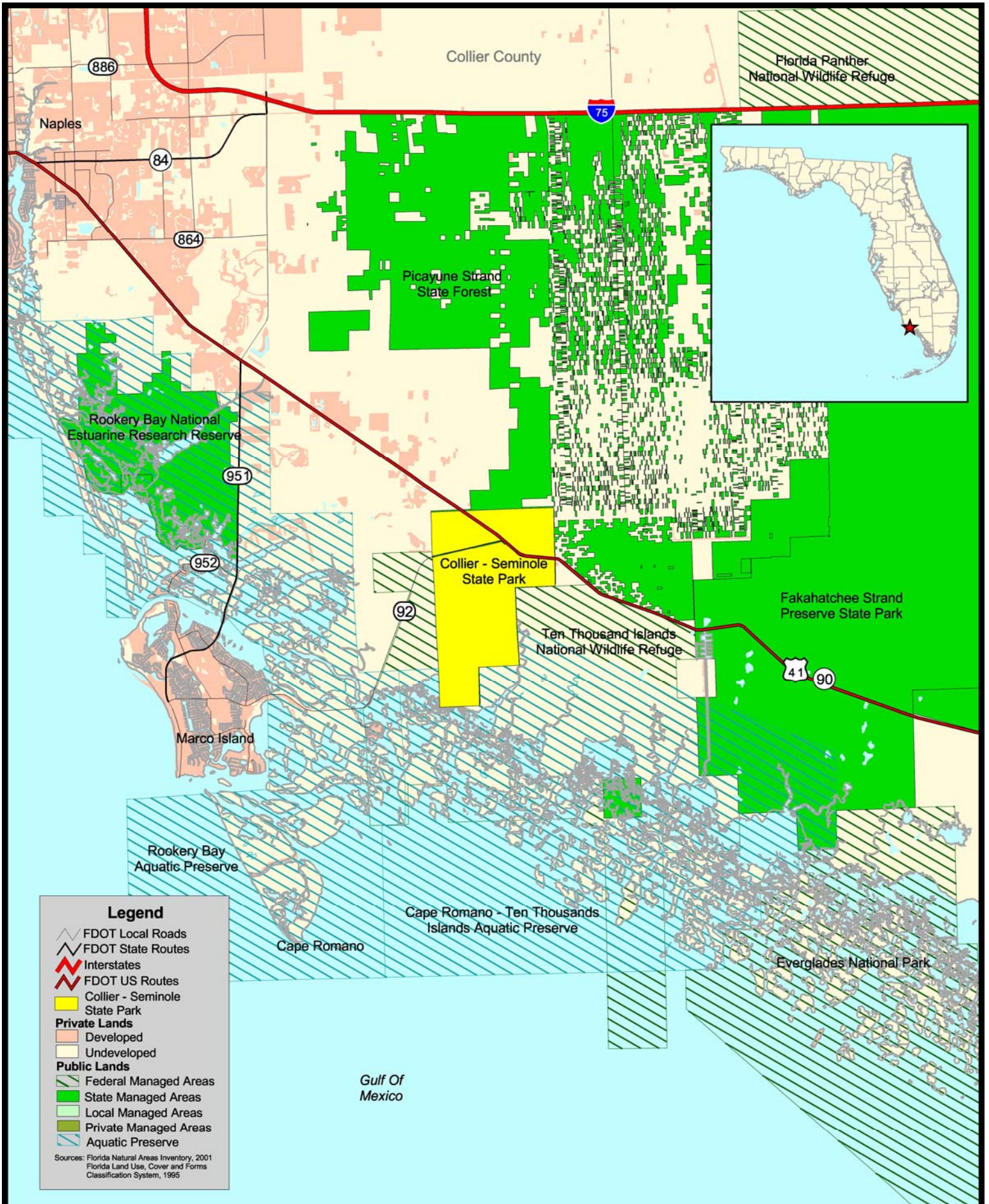
This plan serves as the basic statement of policy and direction for the management of Collier-Seminole State Park as a unit of Florida's state park system. It identifies the objectives, criteria and standards that guide each aspect of park administration, and sets forth the specific measures that will 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 current approved plan of January 21, 1998. 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.

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 park natural and cultural resources, management needs, aesthetic values, visitation and visitor experiences. For this park, 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





**Legend**

- FDOT Local Roads
- FDOT State Routes
- Interstates
- FDOT US Routes
- Collier - Seminole State Park
- Private Lands**
- Developed
- Undeveloped
- Public Lands**
- Federal Managed Areas
- State Managed Areas
- Local Managed Areas
- Private Managed Areas
- Aquatic Preserve

Sources: Florida Natural Areas Inventory, 2001  
Florida Land Use, Cover and Forms Classification System, 1995

**Collier - Seminole State Park  
Vicinity Map**



(other than those forest management activities specifically identified in this plan) are not consistent with this plan or the management purposes of the park and will be discouraged.

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 **Operations Procedures Manual** (OPM) and cover 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 Collier-Seminole State Park, 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. Control invasive exotic plants.
  - A. Eliminate melaleuca trees and monitor sites of infestation for reentrants.
  - B. Eliminate large Brazilian pepper plants and regularly monitor for reentrants.
  - C. Eliminate air potato and regularly monitor for reentrants.
  - D. Regularly monitor remote areas of the park for infestations of climbing fern.
2. Carry out prescribed burning in all pyrrhic communities.
  - A. Burn frequently; annually if possible.
3. Restore hydrology as near to pre-drainage conditions as possible.
  - A. Find funds for a hydrological study to identify corrective measures.
  - B. Eliminate pine trees where they have invaded hydric communities.
4. Protect and monitor archaeological sites, historical structures and objects for vandalism, unauthorized digging or collecting, erosion, and other forms of encroachment.
  - A. Maintain the walking dredge in accordance with the Secretary of Interior Standards for the Treatment of Historic Properties.
  - B. Maintain and interpret the blockhouse.
  - C. Maintain and interpret the Old Marco Road.
  - D. Protect and interpret Grocery Place, Old Grove and all archaeological sites.
  - E. Maintain a Cultural Resource Management File for the park.
  - F. Draft a Scope of Collections Statement for the park.
  - G. Develop an Interpretive Statement for the park.
  - H. Coordinate any plans for ground-disturbing activity through the Division of Historical Resources as required in the DHR/Division Compliance Review Matrix.
  - I. Complete Florida Master Site File documentation for all known sites.

### **Recreational Goals**

5. Continue to provide quality resource based outdoor recreational and interpretive programs and facilities at the state park.
  - A. Maintain opportunities to explore the park through a network of nature (hiking) shared-use (hiking/biking) and canoe trails.
  - B. Provide onsite interpretive programming through regularly scheduled ranger talks, guest speakers and boat tours.
  - C. Maintain opportunities for extended stays at the park through both developed and primitive camping.
  - D. Highlight the park's unique natural and cultural features within the blockhouse interpretive center.
  - E. Provide passive interpretive opportunities through interpretive signs and kiosks at

- important resource locations.
- F. Continue to host special events to support increased visitation and an interest and understanding of park resources and history.
6. 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. Improve access and operational efficiency within the boat basin by relocating the concession, constructing a waiting shelter and upgrading the dock facilities.
  - B. Enhance use of the picnic area by replacing existing shelters, playground equipment and restrooms and constructing a screened pavilion and BBQ shelter.
  - C. Reconfigure and upgrade campsites and replace existing bathhouses to provide a modern, more accessible, state park quality campground.
  - D. Expand the group camp area to accommodate larger groups.
  - E. Improve the Royal Palm Hammock Nature Trail by replacing the boardwalk and providing interpretive signage.
  - F. Improve the shared-use trail by providing interpretive and trail directional signage and linking the trail system with the main use areas of the park.
  - G. Improve park interpretation by upgrading interpretive center exhibits and the dugout canoe exhibit.

#### **Park Administration/Operations**

7. Provide efficient and effective management of park resources and facilities while maintaining a high level of visitor service.
- A. Secure funding for two full-time positions to speed progress in exotic plant control, facilitate a more rigorous schedule of prescribed burning, and allow the park staff more time to research and conduct interpretative programs.
  - B. Provide universally accessible public facilities.
  - C. Collaborate with other land managers to share information, resources and coordinate recreation and resource management planning efforts.
  - D. Recruit and maintain volunteer support to assist park staff with the maintenance of park facilities, protection of park resources and implementation of park programs.
  - E. Develop partnerships and seek other funding alternatives to the legislative appropriation process.
  - F. Conduct routine safety and maintenance inspections of facilities and public areas and correct deficiencies as needed. Assure compliance with state and federal safety guidelines.
  - G. Provide staff with appropriate training opportunities in visitor services, resource management, park operations and interpretation.
  - H. Promote Collier Seminole State Park as a destination for nature and heritage based tourism groups.
  - I. Network with existing institutions dedicated to promoting recreation opportunities in Collier County to encourage both new and repeat visitors to Collier-Seminole State Park.
  - J. Promote responsible use of the park's land and water resources through signage and interpretive programming.
  - K. Monitor land use activities outside the park that may impact park resources or the visitor experience, and increase public awareness of the resource management needs of the park.

#### **Management Coordination**

The park is 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.

The Division recognizes that coordinating planning efforts and monitoring of land use changes would benefit all area land managers. Sharing information and combining resources can improve the management capacity of individual agencies, particularly in time of limited resources. A coordinated approach to recreation planning limits unnecessary duplication of facilities, provides for a diversity of uses and avoids a one-size-fits all approach to the allocation of recreation opportunities. Changing land development patterns affect all conservation lands and can have detrimental impacts to hydrology, wildlife, the use of prescribed fire and even the visitor experience. With this in mind, the Division is committed to inter-agency cooperation in resource management, recreation planning and environmental monitoring.

#### **Public Participation**

The Division provided an opportunity for public input by conducting a public workshop and an advisory group meeting. A public workshop will be held on May 1, 2003. The purpose of this meeting was to present this draft management plan to the public. A DEP Advisory Group meeting will be held on May 2, 2003. The purpose of this meeting was to provide the Advisory Group members the opportunity to discuss this draft management plan. Addendum 1 contains a list of advisory group members and the advisory group meeting staff report.

#### **Other Designations**

Collier-Seminole State Park is within the Big Cypress Area of Critical State Concern as defined in section 380.05, Florida Statutes. The park is a component of the Florida Greenways and Trails System. The park is listed on the National Register of Historic places. The walking dredge is listed on the National Register of Historic Places and is designated a National Historic Mechanical Engineering Landmark.

All permanent water bodies within the park boundaries have been designated as Outstanding Florida Waters, pursuant to Chapter 62-302 Florida. Surface waters in this unit are also classified as Class II waters by DEP.

The southern portion of Collier-Seminole State Park lies within the Cape Romano-Ten Thousand Islands Aquatic Preserve as designated under provision of the Florida Aquatic Preserve Act of 1975 (section 258.35, Florida Statutes). The boundary of the preserve includes areas below the mean high water line, which includes Mud Bay and the marsh and tidal swamp communities to the south.

## 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

Collier County is entirely within the coastal lowlands topographic division of Florida. Collier-Seminole State Park is situated near the coast where the imperceptible downward slope of the land gradually encounters the sea. The submerged western portion of the park lies within a network of coastal swamps and is covered by water at high tide. Topography throughout is subdued. The uplands in the park exceed five feet in elevation only at a few locations. The topography has been altered by borrow canals bordering State Road 92 and U.S. Highway 41, and by a dike enclosing organic soils at a site once used for farming. The dike is in Section 28, T51S, R27E.

##### Geology

**Geological formations.** The Tamiami limestone formation, which can be seen exposed along the Tamiami Trail, underlies nearly all of Collier County and is approximately six million years old. The formation was created during the Miocene epoch and seems to range between 10 and 50 feet in thickness, although this has not been clearly established. It is capped by hard rock, overlying sand, silts and clays, shell marls, and shell-free, greenish clay.

Geologically, the region around the park has been described as having a "karst" topography, which refers to a land type based on carbonate rocks, chiefly limestone. The drainage sloughs in the park are karst features that develop when limestone, formed as sedimentary rock below sea level, is exposed in a setting where there is high precipitation. Water mixed with carbon dioxide easily forms carbonic acid which seeps into openings in the soluble rock and

dissolves the limestone. The cypress strands so common in the region may follow old marine erosion features in the surface rock.

### **Soils**

Over most of Collier County, a thin blanket of sand and marl, and fine shell of Pamlico Sea origin, covers the limestone (see Soils Map). Organic matter has filled natural depressions in the limestone. These sands and their accumulated organic material form the substratum for the biological systems of the county and, before the hydrological disruptions caused by extensive canal building were in direct or close contact with the water table. It is the organic material in the upper layer that yields the acids responsible for dissolution of the underlying limestone. Addendum 3 contains detailed soil descriptions for this unit. Currently, there are no soil conservation or erosion issues at this park.

### **Minerals**

Mineral resources of economic value in southern Florida include limestone, high silica sand, clay, phosphate rock, peat, oil and gas. As implied above under the section on geology, limestone underlies the entire park. The uppermost strata are within a few feet of the ground surface, being covered in most instances by a layer of sand or marl. During the 1980s, seismic explorations, using explosives, were conducted in the park during a search for oil. Presumably, none was discovered.

### **Hydrology**

Most of the county is so low and level that drainage is indefinite and sluggish. The coastal region has numerous embayments, rivers, creeks and lagoons that permit tidewater to extend inland, in a northerly direction. Following heavy rains, and during the rainy season in summer, wet prairies, and even the islands within the big Cypress Swamp may be covered by a few inches to several feet of water.

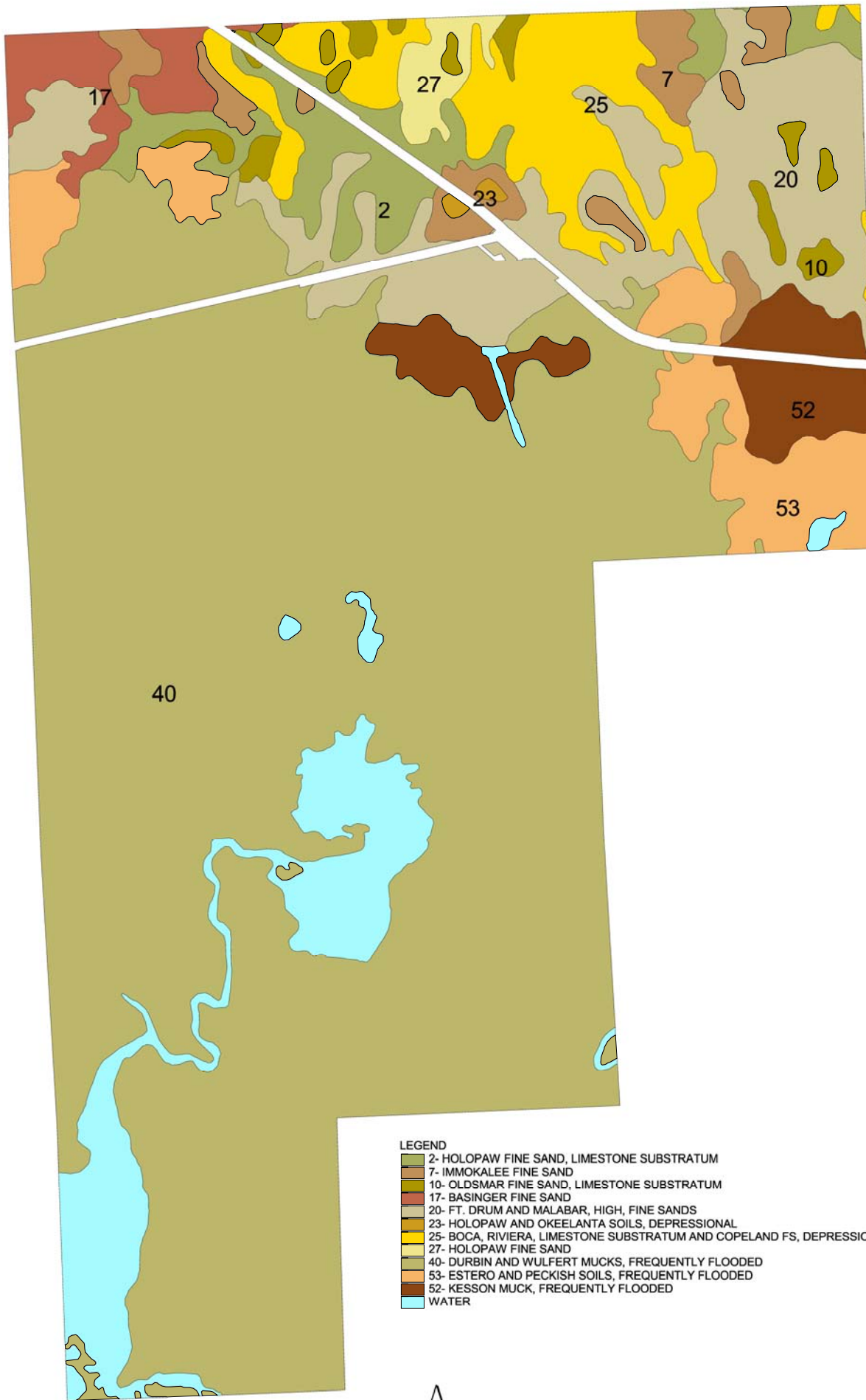
Drainage has been extensively altered in Collier County, first by highway development, and later by agriculture, and still later by urbanization and by the gigantic land sales project of the Gulf American Corporation (now known as Golden Gate).

**Park hydrology.** All surface waters in the park are designated as Class II waters by the Department of Environmental Regulation as stipulated under Chapter 17-3, Florida Statutes. They are also designated Outstanding Florida Waters meaning that no actions can be taken that will degrade the existing quality. Water conservation issues will be addressed latter in the section on management needs.

**Surface water.** In this region drainage is seasonal, normally building in the months of heaviest rainfall (June through September), with a peak in the fall and a slow subsidence in the months thereafter, sometimes ceasing altogether, leaving water standing in surface depressions. In very dry years, all surface water is lost to evaporation or absorbed by the porous substrate. During the wettest months, the water historically moved southward as sheet flow, perhaps as slowly as 0.3 feet per second (0.5 miles per day) on its way to estuaries south of the park. However, the historic flow pattern of surface water has been disrupted on a massive scale.

A map published in 1976 shows the historic drainage basins of western Collier County. Collier-Seminole State Park is situated in the Camp Keasis Basin, a narrow, elongate feature originating just south of Lake Trafford and extending southward to the saline waters below U.S. Highway 41.

Unfortunately, the original surface water flow in this basin has been intercepted northwest of the park by the South Golden Gate canal grid that discharges the water through the Faka Union Canal into Faka Union Bay. Other tracts in this basin to the north and northwest of



**LEGEND**

- 2- HOLOPAW FINE SAND, LIMESTONE SUBSTRATUM
- 7- IMMOKALEE FINE SAND
- 10- OLDSMAR FINE SAND, LIMESTONE SUBSTRATUM
- 17- BASINGER FINE SAND
- 20- FT. DRUM AND MALABAR, HIGH, FINE SANDS
- 23- HOLOPAW AND OKEELANTA SOILS, DEPRESSIONAL
- 25- BOCA, RIVIERA, LIMESTONE SUBSTRATUM AND COPELAND FS, DEPRESSIONAL
- 27- HOLOPAW FINE SAND
- 40- DURBIN AND WULFERT MUCKS, FREQUENTLY FLOODED
- 53- ESTERO AND PECKISH SOILS, FREQUENTLY FLOODED
- 52- KESSON MUCK, FREQUENTLY FLOODED
- WATER

2000 0 2000 4000 Feet





the park have been ditched and diked to grow vegetables, thereby potentially displacing a volume of surface water equal to the size of each tract. All these disturbances have rendered the Camp Keasis Basin dysfunctional. The Collier County Comprehensive Plan contains a map of drainage basins revised to reflect the current reality imposed by canals on the movement of surface water; in this scheme the land in and around Collier-Seminole, north of U.S. Highway 41, is named the Southern Coastal Basin, while a large region south of U.S. Highway 41 is designated Miscellaneous Coastal Basins.

Drainage is also altered by canals along the Tamiami Trail (U.S. Highway 41) from Naples to the southeastern corner of the county and along State Road 92 from Marco Island to Royal Palm Hammock. Both highways make a juncture in the park. The canals formed excavations of material that became the roadbed.

**Groundwater.** Groundwater has been affected by man-made canals constructed through, and adjacent to, the park. During the dry season, when surface water falls, the canals facilitate the lowering of groundwater from nearby subsurface strata. This pattern contributes to the shortening of hydroperiods, the consequences of which can be seen in vegetative changes occurring in the park's natural communities; for example, the encroachment of slash pines into communities formerly dominated by cypress.

**Internal drainage.** The drainage within the park finds its strongest expression in the Blackwater River. The river first becomes identifiable within the park, north of Highway 41. It is actually a creek at this point. It flows under U.S. Highway 41, and thereafter becomes better identified as a stream that widens to a river as it flows southward. Thus, the Blackwater River has a length of about eight miles. The flow varies seasonally, increasing in volume during periods of greatest rainfall.

As noted above, there are several man-made canals within, and adjacent to, the park. They were originally built to facilitate draining the roads, an agricultural site and residential areas. These canals have lowered the water table, accelerated runoff during the rainy season and reduced hydroperiods. Drainage has also contributed to salt water intrusion in the park (and in the surrounding countryside). The Golden Gate Estates Redevelopment Study, Tabb et. al. June 1976, states; "We have noted, with special concern, the strong inland flow of tide water through the Blackwater River culvert under the Tamiami Trail. During low groundwater stages, this is a serious point source of contamination of sand-filled basin storage in the southeastern Belle Meade (drainage) Basin as well as the southern end of the Picayune Strand. Finally, although not within the confines of the Golden Gate Estates, some measure of control should be established on the Blackwater River at Collier-Seminole State Park. A control structure (C11) should be considered at the U.S. Highway 41 bridge to prevent over-drainage of the southeastern portion of the Belle Meade Basin." This and other control measures should be investigated to restore hydroperiods in the park.

### **Natural Communities**

The system of classifying natural communities employed in this plan was developed by the Florida Natural Areas Inventory (FNAI) **FNAI Descriptions**. 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.

Collier-Seminole State Park contains 12 distinct natural communities in addition to ruderal and developed areas (see Natural Communities Map). Park specific assessments of the existing natural communities are provided in the narrative below. A list of plants and animals occurring in the unit is contained in Addendum 4.

**Mesic flatwoods.** The mesic flatwoods community is present in the northern portion of the park interspersed as scattered islands among wet flatwoods and strand swamps. This community is a relatively small portion. In the park, mesic flatwoods is distinguished from wet flatwoods by the presence of large, contiguous patches of saw palmetto. Some large, pre-disturbance slash pines can be seen here. Both communities have slash pines in the overstory although they are generally more stunted in wet flatwoods. As for ground cover, the mesic flatwoods has enough continuous coverage of saw palmetto to give a characteristic “slick” signature on aerial photographs. Although small in proportion, the community is noteworthy because of the slash pine trees that are quite old and of an impressive size even, though some trees were removed during the 1960s through selective cutting.

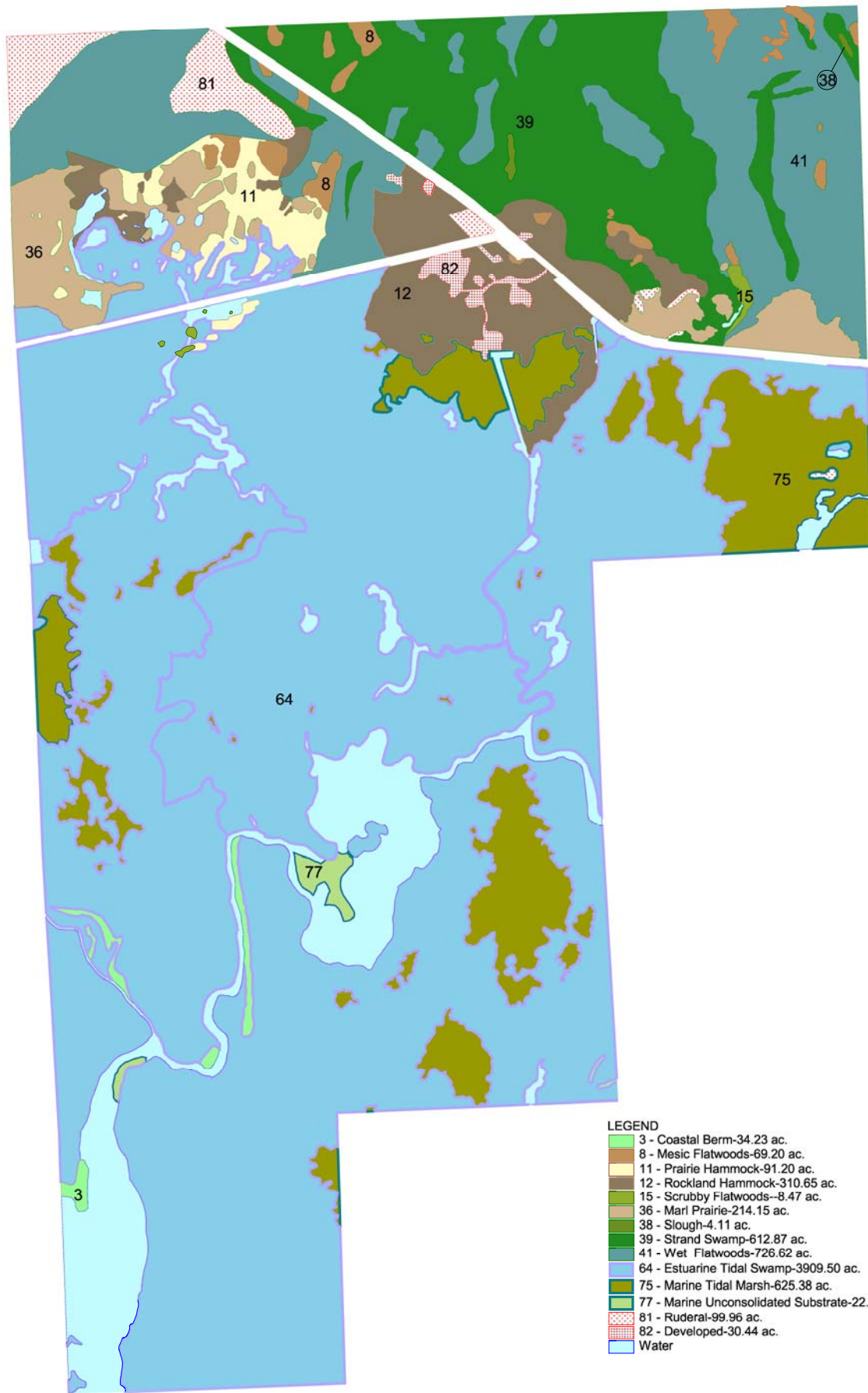
Mesic flatwoods are closely associated with and often grade into wet flatwoods or scrubby flatwoods. The differences between these communities are generally related to minor topographic changes. Wet flatwoods occupy the lower, wetter areas while scrubby flatwoods occupy the higher, drier areas.

**Scrubby flatwoods.** This community is a relatively small proportion of the park acreage. It is the driest of natural communities in the park, being on elevated sands. It is characterized by a dense growth of sand live oaks and myrtle oaks. However, other scrub oak species commonly found in scrubby flatwoods are conspicuously absent or present in much reduced quantity at this southerly latitude. For example, running oak (*Quercus minima*) is present but is not abundant. Gopher tortoises, although few in number, are often seen here. Scrubby flatwoods occurs--just north of U.S. Highway 41, next to the borrow pit. This site was partially destroyed by the digging of a borrow pit in the 1970s. The other principal locations for this community in the park are near the borrow pit along the south side of Hwy 92 and near West Palm Run as it approaches Highway 92.

**Wet flatwoods.** The wet flatwoods community is more common than the above two named. With respect to ground cover, except for the abundance of the parasitic *Cassythia filiformis* (love vine), this community closely resembles the standard description given for it by FNAI. In the park and surrounding region, the demarcation between wet flatwoods and adjoining strand swamps is often indistinct. This blending effect is in part due to disruptions in the hydrological regime followed by the spread of slash pine into adjoining strand swamps. In spite of these perturbations, this community remains a remarkably fine example of south Florida flatwoods.

**Prairie hammock.** This community is found in the western part of the park, immediately south of the Old Marco Road. Prairie hammocks in the park are characterized as clumps of cabbage palms and live oaks in the midst of marl prairie or marsh communities. This community is itself likely the product of an advanced successional stage of marl prairie. Prairie hammocks have a relatively open understory. Typical understory plants include wax myrtle, white stopper, Spanish stopper, marlberry, pigeon plum, poison ivy, orchids and an occasional gumbo-limbo tree. If this community escapes fires long enough, it will eventually succeed into rockland hammock as the above-mentioned understory plants may suggest. That will require the buildup of large amounts of humus.

**Marl prairie.** Examples of this community occur in the western part of the park, south of



Old Marco Road and in the eastern part of the park, just north of U.S. Highway 41. Generally, vegetation in the more northerly parts of the prairie reflect the influence of freshwater sheet flow coming in from the north, whereas the southerly ones, by contrast, show the brackish influence of infrequent tidal surges. To the north, under freshwater influence, sawgrass is more abundant, while in the tidal-influenced marl prairies, *Eleocharis cellulosa*, a salt tolerant spikerush, shows up. In the latter case, FNAI's synonym for marl prairie of "spikerush marsh" is more appropriate. However, the widely scattered, stunted cypress or mangrove trees that FNAI describes as being present are not seen in this park. That community-type is more indicative of the Everglades regions of Everglades National Park and Big Cypress National Preserve.

**Rockland hammock.** Rockland hammock is the reason the park was created. The proponents of Lincoln-Lee National Park saw this appealing tropical forest as its principal feature. They were especially eager to safeguard the large royal palms. Even aside from the royal palms, it remains an excellent example of a surviving tropical hardwood forest in southern Florida. About 35 species of trees have been identified including the most northerly records for such species as gulf graytwig (*Schoepfia chrysophylloides*) inkberry (*Exothea paniculata*), and guiana plum (*Drypetes lateriflora*). From a nature trail, fine examples of satinleaf (*Chrysophyllum oliviforme*), Jamaica dogwood or Florida fishpoison tree (*Piscidia piscipula*), and Simpson's stopper (*Myrcianthes fragrans*) can be seen. A specimen of devil's claw (*Pisonia aculeata*) growing along this trail may be the largest in Florida. A strangler fig (*Ficus aurea*) of impressive size grows in the hammock near the service area. Unfortunately, when the park was developed, some of the trees were cleared to make way for park facilities, although there may have been some clearing prior to that time by settlers or perhaps Native Americans. The memorial field, service area, picnic areas and part of the campground were originally rockland hammock. Part of the old memorial field is being restored by planting tropical hardwood trees grown in the park nursery.

In 1960, the hammock was flattened by Hurricane Donna. Trunks of many of the old hardwoods can still be seen prostrate on the ground. In 1992, another strong hurricane, Hurricane Andrew passed south of the park; although it flattened hammocks near the east coast, the observable impact to large trees at Collier-Seminole State Park was principally to laurel oaks that frequently are afflicted by heart rot in this environment and are easily toppled by strong winds.

There are two smaller rockland hammocks in the park, one is in the eastern portion, north of U.S. Highway 41. The other is in the western part of the park, south of Old Marco Road. These intergrade with, and are undoubtedly successional products of, prairie hammocks. Those examples south of Old Marco Road superficially appear to be prairie hammocks because of the signature given by oaks and cabbage palms, but an examination of the understory shows species indicative of an emerging rockland hammock. Whether these prairie hammocks eventually completely succeed to rockland hammock depends on whether or not fire enters them which is itself largely dependent on how much moisture is retained in the emerging humus layer during dry years.

**Strand swamp.** This community, where the cypress strands appear discontinuous, may resemble cypress domes. They have suffered from fire exclusion and altered hydroperiods. Regarding the latter, numerous man-made canals in the region have contributed to drainage of the strand swamps. The drainage canals have reduced the residence time for standing water with the most obvious effect being an abnormally large scattering of slash pines among cypress. As pointed out under wet flatwoods, the effects of these changes are more noticeable in those places where strand swamps border on wet flatwoods. Brazilian peppers have also

invaded strand swamps to some extent. Nevertheless the park's strand swamps, represent some of the finest examples of this community in southwestern Florida. Although large cypress trees were logged earlier in this century, some trees in the park escaped. A good example is seen near the headwaters of the Blackwater River, just north of U.S. Highway 41 near the Indian Village. This strand swamp is comprised of huge cypress trees that may be 100-feet tall. It is small in geographical extent, but in character, it resembles the finest examples seen in the Fakahatchee Strand or at Corkscrew Swamp. Generally, the biggest trees reflect where water is deepest and remains longest.

Canopy plants are mainly temperate; for example, cypress and red maple, while understory and epiphytic plants are mainly tropical. While this community is not usually considered as fire adapted, infrequent fire is essential for its maintenance; without fire (FNAI estimates between 30 and 200 years), hardwood invasion, and peat accumulation will shift the community to more mesic conditions in a few hundred years. Cypress is tolerant of light surface fires, but muck fires burning into the peat can kill the trees, lower the ground surface and transform a strand into a slough. The largest trees on the deepest and wettest peat usually withstand fires. This is often where sloughs are found.

**Slough.** This community occupies the deeper drainageways of cypress strand interiors and is distinguishable by water which is present at least two-thirds of the year (ca. 250 days), and by the abundance of pond apple, pop ash trees, and cutgrass or southern wild rice in deeper sloughs (*Zizaniopsis miliacea*). Sloughs are usually in the lowest part of linear depressions in the underlying limestone bedrock. With the almost constant water presence, the relative humidity is higher than in the surrounding or associated strand swamps as indicated by greater numbers of epiphytic bromeliads, ferns and orchids. The nearly constant presence of water also moderates temperature and provides some degree of frost protection for the delicate epiphytic plants during the colder winter months. Sloughs are vulnerable to hydrologic disturbance and must have a permanent, reliable, water source of good quality to persist. Currently only two well-defined sloughs are recognized and mapped in the park.

**Estuarine tidal marsh.** This graminoid-dominated community of the park is best developed near tidal streams and along the inland boundary of the tidal swamps. Spike rush (*Eleocharis cellulosa*) and cordgrasses dominate tidal marshes at Collier-Seminole. The most accessible example is near the boat dock. It remains in an apparently pristine condition, but mangrove trees have gradually encroached at the margins over the past 30 years (personal communication, Ken Alvarez).

**Estuarine tidal swamp.** This community occupies most of the park. It is a segment of the great mangrove swamp of southern Florida, one of the largest in the world. The dominant plants are red, black and white mangroves and buttonwood. The community appears to be in an original condition, except for the infestation of Brazilian pepper in some locales where the ground is elevated above the reach of high tide. In this bioenergetically rich community, plant diversity is low compared to animal diversity that is especially high because of the abundant fish and invertebrate species.

**Marine unconsolidated substrate.** FNAI's most appropriate synonyms for this community are probably mud flats or tidal flats. An excellent example is found in Mud Bay where considerable numbers of wading birds, shore birds and waterfowl can be seen at low tide. Although superficially appearing barren, this community is rich in invertebrates and bottom-feeding fish that explain the presence of numerous birds. The community appears to be in very good condition.

**Coastal berm.** This designation is the closest FNAI analog to a community that has been

identified by Division district biologists as Tropical thorn scrub. Unfortunately, this community is not recognized in the Guide to Natural Communities of Florida (FNAI, 1990). Tropical thorn scrub is distinctive, but sparsely scattered in small units among mangroves so that it was apparently overlooked by FNAI. It is indicated on the natural communities map as a coastal berm community to which it has some affinities, although superficial. This inaccuracy will be corrected by the necessary administrative measures when time permits. In south Florida, it can be characterized as a coastal natural community with predominately xeric plant species many of which are conspicuously armed with spines or thorns. The xeromorphic features of these plants include reduced leaf surface area, succulence, and, as mentioned, spines or thorns. The majority are woody perennials of short stature, between 2-5 meters in height. This community type has been recognized in subtropical to tropical regions at similar latitudes around the globe and, therefore, on a global scale is not rare.

The closest ecological counterpart in Florida outside of Collier-Seminole State Park may be in the Cape Sable hammock region of Monroe County, mentioned by Craighead, 1971, in *The Trees of Southern Florida Vol. 1, The Natural Environments and their Succession*, as a possibly distinct plant association within the Cape Sable hammocks. The community was originally described by Harper, 1927, in *Natural Resources of Southern Florida*. He called these communities shore hammocks or cactus thickets. Others have described this community as a thorn woodland. Rzedowski, 1986 in *Vegetacion de Mexico* called it *Bosque espinoso* or Thorn Forest. The examples in the park are too lacking in stature to call a forest; scrub is more appropriate.

Typical plants in the park's thorn/scrub include (Full names are given as this community is not described in Addendum 4 with the FNAI natural communities): indigo berry (*Randia aculeata*), coin vine or fishpoison vine (*Dalbergia ecastophyllum*), buttonwood (*Conocarpus erectus*), Florida wild olive or forestiera (*Forestiera segregata*), wild lime (*Zanthoxylum fagara*), gray nicker (*Caesalpinia bonduc*), soapberry (*Sapindus saponaria*), limber caper (*Capparis flexuosa*), Jamaica caper (*Capparis cynophallophora*), cat-claw (*Pithecellobium unguis-cati*), devil's claw (*Pisonia aculeata*), white stopper (*Eugenia axillaris*), Spanish stopper (*Eugenia foetida*), saffron plum (*Bumelia celastrina*) Florida bully or milk buckthorn (*Bumelia reclinata*), Christmas berry (*Lycium carolinianum*), cabbage palm (*Sabal palmetto*), snowberry (*Chiococca alba*), Jamaica dogwood or Florida fishpoison (*Piscidia piscipula*), gumbo limbo (*Bursera simaruba*), crimson dicliptera (*Dicliptera sexangularis*), yellow chaff-flower (*Alternanthera flavescens*), saltwort (*Batis maritima*), rubber vine (*Rhabdadenia biflora*), giant air plant (*Tillandsia fasciculata*), and sometimes cacti (*Cereus* spp.). No data have yet been accumulated on the fauna of this community, but it is likely that animals from the surrounding mangrove swamps and tidal marshes are common visitors.

This community occurs in the park at three locations--Grocery Place, Old Grove and an unnamed site along the Blackwater River in the southeast corner of the park. Grocery Place has evidence of human habitation in the early part of the twentieth century. No records have been found of habitation at Old Grove. At the Old Grove site, the natural community is re-establishing itself, while at Grocery Place, clearing dominated by St. Augustine grass are maintained for primitive camping. Of the three sites, the plant community in the Blackwater River area is the smallest. Oftentimes, the only evidence of it is a narrow strip of small catclaw along brackish watercourses.

**Ruderal and developed.** Ruderal areas are characterized by having the natural substrate or the natural community overwhelmingly altered because of human activity. Native vegetation is sparse and is often replaced by weedy or exotic species. These areas normally require a long-term restoration effort. At Collier-Seminole State Park, ruderal acreages are primarily



abandoned agricultural areas near Old Marco Road. Developed areas consist of natural biological communities that have been replaced or nearly replaced by structures or permanently cleared areas such as roads, visitor facilities, campgrounds, recreation areas, parking lots or concessions.

### **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.

Thirty-one species of vascular plants have been identified and 42 species of vertebrates. The variety and number of designated species are remarkable for a park of this size and are attributable to its tropical latitude and its diversity of habitats, estuarine, aquatic and upland. Collier-Seminole State Park is one of only three sites in Florida where native royal palms grow in natural abundance. It is home to one of the most extensive populations of the golden leather fern (*Acrostichum aureum*), in the United States. The wild birdnest fern, which is uncommon, grows among the tropical hardwood trees of the rockland hammock. Epiphytic orchids are numerous in the trees of the hammock, and in mangrove and cypress trees. The cowhorn orchid that has become scarce because it is treasured by collectors was recently rediscovered in the park.

The records of bottlenosed dolphins, West Indian manatees, American crocodiles, Florida black bears and the Florida panther hint at the wide diversity of vertebrates in this park. Red-cockaded woodpeckers have been seen and nest cavities found, although not in recent years.

### **Special Natural Features**

The rockland hammock, between the boat dock and the Barron Collier Memorial, with its large number of royal palms is a special natural feature of Collier-Seminole State Park and ranks among the best examples of this natural community on the mainland of south Florida, and is probably the finest on the western side of the peninsula. The park itself might be considered a special natural feature, being remarkable for having such a variety of biological communities' characteristic of the Everglades region in such a relatively small area.

### **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 describe 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 recognizes three sites in the park: 8CR34, 8CR125 and 8CR138. Previously, a fourth site, 8CR33 (GV), was reported as being within the boundary of the park. Research at the FMSF indicates this site is not within park boundary, and it will be excluded from this plan. Note: the, "GV" designation indicates the site was recorded as a "General Vicinity" site, which means its exact location was uncertain. Such sites were commonly

recorded in years past based on imprecise data, usually from the verbal or written accounts passed on to professional archaeologists who, being perhaps unable to verify the report with a field visit, recorded the sites based on somewhat vague information. Although the FMSF does not indicate who recorded the site it was probably recorded by John Goggin based on a 1947 personal communication by a Mr. D. Graham Copeland. Maps in the FMSF indicate the site is on the east bank of the Blackwater River in Township 52S, Range 27E, Section 15.

Site 8CR34 (Grocery Place) is located on a rise at the mouth of Royal Palm Hammock Creek. Two other rises on that same creek are unrecorded in the Florida Master Site File, but perhaps should be; as noted in the 8CR33 site comments, "any tree islands next to creeks likely contain archaeological sites." One site near Grocery Place is identified on old park maps as "Old Grove." Grocery Place is a multi-component site: a shell and black-dirt midden that contains aboriginal pottery dating between 500 BC and AD 900 or perhaps later. The site was also homesteaded in the late 19th or early 20th century and two cisterns remain at the site from that occupation. Initials and the date "1914" are carved into one of the cisterns. A reference to the Grocery Place is found in Tebeau's history of Collier County (Tebeau 1971), which tells of the Cannon family shipwrecked on Marco Island in 1900. The entire family was thrown into the surf. Fortunately, it was shallow and the parents waded ashore, carrying their children with them. On the beach were a Mr. Harris and several members of the Robertson family who lived on an island just inside the pass. The Cannons remained for some time with these hospitable people. They then made their way overland to Royal Palm Hammock where they built and lived in a palmetto shack for a short time. However, before the year 1901 ended they made their way by skiff down Royal Palm Hammock Creek to the Grocery Place and thence again to Marco. Tebeau further reports that another center of settlement for a time was up Royal Palm Creek in the bay of the same name. Several species of exotic plants, from the period of settlement, are found here. The exotic species include lead tree, (*Leucanea leucocephala*) and Hibiscus, (*Hibiscus rosasinensis*). A map in the park file shows a spot of elevated land upstream from Grocery Place that is referred to as the "Old Grove".

Site 8CR125 includes the entire park and lands to the southeast. It was listed on the National Register of Historic Places in 1970 based on the excellent preservation of a full range of south Florida land types (scrub cypress, pine, open prairie, mangrove, etc.), and the presence of the Collier Memorial, the walking dredge and the "blockhouse". During the development of Collier-Seminole State Park in the 1940s, Collier County, using funds from the Collier Corporation, constructed the blockhouse to commemorate the efforts of the US soldiers in the Seminole Wars. Although not a replica of typical construction from the period, it is a stylized version of the type used during these frontier conflicts, although there does not appear to be any evidence of one ever having been constructed near Collier-Seminole State Park. The blockhouse is a historic structure. There is also a prehistoric canoe on display in the park.

Site 8CR138 is the Bay City Walking Dredge, used in the construction of the Tamiami Trail. It was nominated to the National Register of Historic Places in 1973, and was listed as a National Historic Mechanical Engineering Landmark by the American Society of Mechanical Engineers in 1993. The financing and construction of the Tamiami Trail is an interesting part of the history of Collier County, and is summarized in Tebeau's history of Collier County. Finally, The Old Marco Road is an unrecorded archaeological site.

## **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 this park. It was then determined that the primary management objectives of the unit could be met without conducting timber management activities for this management plan cycle. Timber management will be reevaluated during the next update of this management plan.

### **Additional Considerations**

As pointed out in the natural communities description for rockland hammock, much of the original rockland hammock was cleared in the development of the park; and the memorial field, service area, picnic areas, and part of the campground were originally rockland hammock. Although restoration of the old memorial field is underway, it is proceeding very slowly. Emphasis should be placed on speeding up the process by devoting more staff time to the project.

### **Management Needs and Problems**

The three primary resource management problems for natural resources at this park are those associated with hydrological disruptions, invasive exotic plant species, and prescribed burning.

The natural vegetation at Collier-Seminole State Park is fundamentally shaped by and responsive to local hydrological patterns. The land is flat. In the wet season much of it covered by a film of water which moves slowly toward the tidal region. The depth of water and its time of residence over the uneven ground surface--the hydroperiod--dictate the patterns of vegetation, some plants being more tolerant of prolonged inundation than others. A few inches difference in ground elevation from one spot, to another one nearby, is revealed by different assemblages of plants.

Drainage canals near the park have reduced the residence time for standing water. The most obvious effect is an increase of pine trees in natural communities where they were absent or less numerous. Other changes may be less visible. The need is to restore the original flow and periodicity of surface water as much as possible. A surface water problem of another kind is the pumping of water from an adjacent agricultural field onto the park. This diked field is west of U.S. 41. Excess water is vented through a large pipe during periods of heavy rainfall.

Brazilian pepper is the most widespread invasive exotic plant. At some places in the park it has formed monotypic stands, completely displacing all other vegetation. The park environment is strongly encouraging to Brazilian pepper as to conditions of soil and moisture. Not only do birds and raccoons distribute seeds but Florida black bears also. The park staff is small relative to the extent of infestation. The principal need is for staff increase.

Melaleuca trees were once widespread in the park. They have now been reduced to one site, but here they have proved persistent despite repeated attempts to destroy them. A problem, as with Brazilian pepper, is that of warm, wet conditions favoring rapid growth. Moreover, the remaining site of infestation is a hammock where thick undergrowth impedes the easy detection of seedlings. The need is for continuing pressure by the staff until melaleucas are gone.

Air potato has made its appearance at this park in the last ten years. The first plants were noted just north of the Indian village in 1989. There they have increased in density and climbed into the treetops. Once established, air potato is stubbornly resistant to elimination. The principal need is to prevent its spread to other places in the park, then to make regular and frequent visits to the site of infestation until it is gone.

Climbing fern (*Lygodium microphyllum*), another dangerous exotic, has appeared at remote places in the park. Three large patches have been found in the last three years. Fortunately, climbing fern is vulnerable to herbicides and easily treated if discovered in the first few years of infestation. If not treated however, it can climb into the canopy while simultaneously forming a dense biomass in the substrate, particularly in strand swamps. It can destroy the park.

Approximately 2,321 acres are natural communities that require prescribed burning. Although such a program has been in effect since the 1970s, it has been irregular and sometimes lacking for a year or more at a time, with the result that progress has been made in some burn zones toward eliminating hardwood encroachment, but not as much as desired, while in other zones hardwoods have grown tall and thick, completely altering the original community structure. The need is for regular, frequent burns in all designated zones. A long growing season at this southerly latitude, and abundant rainfall, stimulate the rapid encroachment of hardwood vegetation. Therefore, shortened burn intervals may be needed. Burning annually or at least semi-annually may prove to be the best interval.

The Walking Dredge is in fair condition. Corrosion is still present primarily where metal touches metal. All cables have been replaced including the cable for supporting the bucket. For safety, a chain link fence has been constructed. The Blockhouse, which contains exhibits on the first floor and office storage space on the second floor, is in fair condition. The roof was replaced in 2002; however, exposed sections of some rafters are rotted. An ADA ramp has been built along with a concrete sidewalk. A Historic Structure Report is in progress to determine how the Blockhouse should be managed. An architectural history will be completed also. The wooden canoe is in fair condition now, but will deteriorate over time if not treated or removed to a climate-controlled environment. The pedestal of the Collier memorial has been damaged and the original bust of Barron Collier stolen. A replica bust is now on display. The occasional pressure washing of the memorial is needed to ensure it meets the standards of preserving historic stonework.

All archaeological sites should be considered threatened because of erosion. At Grocery Place, one of the cisterns is now at the shoreline and is being undermined. Vegetation is also causing damage.

### **Management Objectives**

The resources administered by the Division are divided into two principal categories: natural resources and cultural resources. The Division's 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.

The objective for hydrological restoration is just that--to restore the hydrological regime as nearly as possible to its original state, and to reverse and obliterate all biological changes brought on by hydrological disruption that can be identified.

The objective for invasive exotic plants is to eliminate all mature plants. Reentry of individual plants will continue so long as they are widespread beyond the park and therefore removing or

killing the reentrants will become a permanent aspect of park maintenance. The objective, stated another way, is to bring control of invasive exotics to the maintenance phase.

The objective of prescribed burning at Collier-Seminole State Park is reintroducing fire at the appropriate fire return intervals to the following natural communities: mesic flatwoods, scrubby flatwoods, wet flatwoods, marl prairie, and perhaps tidal marsh when appropriate. A present rule-of-thumb for return intervals in mesic flatwoods and wet flatwoods is three years. However, given the density of fine fuels in the wet flatwoods--and in the marl prairies--it may be reasonable to assume that before modern times, fire return intervals were shorter in those natural communities.

The objective in managing cultural resources is to return them to the appearance of the most significant cultural period, to the degree that present day constraints will allow. When properly interpreted, period restoration enhances the visitor's understanding of the historic events of the site under conditions then prevailing. In all matters of cultural resource management, the Division works in consultation with the DHR.

The following objectives should guide the management of the cultural resources of Collier-Seminole. Successful completion of the objectives will result in preservation of the resources and the information they contain for future generations.

1. Maintain and protect cultural resources according to DHR and Department of the Interior best management practices, guided by rigorous research and appropriate funding levels.
2. Develop cyclical maintenance plans for the dredge, blockhouse and memorial.
3. Regularly assess the condition of archaeological sites through patrolling for vandalism and the use of photopoints.
4. Complete Florida Master Site File documentation for all known sites.

### **Management Measures for Natural Resources**

#### **Hydrology**

The following discussion includes measures to conserve water resources. As indicated earlier, canals in and around the park have led to the encroachment of slash pines into communities that would not normally have them in high proportions. Strand swamps, for example, currently have greater numbers of slash pines growing among cypress than in times past, as early aerial photographs show. Furthermore, the slash pines are presently stunted in appearance that suggests they are not in their optimum habitat. These "slash pine infested" cypress strands no longer have water standing long enough to prevent the establishment of pine seedlings.

The indistinctiveness of some of the natural communities described above is a result of the regional disruption of hydrological patterns. Therefore, part of the remedy is not fully within the control of land managers within the Division of Recreation and Parks. At Collier-Seminole State Park the hydrology of lands to the north and northeast are most important since the sheet flow is generally south to southwest. Fortunately, much of that region, recently designated the Picayune Strand State Forest, is coming into public ownership as landowners sell their small private lots to the state.

Before any remedial hydrological measures are attempted, baseline hydrological data, as called for in the 1988 Collier County Comprehensive Plan, are needed on hydrodynamics, topography, flow volumes and other physical characteristics. In addition, as indicated above, the South Florida Water Management District should be a part of any actions affecting hydrology.

The pumping of excess water from an adjacent agricultural field onto the park, as described

above under Management Needs and Problems, was grandfathered by permitting agencies and thus does not present an obvious solution. Nonetheless, management will remain alert to opportunities that present a solution to this problem.

Serious consideration should be given to pushing in the walls of the old dike system north of Old Marco Road and south of U.S. Highway 41 (Section 28, T51S, R27E). There is historical evidence that this site was once a wetland. Currently this large feature supports unnaturally large strands of Carolina willow and serves as a source of Brazilian pepper re-infestation. It is difficult to penetrate on foot because of the artificially impounded water behind the dike, and because of the density of willows and Brazilian peppers. Other canals and ditches within the park will be filled in where feasible.

### **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 the unit's natural communities. To meet these objectives, the park is partitioned into burn zones, and burn prescriptions are prepared for each zone. 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.

The burn plan will incorporate the frequency and seasonal timing of prescribed burns. Frequent late spring and early summer burns are effective in controlling hardwood encroachment in fire-adapted communities. Burns conducted during this season cause the release of nutrients from burned vegetation. After allowing for these factors, the timing of most prescribed burns should correspond with the natural fire season, which occurs between April and July. Unfortunately, regulations that sometimes prevent burning during very dry periods of the year--when, in the pre-Columbian era, much of the burning would have occurred. Some variation within the natural fire season is also important. Instead of conducting burns during the same month each year, they should be scheduled for different months within the natural fire season. However, in this park, it is important to burn frequently even if that means burning "out of season".

Although many communities are adapted to spring and summer fire, a spring or summer fire should not be introduced into a community that has a high fuel buildup. When a community has not been burned for a number of years, consideration should be given to an initial fall or winter fuel-reduction burn, before using a growing-season burn. After a fuel-reduction burn, a natural fire regime can again prevail.

A smoke management concern at Collier-Seminole is the necessity of keeping smoke off the two highways that transect the park and make a junction within its boundaries: U.S. Highway 41, which passes through the park from northwest to southeast, and State Road 92, which intersects with U.S. Highway 41 from the west.

Careful planning is necessary when burning near the Seminole Indian Village; a line will have to be cleared in the woods just to the west of the village. The line should curve northward from the highway to the large strand swamp, just to the north of the village.

### **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 FWC and USFWS as part of their ongoing research and monitoring programs will be periodically reviewed to inform management decisions that may have an impact on designated species at the park.

This park is noteworthy for the large number of designated species. As pointed out earlier, 31 designated species of vascular plants and 42 species of vertebrates have been identified.

U.S. Fish and Wildlife Service (USFWS) recovery plans have been written for the following park species: American crocodile (*Crocodylus acutus*), eastern indigo snake (*Drymarchon corais couperi*), Florida panther (*Felis concolor coryi*), West Indian manatee (*Trichechus manatus*) wood stork (*Myceteria americana*), and bald eagle, (*Haliaeetus leucocephalus*), red-cockaded woodpecker (*Picoides borealis*). The management recommendations in these species recovery plans will be followed.

Other listed species, for which there are no recovery plans, include the Florida black bear and several orchid species. The orchids are subject to poaching, and park patrolling is the recommended protective action, but a low staff to acreage ratio makes executing this recommendation difficult as it does for exotic plant species control.

### **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, as well. 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.

**Plants.** Seed (or spore) dispersal is the means of entry or reentry to the park. Brazilian pepper then will be the most troublesome since so many seeds are produced and can be carried long distances by a variety of animal transmitters. Maintenance will probably be demanding and never-ending. After initial treatment of Brazilian pepper has been conducted, followup treatment will be necessary because of resprouting from the trunks and the roots.

Melaleuca seeds are not dispersed so readily. Once cleared from the park they can be kept out with a minimum of vigilance. Climbing fern spores are brought on the winds from afar to grow unexpectedly in remote parts of the park. Regular probes into the backcountry by staff will be important. Air potato seems to move about with direct human assistance. Therefore, early detection and removal will be essential. Additional staff is needed to carry out these demanding tasks. Grants, mitigations, Americorps and the like are helpful, but without adequate manpower based on the park, it will be difficult at best to keep exotic plants out.

**Animals.** The park's armadillo population is relatively small and control is ongoing. Feral hogs occur, but infrequently. Fire ants are present, and evidence is mounting elsewhere that they are capable of killing the young of small mammals. At present, there is no practical method of control.

### **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.

**Mosquito control.** Collier-Seminole has long been known for its mosquitoes. The unusually dense concentrations, especially salt marsh species, may be a result, at least in part, of the artificially impounded water that occurred when the park was developed.

The mosquitoes add an element of difficulty to park operations and make visitation during certain times almost unbearable. Infestations are historically worse during periods of moderate rainfall. In wetter years, gambusias help control them, and in very dry years, it is difficult for the eggs and larva to survive.

At one time, several holes had been dug at sites throughout the park so that the mosquito larvae-eating fish (gambusia) could seek refuge during the dry season and spread out through the swamps and marshes during the rainy season. Minnows were collected from other locations to stock the holes. These measures should be re-examined.

### **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. Approval from Department of State, Division of Historical Resources (DHR) must be obtained before taking any actions, such as development or site improvements that could affect or disturb the cultural resources on state lands (see **DHR Cultural Management Statement**).

Actions that require permits or approval from DHR include development, site excavations or surveys, disturbances of sites or structures, disturbances of the substrate, and any other actions that may affect the integrity of the cultural resources. These actions could damage evidence that would someday be useful to researchers attempting to interpret the past.

The most important management measures for cultural resources are to continue to preserve and protect the Bay City Walking Dredge, the Blockhouse and the Barron Collier Memorial. With consultation from the Bureau of Natural and Cultural Resources, cyclical maintenance plans should be developed and permanent records maintained. This will ensure that routine needs are met and potential problems are identified.

The Walking Dredge's condition can be upgraded to good if stabilization work is completed following recommendations from the DHR Bureau of Archaeological Research. In addition, park staff should make sure that no metal parts are in contact with the ground.

Restoration work is needed on the Blockhouse rafters. The Secretary of the Interior Standards should be followed. Routine termite inspection should be scheduled. At Grocery Place are the remains of two cisterns built in the early 1900s. Grant funding should be sought to restore the cisterns providing that the substrate around them can be stabilized. Encroaching vegetation should be cleared away. Archaeologists and historical preservationists should be consulted for determining preventive measures for the entire site. This site and the Old Grove should be monitored for erosion, vandalism and encroaching vegetation. The midden at Grocery Place needs archaeological testing to determine its integrity and history.

### **Research Needs**

#### **Natural Resources**

Any research or other activity that involves the collection of plant or animal species on park lands 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.

As pointed out under the section on "Management Measures for Natural Resources--Hydrology", baseline hydrological data need to be established in accord with the type of proposal called for in the 1988 Collier County Comprehensive Plan, in which hydrodynamics, topography, flow volumes, and other physical characteristics will be considered. In addition, as indicated earlier, the South Florida Water Management District should be a part of any

actions affecting hydrology.

In order to monitor the effects of prescribed burning on vegetation, photo points should be considered.

### **Cultural Resources**

The park would benefit from the documentation resulting from the following types of research:

1. A Phase II archaeological survey at Grocery Place and Old Grove.
2. Oral history interviews of Bobby Clay (Seminole leader) and others who currently live or have lived in or near the park.
3. Research on human occupation at Grocery Place and the Old Grove.
4. Research on Old Marco Road to determine if it can be recorded as an archaeological site.
5. Research on Tamiami Canal to determine if it can be recorded as an archaeological site.
6. Research on history of canoe for an interpretive panel.
7. Research on history of the "blockhouse" to record it as a historic structure, although it is mentioned in the National Register nomination for 8CR125 as a contributing element to the NR site.

### **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 (see Addendum 6).

### **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 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.

The park was subject to a land management review on October 7, 2003. The review team made the following determinations:

1. The land is being managed for the purpose for which it was acquired.
2. The actual management practices, including public access, complied with the management plan for this site.

## 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's 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, adjacent land uses, and the park interaction with other facilities.

Collier-Seminole State Park is located on the Gulf coast in Collier County, roughly 15 miles south of Naples. The park lies within the Southwest Florida Planning District, which includes Charlotte, Collier, Glades, Hendry, Lee and Sarasota County. According to the Florida Statistical Abstract 2002, the District is the fifth most populous and second fastest growing of the state's eleven planning districts, having grown nearly 33 percent since 1990 to more than 1.2 million residents. This growth rate exceeds the statewide district average of 23.5 percent. Lee County is the most populous, with nearly 37 percent of the total District population. However, Collier County is notable as the third fastest growing county in the state, having increased its population by over 65 percent since 1990 to better than 250,000 residents. Medium projections calculate an additional 23 percent growth in District population by 2010.

The closest incorporated area is Marco Island roughly five miles east, off County Road 92, with a 2000 population of nearly 15,000. A short drive north along the coast is the city of Naples, with roughly 21,000 residents. Extensive commercial and residential development occurs from the Naples area north to Lee County.

### Existing Use of Adjacent Lands

The land surrounding Collier-Seminole State Park is at a low elevation and poorly suited to development. Much of the land around the park is within public ownership and managed for its natural resource and recreation value. Conservation lands in the area include Picayune State Forest, Fakahatchee Strand Preserve State Park, Ten Thousand Islands

National Wildlife Refuge, Everglades National Park, Cape Romano-Ten Thousand Islands Aquatic Preserve, Rookery Bay Aquatic Preserve and Rookery Bay National Estuarine Research Reserve. As a result, the park is not seriously threatened by encroaching development, although development activity associated with agricultural and residential uses, and road construction have impacted hydrology within the park, complicated prescribed burning efforts, and contributed to incidents of unauthorized use.

The park is fragmented into three pieces by U. S. Highway 41 and San Marco Drive (County Road 92). A small parcel of commercial property is located on the south side of the intersection of these two roads and a small Seminole Indian community is located on the north side of U. S. Highway 41. Agricultural lands are located along the northwestern boundary and are a permitted source of water discharge onto park lands. A residential golf course community has recently been constructed immediately west of this area. The Picayune State Forest manages a portion of lands along the north and northeastern boundary. Vacant private parcels associated with the defunct Golden Gate Estates land scheme are also located in this area, which is a source of unauthorized ATV access. A private parcel of land on the south side of U. S. Highway 41 at the northeast corner of the park supports an airboat tour business that has contributed to airboat use of park waters. The Ten Thousand Islands National Wildlife Refuge extends along the east, south and western boundaries. The Cape Romano-Ten Thousand Islands Aquatic Preserve includes the waters of Blackwater Bay, Palm Bay and the Gulf of Mexico to the south of the park.

The park employs a combination of monitoring, enforcement and education to mitigate the impacts from human uses of adjacent land. The park will work with adjacent landowners and the county to facilitate the use of prescribed fire, and seek ways to address problems associated with hydrology and unauthorized access of off-road vehicles and airboats. The park will also seek assistance from the Florida Park Patrol and local law enforcement and use signage and fencing as means to reduce illegal intrusions along the park boundary.

#### **Planned Use of Adjacent Land**

Much of the adjacent lands around the park are currently being managed for conservation purposes. However, residential development continues to creep from the Naples area toward the park along the U.S. Highway 41 corridor. Surrounding lands currently being used for agriculture may eventually be converted to residential development as the population of southwest Florida continues to grow.

The park is in the heart of a rapidly developing ecotourism destination. With large tracts of public land preserving open space ideally suited for a wilderness experience, it is anticipated that the number of visitors seeking resource-based recreation opportunities will continue to increase in the region.

#### **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.

Due to the extensive presence of wetlands, only a small area of the park is developed for recreational use, allowing visitors to experience Florida's natural heritage in an area virtually undisturbed by humans. Over 68 percent of the park is designated as a Wilderness Preserve designed to protect the primeval character and wilderness experience of a large, undisturbed area. Most of the property is an impenetrable tangle of mangrove swamps and marshes. The flat topography of the park is typical of coastal southwest Florida.

The park includes both tropical and temperate zones creating a unique community of flora. This is one of the few places in America where the royal palm occurs in its natural setting. Lush tropical hardwoods meet the swamps of the Big Cypress region at a forest of impressive mangroves. Marine tidal swamp is the predominant natural community in the park. These mangrove communities are highly productive and extremely vulnerable to human disturbance.

The most significant water body in the park is the Blackwater River. The freshwater flow from the headwaters of this small stream is seasonal and dries up during certain times of the year. As the Blackwater River travels south toward the Gulf of Mexico, its waters become brackish. Canoeing, boating and fishing are popular activities in the river.

The remote areas of the Wilderness Preserve offer habitat to numerous forms of wildlife including such rare and endangered species as the crocodile and manatee. The Florida panther may utilize portions of the park as part of its range. Bird species are abundant, and bald eagles, brown pelicans, wood storks and ospreys have all been seen in the park. The scrubby flatwoods support a small isolated population of gopher tortoises, one of Florida's threatened species. In the summertime, the park is almost uninhabitable due to high concentrations of mosquitoes.

Several historic objects available for public viewing at the park serve as recreation resources that help to interpret the park's role in national, state and local history. The Walking Dredge, Collier Monument, blockhouse with its interpretive displays, and the dugout canoe, all serve as attractions that help the visiting public appreciate the historic aspects of the region.

### **Assessment of Use**

All legal boundaries, significant natural features, structures, facilities, roads, trails and easements 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**

Before state acquisition, the majority of the land was owned by the Lee County Land Company, and much of the upland property was logged for pines.

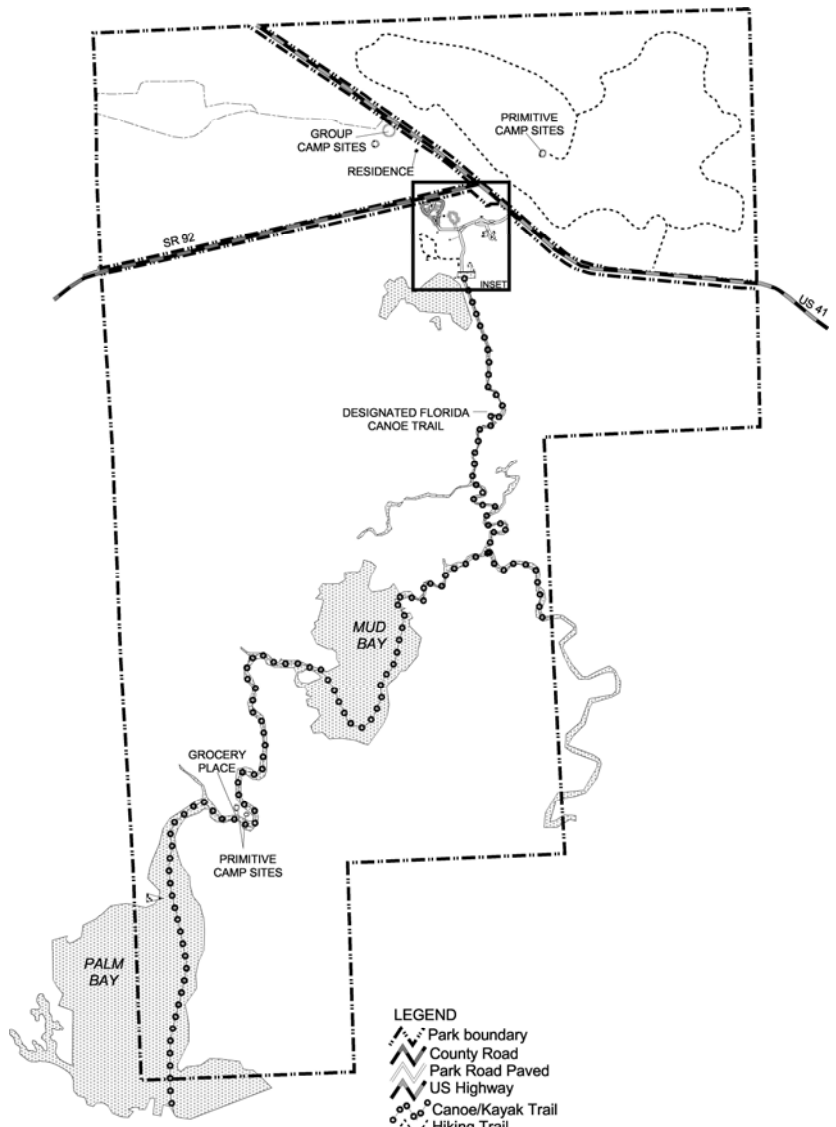
#### **Recreational Uses**

The existing forms of recreation at Collier-Seminole State Park include tent and RV camping, primitive camping, hiking, off-road biking, nature study, picnicking, fishing, canoeing/kayaking, and boating. A concessionaire operates boat tours into the wilderness preserve via the Blackwater River.

#### **Protected Zones**

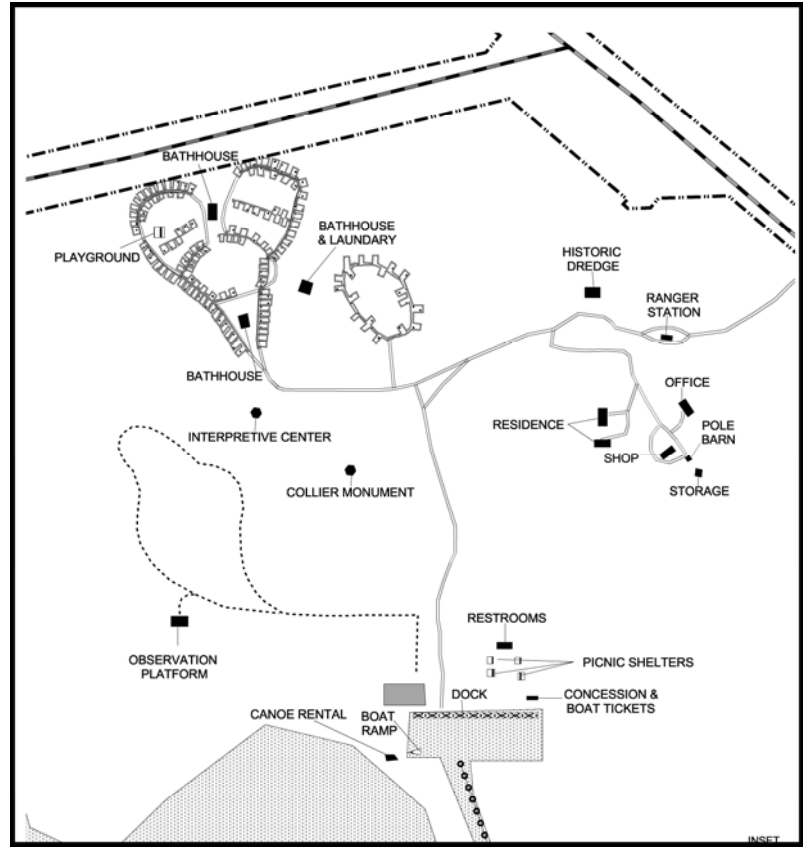
A protected zone is an area of high sensitivity or outstanding character from which most types of development are excluded as a protective measure. Generally, facilities requiring extensive land alteration or resulting in intensive resource use, such as parking lots, camping areas, shops or maintenance areas, are not permitted in protected zones. Facilities with minimal resource impacts, such as trails, interpretive signs, and boardwalks are





- LEGEND**
- Park boundary
  - County Road
  - Park Road Paved
  - US Highway
  - Canoe/Kayak Trail
  - Hiking Trail
  - Hiking/Biking Trail
  - Campsite
  - Designated canoe launch
  - Primitive Campsites
  - Building
  - Parking

COLLIER-SEMINOLE  
STATE PARK



BASE MAP

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 Collier-Seminole State Park the coastal berm, rockland hammock, marl prairie, slough, strand swamp, wet flatwoods, marine tidal marsh, marine tidal swamp, and marine unconsolidated substrate have been designated as protected zones as delineated on the Conceptual Land Use Plan. These lands comprise over 96 percent of the park.

### **Wilderness Preserves**

Wilderness Preserve designations are reserved for large, undeveloped areas within a park that have retained their principal character and influence without permanent alteration. They are protected and managed in a manner to preserve the natural appeal and values of a significant portion of the park. The characteristics of a Wilderness Preserve are as follows:

Generally appears to have been affected primarily by the forces of nature, with human impacts substantially unnoticeable;

Offers outstanding opportunities for solitude, or a primitive and unconfined type of recreation;

Is expansive and sufficient in size to make preservation and use in an unimpaired condition practical;

May also contain ecological, archaeological, or other features of scientific, educational, scenic, or historic value.

Uses are to be limited, passive in nature, and related to the aesthetic, educational and scientific enjoyment of the features and conditions maintained. Other uses may be permitted if fully compatible. Activities that are generally recognized as being compatible within a Preserve are trail use, canoeing/kayaking, nature study and natural scenery appreciation. Facilities are limited to those considered essential for management and appropriate forms of public use.

Approximately 4,900 acres of creeks, rivers, tidal marsh and tidal swamp south of San Marco Road, U. S. Highway 41 and the boat basin have been designated as a Wilderness Preserve at Collier Seminole State Park.

### **Existing Facilities**

**Boat Basin and Picnic Area.** The boat basin provides access to the Blackwater River for private boats, canoes/kayaks and a concession operated tour boat. A boat ramp and rental canoes are located on the east end of the basin. The basin is partially enclosed with a seawall and has a wooden loading dock along the north side. The seawall and dock are showing signs of wear and do not meet universal accessibility requirements. A concession building is located north of the basin, along its midpoint, at the edge of the picnic area. In addition to scheduling boat tours, visitors can purchase snack foods, soft drinks, T-shirts, and souvenirs at this facility. The picnic area contains four small, aging, chickee-style picnic shelters, a restroom, scattered tables and grills and dated playground equipment. A paved parking lot is located between the boat basin and the picnic area, serving both uses. The parking lot contains 71 standard, 13 oversize and four handicapped parking spaces. The trailhead for the Royal Palm Hammock Trail is located at the west end of the parking lot.

**Camping.** The campground contains 156 sites, 19 of which are for tent camping only. A portion of the RV sites does not have electric service. The campgrounds include two bathhouses, dump station, and screened activity room with restrooms, fireplace, fans and a small concession. A primitive group camp is located north of San Marco Road with facilities limited to privies. Primitive camping is also available along Royal Palm Hammock Creek and the hiking trail north of U. S. Highway 41. The former site is only accessible by canoe

or kayak.

**Trails and interpretation.** A well-marked canoe trail extends for approximately 13 miles along the Blackwater River, Mud Bay and Royal Palm Creek. Trail markers are provided so that inexperienced paddlers do not get lost in the vast mangrove forest. The Royal Palm Hammock nature trail begins at the boat basin parking lot and forms a partial loop through the park's exceptional Rockland Hammock, ending at an observation platform that provides wildlife viewing opportunities over a tidal marsh. The boardwalk portion of the trail is nearly 1,900 feet long and in poor condition. The northeast section of the park contains a 6.5-mile hiking trail through the prairie, pine flatwoods and alongside strand swamp. The northwest corner of the park contains approximately 5.5-mile shared-use trail for hiking and off-road biking, and a primitive group camp.

Cultural resource interpretation is enhanced at the park by several features. The Bay City Walking Dredge is located near the entrance to the park and was used in the construction of the Tamiami Trail. A short distance further along the park drive is the Barron Collier Memorial, which includes a small monument and lawn. The lawn area supports park special events, such as the annual Native American Heritage Festival. A prehistoric wooden canoe is housed in an open-air display case adjacent to the memorial. A replica of a 1830s era military blockhouse is located near the campground and serves as a small interpretive center.

**Support facilities.** Park residences and shop facilities are located just south of the entrance station.

The following is a listing of existing facilities at Collier-Seminole State Park (see Base Map).

**Boat Basin and Picnic Area**

Concession building  
Boat dock  
Boat ramp  
Paved parking (71 spaces)  
Small picnic shelters (4)  
Scattered tables and grills  
Playground equipment  
Canoe/kayak storage  
Interpretive signs (2)  
Restrooms

**Camping**

Standard campground (156 sites)  
Screened activity room  
Bathhouses (2)  
Primitive campsites (2 locations)  
Primitive Group Camp  
Privies (2)

**Trails and Interpretation**

Canoe trail (13 miles)  
Royal Palm Hammock Nature Trail (.5 mi)  
Boardwalk and overlook  
Hiking trail (6.5 miles)  
Shared-use trail (5.5 miles)  
Blockhouse Interpretive Center  
Paved parking (6 spaces)  
Bay City Walking Dredge  
Barron Collier Memorial  
Paved parking (4 spaces)  
Prehistoric canoe

**Support Facilities**

Entrance station  
Residences (2)  
Volunteer host sites (8)  
Two bay garage  
Three bay shop  
Pole barn  
Office/storage trailer  
Storage shed  
Flammable storage building

## CONCEPTUAL LAND USE PLAN

The following narrative represents the current conceptual land use proposal for this park. 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.

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

Existing recreational uses are appropriate and should be continued. Many of the facilities at Collier-Seminole were constructed many years ago and are showing their age. The current plan focuses primarily on replacing and/or upgrading and improving existing facilities as opposed to establishing new use areas. The following narrative discusses proposed improvements to interpretive, camping, trail and support facilities.

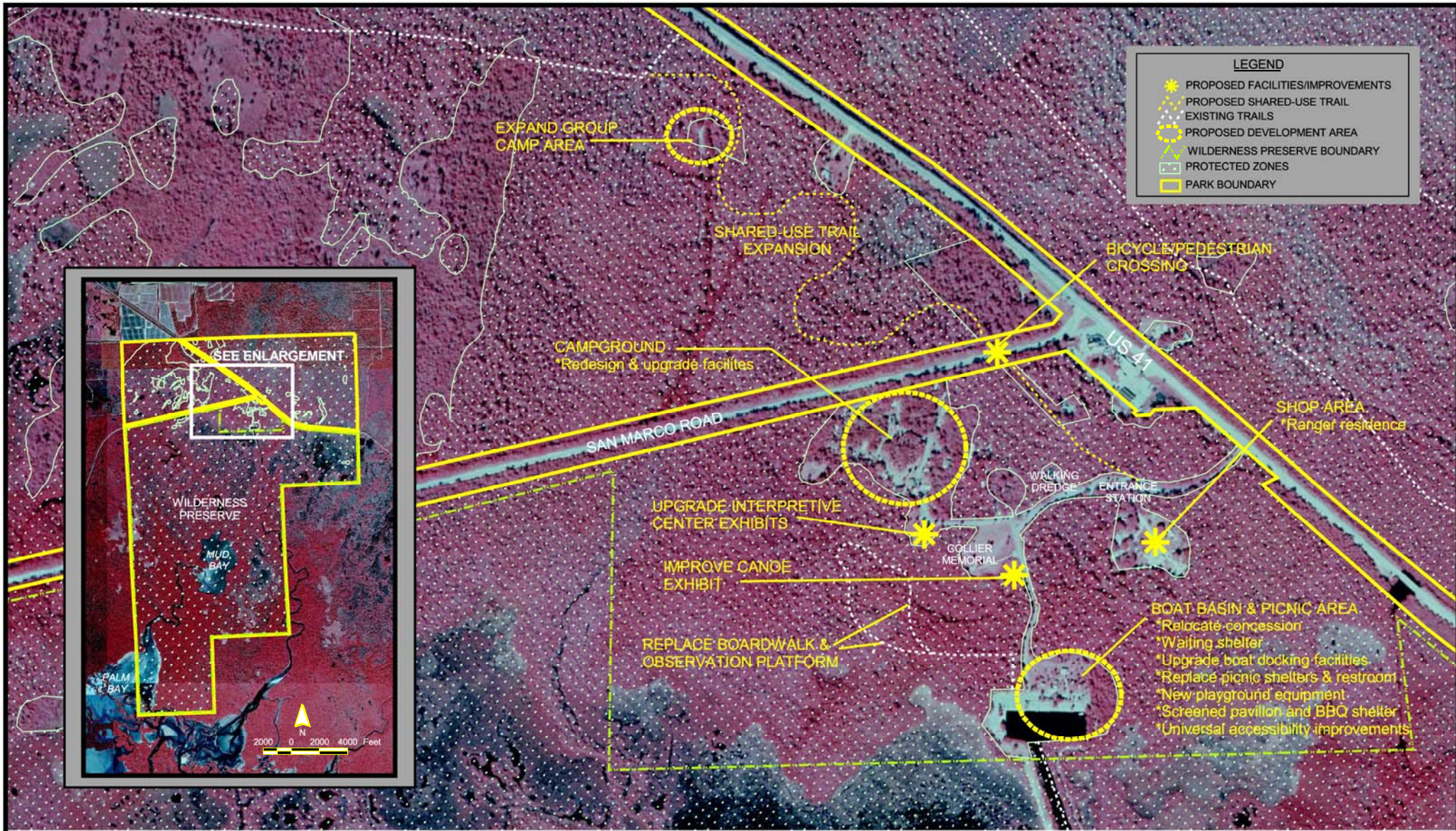
**Boat Basin and Picnic Area.** The existing location of the concession building encourages pedestrian traffic through the parking area, and obstructs views of the boat basin from the picnic area. It is recommended that this structure be removed and a new concession area be established on the eastern side of the boat basin in an existing disturbed area. Relocating the concession will also allow for an expansion of concession services in the future. A screened tour boat waiting shelter is recommended as part of a new concession facility. Interpretive signage should be incorporated into the design of this project to take advantage of the visitors concentrated in this area.

The existing boat dock and retaining wall need to be evaluated for improvements necessary to facilitate universal access, address existing maintenance needs, and allow for efficient organization of private boats that enter the basin. The conversion of the existing dock to a floating dock system is desirable to facilitate boat loading and unloading during different tidal stages.

The existing shelters, restrooms and playground in the picnic area are proposed for replacement.

A large screened pavilion with a barbecue pit is proposed in this area to accommodate group meetings and picnics during times when biting insects are a problem. The existing network of sidewalks should be expanded to provide universal access to all facilities and to





**LEGEND**

- PROPOSED FACILITIES/IMPROVEMENTS
- PROPOSED SHARED-USE TRAIL
- EXISTING TRAILS
- PROPOSED DEVELOPMENT AREA
- WILDERNESS PRESERVE BOUNDARY
- PROTECTED ZONES
- PARK BOUNDARY

**COLLIER-SEMINOLE  
STATE PARK**



PREPARED BY: EL  
DEPARTMENT OF ENVIRONMENTAL PROTECTION  
DIVISION OF RECREATION AND PARKS  
OFFICE OF PARK PLANNING

**CONCEPTUAL  
LAND USE PLAN**



link the picnic area to the new concession location.

**Camping.** A partial redesign and upgrade of the main campground is recommended to better accommodate larger recreation vehicles, provide buffering between the dump station, trash dumpsters, campsites, and facilities that meet current park service standards. A portion of sites may need to be removed or combined to create a limited number of larger sites and the space necessary to relocate or adequately buffer waste disposal facilities. Existing bathhouses are quite old and in need of renovation or replacement, and electrical service is recommended to be extended to all sites. Improvements should be made within the existing footprint of the campground, if possible. Additional clearing, if necessary, will be limited to surrounding disturbed areas and will not impact the adjacent tropical hammock.

The group camp is proposed for limited expansion as exotic vegetation is removed around the site.

**Trails and Interpretation.** To provide for an organized, comprehensive approach to interpretive programming it is recommended that a statement for interpretation be developed for the park. The statement will identify the primary thematic elements for interpretation and provide a foundation for proposed interpretive improvements.

The Royal Palm Hammock Nature Trail boardwalk was constructed in the 1980s. It is in poor condition and needs to be replaced. Interpretive signage is recommended along the trail to educate users about the unique tropical hammock community.

Recommended improvements for the shared-use trail include trail directional signage, interpretive signage aimed at educating users about the historic significance of Marco Road and an expansion of the trail to link with the main area of the park. The proposed expansion would extend south from the existing trail near its juncture with U. S. Highway 41, weaving through ruderal areas and tropical hammock towards San Marco Road. Recent acquisition of property near the intersection of San Marco Road and U. S. Highway 41 provides an opportunity to link these two areas. The design and layout of this trail connection will consider potential impacts to sensitive resources and may require the use of boardwalks to traverse wet areas. The Division will coordinate the placement of signage and pavement striping with the county to provide a safe crossing of San Marco Road.

There is the potential to provide a trail connection between the park and trails planned on the adjacent Picayune Strand State Forest. It is recommended that the Division of Recreation and Parks and the Division of Forestry coordinate trail planning efforts to provide this linkage. Additional coordination will be necessary with the Department of Transportation to provide a safe crossing of U. S. Highway 41 when the opportunity exists to connect the state park and state forest trails.

Collier County and Marco Island are also interested in providing trail connections between population centers and existing conservation lands. County has expressed interest in Collier-Seminole State Park serving as an important destination and jumping off point within this trail network. While the Division supports local trail planning initiatives, specific proposals for trailheads and trail connections will need to be evaluated by staff to consider impacts to visitor circulation and access, park resources and operations before they are implemented at the park. The Division is committed to working with local governments, and trail user groups to develop a system of trails that encourages safe bicycle and pedestrian access to the state park and other conservation lands.

The existing exhibits in the park interpretive center have served an important role in

educating visitors about the natural and cultural resources of the park for over 30 years. It is recommended that the exhibits be replaced with ones that reflect modern standards of interpretation.

The wooden canoe is in a low-visibility location that is not conducive to interpretation. This artifact was recovered from a location off-site and moved to the park for display. A determination is needed whether to continue displaying it at the park or to search for a more appropriate setting. If it is to be maintained at the park, consideration should be given to relocating this artifact where visitors are more likely to see it, providing interpretive signage and replacing the display case. Possible locations include the interpretive center or the boat basin.

**Wilderness Preserve.** The wilderness preserve provides a unique opportunity for visitors to leave behind most traces of human activity and achieve a real feeling of isolation and solitude. High-speed boat traffic on the Blackwater River poses a potential threat to not only this experience but also visitor health and safety and sensitive resources. It is also recognized that boating access to park waters will only increase in the future. In order to address these concerns and preserve the integrity of the visitor experience in this remote area of the park, it is recommended that the stretch of Blackwater River within the park boundary be designated a minimum wake zone. Signage will be posted within the boat basin and the point where the river leaves the park to educate boaters to the change in boat speed.

### **Support Facilities**

The park needs an additional ranger residence to meet staff housing needs. This facility will be located within the existing shop and residence compound.

The spray field for the park sewage treatment plant does not function properly during the wet season when much of the park is flooded. The capacity of the existing system is also strained to handle the loads generated by peak season use. Unfortunately, the extensive presence of wetlands at the park does not provide another suitable location for the spray field a practical distance from the plant. Ideally, park facilities should be connected to central sewer lines when they are extended near the park. Currently, the nearest sewer lines are located over two miles to the north.

### **Facilities Development**

Preliminary cost estimates for the following list of proposed facilities are provided in Addendum 6 and 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.

#### **Boat Basin and Picnic Area**

- Relocate concession
- Tour boat waiting shelter
- Boat dock improvements
- Replace picnic shelters (4)
- Replace picnic restroom
- Replace playground equipment
- Screened pavilion and BBQ pit
- Universally accessible walkways

#### **Camping**

- Redesign/upgrade main campground

#### **Trails and Interpretation**

- Royal Palm Hammock Nature Trail
- Replace boardwalk
- Interpretive signage
- Shared-use trail expansion
- Link to main use area
- Trail directional signage
- Interpretive signage
- Pedestrian crossing
- Upgrade interpretive center exhibits
- Canoe exhibit improvements

#### **Wilderness Preserve**

- Post minimum wake zone signage

**Support Facilities**

Ranger residence

**Existing Use and Optimum Carrying Capacity**

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 optimum 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 carrying capacity as shown in Table 1.

**Table 1-- Existing Use And Optimum Carrying Capacity**

<b>Activity/Facility</b>	<b>Existing Capacity</b>		<b>Proposed Additional Capacity</b>		<b>Estimated Optimum Capacity</b>	
	<b>One Time</b>	<b>Daily</b>	<b>One Time</b>	<b>Daily</b>	<b>One Time</b>	<b>Daily</b>
<b>Trails</b>						
Shared Use	55	220	10	40	65	260
Nature	70	140			70	140
<b>Picnicking</b>	36	72	40	80	76	152
<b>Camping</b>						
Developed	624	624			624	624
Group Camp	30	30	20	20	50	50
Primitive	20	20			20	20
<b>Interpretive Center</b>	10	40			10	40
<b>Tour Boat</b>	40	160			40	160
<b>*Wilderness Preserve</b>						
	90	90			90	90
<b>TOTAL</b>	<b>925</b>	<b>1,396</b>	<b>70</b>	<b>140</b>	<b>995</b>	<b>1,536</b>

**\* Wilderness Preserve capacity based on canoe/kayak access of 30 boats per day.**

**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 map is solely for planning purposes and

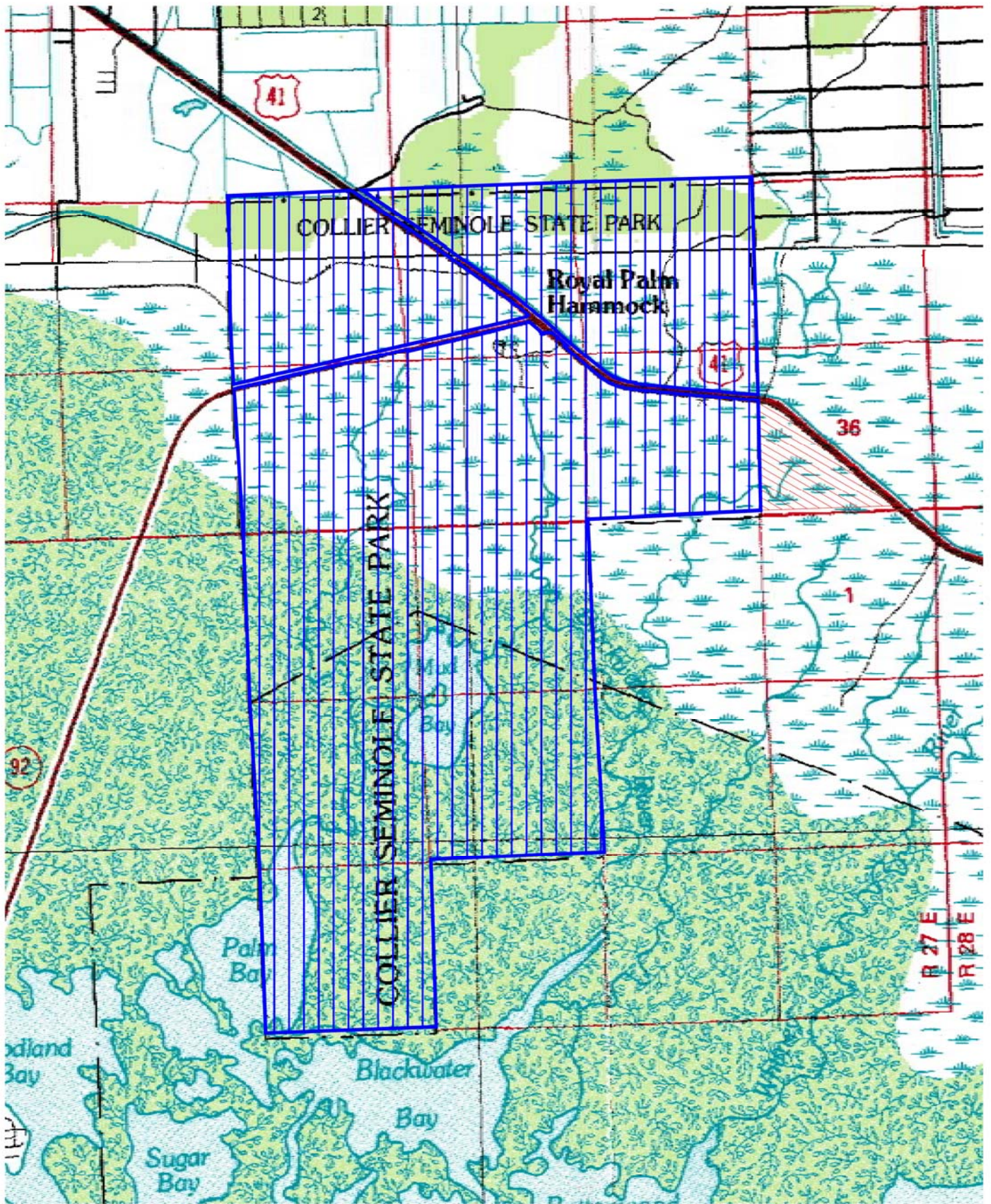


not for regulatory purposes. A property's identification on the optimum boundary map is not for use by any party or other government body to reduce or restrict the lawful right of private landowners. Identification on the map does not empower or require any government entity to impose additional or more 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 optimum boundary map reflects 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.

Acquisition of the identified parcel would assist with management control of airboat access into park waters. At this time, no lands are considered surplus to the needs of the park.





**COLLIER-SEMINOLE  
STATE PARK**

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

**OPTIMUM BOUNDARY  
MAP**



**Addendum 1—Acquisition History and Advisory Group Documentation**

**Collier-Seminole State Park  
Acquisition History**

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**Purpose and Sequence of Acquisition**

The State of Florida acquired Collier-Seminole State Park to develop, operate and maintain the property for outdoor recreation, park, conservation, historic, and related purposes.

On March 8, 1944, the State of Florida, obtained title to the property constituting the initial area of Collier-Seminole State Park. Lee County Land Company donated the property to the state. Since this initial donation, several additional parcels under a perpetual lease and the P2000/A and I land acquisition program have been acquired.

On January 23, 1967, the Division of Recreation and Parks (Division), transferred and conveyed its title to Collier-Seminole State Park to the Board of Trustees of the Internal Improvement Trust Fund (Trustees). On January 23, 1968, the Trustees conveyed its management authority of Collier-Seminole State Park to the Division under Lease No. 2324. The lease is for a period of ninety-nine (99) years and will expire on January 23, 2067. In 1988, the Division of State Lands, Bureau of Uplands Management, assigned a new lease number, Lease No. 3612, to Collier-Seminole State Park without changing any of the terms and conditions of Lease No. 2324.

According to this lease, the Division manages the property 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.

**Title Interest**

The Trustees hold fee simple title to Collier-Seminole State Park.

**Special Conditions on Use**

Collier-Seminole 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, storm-water management projects, and linear facilities and sustainable agriculture and forestry (other than those forest management activities specifically identified in the unit management plan of this park) are not consistent with the management purposes of the park.

**Outstanding Reservations**

Following is a listing of outstanding rights, reservations, and encumbrances that apply to Collier-Seminole State Park

<b>Instrument:</b>	Easement
<b>Instrument holder:</b>	Division
<b>Beginning date:</b>	November 24, 1975
<b>Ending date:</b>	Coterminous with Lease No. 3612
<b>Outstanding rights, uses, etc.:</b>	The easement allows Lee County Electric Cooperative, Inc. to construct, install, operate and maintain a single-phase distribution system for the transmission and distribution of electricity.

<b>Instrument:</b>	Easement
<b>Instrument holder:</b>	Division
<b>Beginning date:</b>	January 28, 1974
<b>Ending date:</b>	Coterminous with Lease No. 3612
<b>Outstanding rights, uses, etc.:</b>	The easement grants a road right-of- way to Seminole County across a specified portion of the subject property.

**Collier-Seminole State Park  
Acquisition History**

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<b>Instrument:</b>	Easement
<b>Instrument holder:</b>	FBPHM
<b>Beginning date:</b>	March 29, 1954
<b>Ending date:</b>	when the state ceases to own the subject property
<b>Outstanding rights, uses, etc.:</b>	The easement allows Lee County Electric Cooperative, Inc. to construct, install, operate and maintain a line or lines for the transmission of electrical power.
<b>Instrument:</b>	Warranty Deed
<b>Instrument holder:</b>	Lee County
<b>Beginning date:</b>	March 8, 1944
<b>Ending date:</b>	Forever
<b>Outstanding rights, uses, etc.:</b>	The property shall be used only as part of Collier-Seminole State Park and maintained wholly by state of Florida.

**Collier-Seminole State Park  
Advisory Group List**

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The Honorable James N. Coletta, Jr., Chair  
Collier County Board of County  
Commissioners  
3301 East Tamiami Trail  
Naples, Florida 34112

Joe Howard, Park Manager  
Collier-Seminole State Park  
20200 East Tamiami Trail  
Naples, Florida 34114

Mike Ramsey, Chair  
Collier Soil and Water  
Conservation District  
14700 Immokalee Road  
Naples, Florida 34120

Ms. Sonja Durrwacher, Manager  
Picayune Strand State Forest  
710 Randall Boulevard  
Naples, Florida 34120

Mr. Steve Coughlin, Regional Biologist  
Florida Fish and Wildlife  
Conservation Commission  
8535 Northlake Boulevard  
West Palm Beach, Florida 33412

Lane Hamilton, Refuge Manager  
Florida Panther and Ten Thousand Islands  
National Wildlife Refuges  
3860 Tollgate Boulevard, Suite 300  
Naples, Florida 34114

Mr. Gary Lytton, Environmental  
Administrator  
Rookery Bay National Estuarine Research  
Reserve  
Division of Marine Resources  
300 Tower Road  
Naples, Florida 34113-8059

John Donahue, Superintendent  
Big Cypress National Preserve  
HCR 61 Box 110  
Ochopee, Florida 34141

Candice Tinkler, NW District Supervisor  
Everglades National Park  
P.O. Box 120  
Everglades City, Florida 34139

Ms. Sandi Trapasso, Director  
Marco Island and The Everglades  
Convention and Visitors Bureau  
1102 North Collier Boulevard  
Marco Island, Florida 34145

Bobbie Lee Hasty, Chair  
Sierra Club, Calusa Group  
Post Office Box 3276  
Bonita Springs, FL 34133

Ted Below, President  
Collier County Audubon Society  
3697 North Road  
Naples, Florida 34104

Don Bottomley, Chapter Chair  
Florida Trail Association  
35250 Southwest 177 Court  
Homestead, Florida 33034

Kristen Smith, President  
Earth Outfitters  
1968 Tamiami Trail  
Naples, Florida 34102

Brian Zepeda, Operations Manager  
Ah-tah-Thi-Ki Museum  
HC-61, Box 21-A  
West Boundary Road  
Fort Lauderdale FL 33440

Mr. Bobby Clay  
Post Office Box 122  
Marco Island, Florida 34146

Charles Hannsz, President  
Friends of Collier-Seminole State Park  
Post Office Box 745  
Richmond, Missouri 64085

Collier-Seminole State Park  
Advisory Group Staff Report

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The Advisory Group appointed to review the proposed land management plan for Collier-Seminole State Park met at the Rookery Bay National Estuarine Research Reserve on May 2, 2003. Judy Haner represented Gary Lytton. Chip Billbrey, Mike Ramsey, Sandi Trapasso, Bobbie Lee Hasty, Kristen Smith, Bobby Clay and Charles Hannsz did not attend the meeting. All other appointed Advisory Group members or their representatives were present. The meeting was also attended by Marla Ramsey (Collier County Parks and Recreation), Tessie Sillery (Collier County Alternative Transportation Modes), and Beth Kelso (FTA). Attending staff were Robert Wilhelm, Ken Alvarez, Joe Howard, and Michael Kinnison.

Mr. Kinnison began the meeting by explaining the purpose of the advisory group and reviewing the meeting agenda and format. He also provided a brief overview of the Division's planning process and summarized public comments received during the previous evening's public workshop. He then asked each member of the advisory group to express his or her comments on the plan. Additional comments were provided by other attendees and are included in the summary below.

### Summary Of Advisory Group Comments

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**Commissioner Coletta** stated that he was very interested in maintaining public access for a variety of different interests and uses, and cited area beaches as an example of diminishing public access. He acknowledged the need to balance access with resource protection and encouraged the park to consider expanding recreational uses.

**Marla Ramsey** discussed the importance of forming partnerships and the untapped opportunities that exist to promote the park locally. She indicated that the park's campground was one of only a few in Collier County and supported its enhancement and expansion, if possible. She also would like to see more promotion of water access opportunities at the park. **Mr. Wilhelm** discussed park visitation patterns, which are seasonal and on the low side compared to other parks in the District. **Commissioner Coletta** asked why visitation has not kept pace with population growth. **Mr. Howard** discussed the need to let potential visitors know about all the opportunities at the park, and the challenge of bringing local residents back for repeat visits. **Commissioner Coletta** suggested working with the County to be included in promotional brochures and the local government channel. **Beth Kelso** suggested networking with the Visitor and Convention Bureau. **Ms. Ramsey** indicated that Marco Island residents were very interested in establishing a bike trail along CR 92 that would connect with SR 41 that could provide a connection to the park. **Mr. Kinnison** discussed plans for expanding the park's existing bike trail with a crossing of CR 92 and encouraged coordinating local plans with the park so that operational issues can be properly addressed with regard to trail connections. A discussion followed focusing on the idea of Collier-Seminole as a jumping off point for trails to Everglades City and other public lands. **Sonja Durrwacher** stated that the U.S. Army Corps of Engineers were planning to put in a berm parallel to Miller Boulevard that could provide a dual function as a trail connection to Picayune Strand State Forest.

**Candice Tinkler** described the park as a local jewel that, while not currently well linked to other public lands and their visitors, has great potential for increased interpretation and recreation opportunities. She discussed the possibility of a backcountry water-based connection between the park and the Marco Island area. She stated that visitors to Everglades National Park are always looking for additional hiking and biking experiences that Collier-Seminole could provide. She agreed with earlier comments regarding the need for improved local promotion. She discussed the staffing challenges all land managers face and the potential for personnel from different parks to support each other. **Layne Hamilton** recommended coordinating education programs.

**John Donahue** expressed approval of the plan and its content. He echoed previous comments regarding public access, resource protection and the need for maintaining and upgrading facilities.

He emphasized the importance of a regional approach to recreation planning and resource management that involved a coordinated effort between different land managers. He discussed how individual parks cannot provide all possible recreational opportunities and certain uses are more appropriate than others at any given location. While he indicated that this type of coordination occurred on an informal basis, he felt it important to acknowledge the need to bolster within the plan. He discussed the concept of life cycle costing of park facilities, stressed the need to embrace the concept of sustainability in all park activities, and the importance of letting the public know of these efforts. He touched on the tremendous opportunities for partnering with other agencies on the use of prescribed fire, historic preservation, and environmental leadership and the tendency of large agencies to overlook smaller parks when allocating resources. He suggested that with enough resources Collier-Seminole could be a model for comprehensively cataloguing a park's flora and fauna. He explained that a multi-agency visitor center was being planned on SR 41 and invited Collier-Seminole State Park to participate as a means to encourage visitation. He talked about the Everglades heritage trail concept that involves a scenic driving tour with kiosks at key locations and the potential to work with the county to expand stops along the trail. **Mr. Kinnison** and **Mr. Wilhelm** indicated that kiosks were currently in place at Collier-Seminole and Fakahatchee Strand Preserve.

**Judy Haner** stated that the new Rookery Bay nature center would provide an opportunity to showcase all agencies and the lands they manage. She expressed support for Mr. Donahue's call for more coordinated planning. She encouraged the park to be innovative and a leader in environmental design when building facilities. She discussed how changing land uses were impacting the area's watershed and indicated that the Reserve was advocating for more increased environmental monitoring. She discussed the need for a coordinated involvement of all land managers in monitoring land use changes and regional restoration projects, such as the Everglades, and warned of current plans that call for increasing hydroperiods with culverts along 41 that could effect park hydrology. She also expressed interest in coordinating efforts to protect and manage cultural resources and explained the Reserve's plans for acquiring new land. She explained that this area contained an old railbed that would be researched for its cultural significance and recreation opportunities. **Mr. Alvarez** supported the concept of increased interagency coordination, particularly with regard to hydrology and burning. **Ms. Haner** also suggested that land managers were more likely to be able to enlist the assistance of the interagency fire team if managers coordinated their burning needs.

**Brian Zepeda** asked how increasing access and visitation may impact park resources. **Commissioner Coletta** responded that most visitors stay within the easily accessible areas at the park and that it is important that the resource be made available to everybody. **Mr. Alvarez** added that existing levels of access have a very low impact on resources, and that exotics, hydrological alteration and past fire suppression are of more concern. **Ms. Kelso** stated that all points in the park do not have to be made accessible in the same way. **Ms. Hamilton** responded that agencies are obligated to comply with the requirements of the Americans with Disabilities Act (ADA). **Mr. Kinnison** responded that the Division of Recreation and Parks (DRP) constructs new facilities to meet ADA standards. He added that regulations regarding the provision of universal access for outdoor recreation facilities have not been finalized so agencies are not clear on exactly what is required. **Ms. Haner** responded that cost is an important factor in decisions to construct facilities that are universally accessible. **Mr. Zepeda** stated that visitors to the museum were often interested in other sites to visit. He asked if the park could handle large groups of children. **Mr. Howard** explained that the park's tour boat can accommodate 30 at one time, every 1.5 hours during the season. He indicated that coordination would be needed with the park concessionaire to handle large groups. **Mr. Zepeda** also offered the assistance of the museum's archaeological expertise.

**Sonja Durwaccher** discussed the difficulty in conducting annual burns as suggested in the plan.



She supported the goal of summer burning but recommended burning whenever conditions permit since it is hard to control smoke in the summer. She raised the issue of sharing burn equipment between agencies and discussed the problems staff turnover has presented to the Division of Forestry's burn program at Picayune Strand State Forest. **Ms. Haner** indicated that the Reserve would support the sharing of agency resources to improve burning opportunities. **Ms. Durwachter** explained that the U.S. Army Corps is the lead agency on restoration within the state forest. She supported earlier calls for interagency involvement in Corps restoration plans and verified that current plans appear to reduce water flow to Collier-Seminole. She added that the State Forest contains four active red-cockaded woodpecker clusters and that the birds may utilize lands within Collier-Seminole in the future. **Mr. Alvarez** responded that most burnable areas have fine fuels and are possible to burn annually. He indicated that moisture is more of a factor than fuel loads and stated that burns are conducted whenever the opportunity presents itself.

**Tess Sillery** stated that she was interested in working with the park in terms of trail planning. She felt that trail linkages with the park would help promote the park locally and increase visitation. **Commissioner Coleta** added that local speakers bureaus, the Tourism Development Council and a friends of the park volunteer group could also help with local promotion efforts. **Mr. Kinnison** explained that the park currently has a Citizen Support Organization.

**Layne Hamilton** stated that the current draft plan was well written and informative. She discussed plans for trail improvements and an observation tower at the National Wildlife Refuge and the challenges of finding sufficient uplands for parking. She expressed a need for partnerships due to limited staffing at the Refuge, and echoed the concept presented by others about coordinating planning efforts. **Mr. Wilhlem** discussed the Division's use of outsourcing to bolster staff resources. **Ms. Haner** responded that outsourcing does not always provide a better or cheaper service. **Ms. Tinkler** asked if a fee was required on the park's hiking trail. **Mr. Howard** explained that visitors are expected to check in and pay at the entrance station to gain access to park trails. He added that compliance is better on the hiking trail since access is controlled by a gate.

**Roger Rose** stated that the Florida Trail Association (FTA) is involved with building and maintaining over 1,200 miles of trails statewide and that the local chapter is relatively new, with a focus on developing and maintaining Collier County trails. He discussed FTA involvement with the park's hiking trail and the recent construction of a trail bridge. He presented a long-term vision of connecting trails from Collier-Seminole State Park through the Picayune Strand, Fakahatchee Strand and on to Big Cypress and the Florida National Scenic Trail. He added that volunteers also assist with removing exotic plants along the park's hiking trail corridor. Mr. Rose indicated that the local group is helping promote the park through media interviews, and FTA literature. He emphasized that the park needs volunteer support and suggested that FTA volunteers may be able to assist other land managers with trail projects.

**Beth Kelso** was pleased to see such a high level of interagency cooperation. She encouraged outreach to non-traditional groups, such as new moms, schools and gated communities. She emphasized the importance of linking promotional efforts with the travel industry and using special events to bring people to the park.

**Ted Below** stated that he has reviewed many different management plans and generally approved of this one. He was concerned about human impacts to park resources and wished that this issue was more of a concern for the group. He recommended banning motorized boats, particularly personal watercraft, from park waters and indicated he had seen personal watercraft in the more remote areas of the park. **Mr. Alvarez** responded that while personal watercraft are a problem in state parks their exclusion is difficult to enforce. **Mr. Howard** added that current operation of

personal watercraft within the park is sporadic. **Ms. Haner** stated that local eco-tour operators are now providing personal watercraft tours to the 10,000 Islands area. **Mr. Alvarez** emphasized that any regulation of motorized boating would require inter-agency cooperation to enforce and implement effectively. **Commissioner Coleta** emphasized that limiting watercraft would need to be supported by evidence that they were having undesirable impacts. He added that unwanted public exposure on the issue could generate additional boating traffic in the area. **Ms. Haner** discussed the Reserve's experience with boats and stated that additional study was needed to quantify impacts from personal watercraft. **Ms. Tinkler** added that agencies needed to consider where other opportunities were available before prohibiting a user activity. She pointed out that personal watercraft present public safety issues in addition to environmental ones. **Mr. Donahue** added that the noise from personal watercraft affects the experience of other visitors. **Commissioner Coleta** suggested that it might be possible to provide designated routes for watercraft instead of prohibiting their use. **Mr. Below** also recommended removing reference to annual burning in the plan goals and objectives. He pointed out that the plan made no reference to follow up treatment of exotic plants and emphasized that stopping the seed source was critical to successfully removing invasive exotics. **Mr. Alvarez** clarified that while it may not be clearly stated in the plan, staff understand the importance of follow up treatment when removing exotic plants.

**Joe Howard** discussed the challenge of enforcing a regulation that would prohibit only one type of watercraft. He expressed appreciation for all the agency and public support provided to the park and specifically mentioned DOF assistance with burning.

**Ms. Tinkler** asked if the park's Statement for Interpretation had been completed. **Mr. Kinnison** indicated that he did not believe it was complete.

The meeting was then adjourned.

It should be noted that on more than one occasion, at both the advisory group and previous evening's public workshop, complementary statements were made regarding the cooperative attitude and management performance of Mr. Howard and his staff at Collier-Seminole State Park.

### **Staff Recommendation**

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Staff recommends approval of the proposed management plan for Collier-Seminole State Park as presented with the following recommendations.

#### **Park Promotion**

- Promoting state parks is largely the responsibility of the Division's marketing section. However, it is acknowledged that much can be done to help promote the park at the local level. An objective will be added to the plan that acknowledges the importance of networking with local institutions in actively promoting Collier-Seminole State Park throughout Collier County.

#### **Coordinated Planning**

- The Division agrees that coordinating planning efforts and monitoring of land use changes would benefit all area land managers. Language will be added to the plan that indicates Division support for inter-agency cooperation in resource management, recreation planning and environmental monitoring.

#### **Personal Watercraft**

- Staff do not feel that the current level of use of personal watercraft warrants prohibiting this type of activity. However, it is acknowledged that boating access to park waters will only increase in the future and that high speed motorized boat traffic is not appropriate in the

park's Wilderness Preserve. Language will be added to the plan that recommends designating the stretch of Blackwater River within the park boundary as a no wake zone to protect public health and safety, marine resources and maintain a quality visitor experience for other users.

**Local Trail Planning Efforts**

- The Division supports local greenways planning initiatives. Language will be added to the plan that discusses Collier County trail planning efforts, the need for coordination with public land managing agencies and the potential to link with Collier-Seminole State Park.

**Addendum 2—References Cited**

## Collier-Seminole State Park

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### **Addendum 3—Soils Description**

**Collier-Seminole State Park**  
**Soil Descriptions**

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**(2) Holopaw fine sand, limestone substratum.** This nearly level, poorly drained soil is in sloughs and broad, poorly defined drainageways. Individual areas are elongated and irregular in shape, and they range from 20 to 300 acres in size. The slope is 0 to 2 percent.

Typically, the surface layer is dark gray fine sand about 5 inches thick. The subsurface layer is fine sand to a depth of about 57 inches. The upper part of the subsurface layer is white, and the lower part is light gray and dark grayish brown. The subsoil extends to a depth of about 62 inches. It is dark grayish brown fine sandy loam. Limestone bedrock is at a depth of about 62 inches.

In 95 percent of the areas mapped as Holopaw fine sand, limestone substratum, Holopaw and similar soils make up 78 to 97 percent of the map unit. In the remaining areas, the Holopaw soil makes up either a higher or lower percentage of the mapped areas. The characteristics of Malabar, Pineda, and Riviera soils that have a limestone substratum are similar to those of the Holopaw soil.

The dissimilar soils in this map unit are small areas of Basinger, Boca, and Chobee soils in landscape positions similar to those of the Holopaw soil. These soils make up about 3 to 22 percent of the unit.

The permeability of this soil is moderate to moderately slow. The available water capacity is low. Under natural conditions, the seasonal high water table is within a depth of 12 inches for 3 to 6 months during most years. During the other months, the water table is below a depth of 12 inches, and it recedes to a depth of more than 40 inches during extended dry periods. During periods of high rainfall, the soil is covered by shallow, slowly moving water for about 7 days.

The natural vegetation consists of scattered areas of South Florida slash pine, cypress, cabbage palm, saw palmetto, waxmyrtle, sand cordgrass, chalky bluestem, and gulf muhly.

**(7) Immokalee fine sand.** This nearly level, poorly drained soil is on flatwoods. Individual areas are elongated and irregular in shape, and they range from 10 to 500 acres in size. The slope is 0 to 2 percent.

Typically, the surface layer is black fine sand about 6 inches thick. The subsurface layer is light gray fine sand to a depth of about 35 inches. The subsoil is fine sand to a depth of about 58 inches. The upper part of the subsoil is black, the next part is dark reddish brown, and the lower part is dark brown. The substratum is pale brown fine sand to a depth of about 80 inches.

In 95 percent of the areas mapped as Immokalee fine sand, Immokalee and similar soils make up 89 to 99 percent of the map unit. In the remaining areas, the Immokalee soil makes up either a higher or lower percentage of the mapped areas. The characteristics of Myakka and Oldsmar soils are similar to those of the Immokalee soil.

The dissimilar soils in this map unit are small areas of Basinger and Holopaw soils in sloughs. These soils make up about 1 to 11 percent of the unit.

The permeability of this soil is moderate. The available water capacity is low. Under natural conditions, the seasonal high water table is at a depth of 6 to 18 inches for 1 to 6 months during most years. During the other months, the water table is below a depth of 18 inches, and it recedes to a depth of more than 40 inches during extended dry periods.

The natural vegetation consists of South Florida slash pine, saw palmetto, waxmyrtle, chalky bluestem, creeping bluestem, and pineland threeawn.

**(10) Oldsmar fine sand, limestone substratum.** This nearly level, poorly drained soil is on flatwoods. Individual areas are elongated and irregular in shape, and they range from 10 to 300 acres in size. The slope is 0 to 2 percent.

Typically, the surface layer is dark grayish brown fine sand about 4 inches thick. The subsurface

**Collier-Seminole State Park**  
**Soil Descriptions**

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layer is fine sand to a depth of about 35 inches. The upper part of the subsurface layer is light gray, and the lower part is light brownish gray. The subsoil extends to a depth of about 60 inches. The upper part of the subsoil is black fine sand, the next part is very dark grayish brown fine sand, and the lower part is dark grayish brown fine sandy loam. Limestone bedrock is at a depth of about 60 inches.

In 95 percent of the areas mapped as Oldsmar fine sand, limestone substratum, Oldsmar and similar soils make up 85 to 98 percent of the map unit. In the remaining areas, the Oldsmar soil makes up either a higher or lower percentage of the mapped areas. The characteristics of Immokalee and Wabasso soils are similar to those of the Oldsmar soil.

The dissimilar soils in this map unit are small areas of Malabar, Pineda, and Riviera soils in sloughs. These soils make up about 0 to 15 percent of the map unit.

The permeability of this soil is slow. The available water capacity is low. Under natural conditions, the seasonal high water table is between a depth of 6 to 18 inches for 1 to 6 months during most years. During the other months, the water table is below a depth of 18 inches, and it recedes to a depth of more than 40 inches during extended dry periods.

The natural vegetation consists mostly of cabbage palm, South Florida slash pine, saw palmetto, waxmyrtle, and chalky bluestem.

**(17) Basinger fine sand.** This nearly level, poorly drained soil is in sloughs and poorly defined drainageways. Individual areas are elongated and irregular in shape, and they range from 20 to 800 acres in size. The slope is 0 to 2 percent.

Typically, the surface layer is grayish brown fine sand about 3 inches thick. The subsurface layer is light gray fine sand to a depth of about 25 inches. The subsoil is brown fine sand to a depth of about 44 inches. The substratum is brown fine sand to a depth of about 80 inches.

In 95 percent of the areas mapped as Basinger fine sand, Basinger and similar soils make up 83 to 98 percent of the map unit. In the remaining areas, the Basinger soil makes up either a higher or lower percentage of the mapped areas. The characteristics of Malabar soils are similar to those of the Basinger soil.

The dissimilar soils in this map unit are small areas of Immokalee soils on the flatwoods. These soils make up 17 percent or less of the map unit.

The permeability of this soil is rapid. The available water capacity is low. Under natural conditions, the seasonal high water table is within a depth of 12 inches for 3 to 6 months during most years. During the other months, the water table is below a depth of 12 inches, and it recedes to a depth of more than 40 inches during extended dry periods. During periods of high rainfall, the soil is covered by shallow, slowly moving water for about 7 days.

The natural vegetation consists of scattered areas of South Florida slash pine, cypress, cabbage palm, saw palmetto, waxmyrtle, blue maidencane, sand cordgrass, pineland threeawn, chalky bluestem, and St. Johnswort.

**(20) Ft. Drum and Malabar, high, fine sands.** These nearly level, poorly drained soils are on ridges along sloughs. Individual areas are elongated and irregular in shape, and they range from 10 to 200 acres in size. The slope is 0 to 2 percent.

Typically, the Ft. Drum soil has a surface layer of very dark grayish brown fine sand about 5 inches thick. The subsoil is fine sand to a depth of about 20 inches. The upper part of the subsoil is light brownish gray, and lower part is light gray. The substratum is fine sand to a depth of about 80 inches. The upper part of the substratum is brownish yellow, the next part is white, and the lower



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part is brown.

Typically, the Malabar, high, soil has a surface layer of dark gray fine sand about 2 inches thick. The subsurface layer is light brownish gray fine sand to a depth of about 15 inches. The subsoil extends to a depth of about 72 inches. The upper part of the subsoil is brownish yellow and yellow fine sand, the next part is very pale brown and light gray fine sand, and the lower part is grayish brown, mottled sandy clay loam. The substratum is light gray fine sand to a depth of about 80 inches.

Mapped areas consist entirely of the Ft. Drum soil, entirely of the Malabar soil, or any combination of the two soils. The two soils were not separated in mapping because of similar management needs and soil characteristics.

The dissimilar soils in this map unit are small areas of Basinger, Holopaw, and Pineda soils in sloughs. These soils make up about 0 to 18 percent of the unit.

The permeability in the Ft. Drum soil is rapid. The permeability in the Malabar soil is slow or very slow. The available water capacity of both soils is low. Under natural conditions, the seasonal high water table is within a depth of 6 to 18 inches for 1 to 6 months during most years. During the other months, the water table is below a depth of 18 inches, and it recedes to a depth of more than 40 inches during extended dry periods.

The natural vegetation consists mostly of South Florida slash pine, saw palmetto, live oak, cabbage palm, waxmyrtle, chalky bluestem, creeping bluestem, low panicum, and pineland threeawn.

**(23) Holopaw and Okeelanta soils, depressional.** These level, very poorly drained soils are in depressions and marshes. Individual areas are circular or elongated in shape, and they range from 5 to 200 acres in size. The slope is 0 to 1 percent.

Typically, the Holopaw soil has a surface layer of dark gray fine sand about 5 inches thick. The subsurface layer is fine sand to a depth of about 52 inches. The upper part of the subsurface layer is light gray, and the lower part is light brownish gray. The subsoil extends to a depth of about 62 inches. The upper part of the subsoil is dark grayish brown fine sand, and lower part is dark grayish brown fine sandy loam. The substratum is gray loamy fine sand to a depth of about 80 inches.

Typically, the Okeelanta soil has surface soil of black and dark reddish brown muck about 20 inches thick. The substratum extends to a depth of about 80 inches. The upper part of the substratum is dark grayish brown fine sand, and the lower part is light brownish gray loamy fine sand.

Mapped areas can consist entirely of the Holopaw soil, entirely of the Okeelanta soil, or any combination of the two soils. The two soils were not separated in mapping because of similar management needs resulting from the ponding. The characteristics of Riviera soils are similar to those of the major soils.

The dissimilar soils in this map unit are small areas of Basinger and Gator soils in similar landscape positions. These soils make up about 10 percent or less of the unit.

The permeability in the Holopaw soil is moderate to moderately slow, and the available water capacity is low. The permeability in the Okeelanta soil is slow or very slow, and the available water capacity is high. Under natural condition, These soils are ponded for 6 months or more each year. During the other months, the water table is within a depth of 12 inches, and it recedes to a depth of 12 to 40 inches during extended dry periods.

These soils are used for natural wetlands. The natural vegetation consists of St. Johnswort, maidencane, rushes, primrose willow, fireflags, pickerelweed, sawgrass, Florida willow, and a few cypress trees.

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**(25) Boca, Riviera, limestone substratum, and Copeland fine sands, depressional.** These level, very poorly drained soils are in depressions, cypress swamps, and marshes. Individual areas are elongated and irregular in shape, and they range from 100 to 3,000 acres in size. The slope is 0 to 1 percent.

Typically, the Boca soil has a surface layer of very dark gray fine sand about 4 inches thick. The subsurface layer is fine sand to a depth of about 26 inches. The upper part of the subsurface layer is light gray, and lower part is brown. The subsoil is dark grayish brown fine sandy loam to a depth of about 30 inches. Limestone bedrock is at a depth of about 30 inches.

Typically, the Riviera soil has a surface layer of gray fine sand about 6 inches thick. The subsurface layer is fine sand to a depth of about 32 inches. The upper part of the subsurface layer is light brownish gray, and the lower part is light gray. The subsoil is sandy clay loam to a depth of about 54 inches. The upper part of the subsoil is grayish brown, and the lower part is dark gray. Limestone bedrock is at a depth of about 54 inches.

Typically, the Copeland soil has a surface layer of black fine sand about 6 inches thick. The subsurface layer is fine sand to a depth of about 18 inches. The upper part of the subsurface layer is very dark grayish brown, and the lower part is dark gray. The subsoil is light gray, mottled sandy clay loam to a depth of about 24 inches. The substratum is light gray marl to a depth of about 30 inches. Limestone bedrock is at a depth of about 30 inches.

Mapped areas can consist entirely of the Boca soil, entirely of the Riviera soil, entirely of the Copeland soil, or any combination of the three soils. These three soils were not separated in mapping because of similar management needs resulting from the ponding. The characteristics of Holopaw, Malabar, and Pineda soils are similar to those of the major soils.

The dissimilar soils in this map unit are small areas of Basinger, Dania, Gator, and Hallandale soils in similar landscape positions. These soils make up about 20 percent or less of the map unit.

The permeability in the Boca soil is moderate, and the available water capacity is very low. The permeability in the Riviera soil is moderately rapid to moderately slow, and the available water capacity is low. The permeability in the Copeland soil is moderately slow, and the available water capacity is moderate. Under natural conditions, these soils are ponded for 6 months or more each year. During the other months, the water table is within a depth of 12 inches, and it recedes to a depth of 12 to 40 inches during extended dry periods.

The natural vegetation consists that found in natural wetlands: baldcypress, pickerelweed, rushes, fireflag, sawgrass, and Florida willow.

**(27) Holopaw fine sand.** This nearly level, poorly drained soil is in sloughs and poorly defined drainageways. Individual areas are elongated and irregular in shape, and they range from 10 to 400 acres in size. The slope is 0 to 2 percent.

Typically, the surface layer is dark gray fine sand about 5 inches thick. The subsurface layer is fine sand to a depth of about 52 inches. The upper part of the subsurface layer is light gray, and the lower part is light brownish gray. The subsoil extends to a depth of about 62 inches. The upper part of the subsoil is dark grayish brown fine sand, and the lower part is dark grayish brown fine sandy loam. The substratum is gray loamy fine sand to a depth of about 80 inches.

In 90 percent of the areas mapped as Holopaw fine sand, Holopaw and similar soils make up 87 to 98 percent of the map unit. In the remaining areas, the Holopaw soil makes up either a higher or lower percentage of the mapped areas. The characteristics of Malabar, Pineda, and Riviera soils are similar to those of the Holopaw soil.

The dissimilar soils in this map unit are small areas of Basinger and Oldsmar soils in landscape

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positions similar to those of the Holopaw soil. These soils make up about 13 percent or less of the unit.

The permeability of this soil is moderate to moderately slow. The available water capacity is low. Under natural conditions, the seasonal high water table is within a depth of 12 inches for 3 to 6 months during most years. During the other months, the water table is below a depth of 12 inches, and it recedes to a depth of more than 40 inches during extended dry periods. During periods of high rainfall, the soil is covered by shallow, slowly moving water for about 7 days.

The natural vegetation consists of scattered areas of slash pine, cypress, cabbage palm, saw palmetto, waxmyrtle, sand cordgrass, gulf muhly, panicums, chalky bluestem, plumgrass, gulf dune paspalum, and blue maidencane.

**(40) Durbin and Wulfert mucks, frequently flooded.** These level, very poorly drained soils are in tidal mangrove swamps. Individual areas are elongated and irregular in shape, and they range from 50 to 1,000 acres in size. The slopes are 0 to 1 percent.

Typically, the Durbin soil has a surface soil of dark reddish brown to black muck about 63 inches thick. The substratum is dark gray fine sand to a depth of about 80 inches.

Typically, the Wulfert soil has a surface soil of dark reddish brown to black muck about 40 inches thick. The substratum is dark gray fine sand to a depth of about 80 inches.

Mapped areas can consist entirely of the Durbin soil, entirely of the Wulfert soil, or any combination of the two soils. The two soils were not separated in mapping because of similar management needs resulting from the tidal flooding.

The dissimilar soils in this map unit are small areas of Kesson and Pennsuco soils in similar landscape positions. These soils make up about 0 to 10 percent of the unit.

The permeability in the Durbin soil is rapid, and the available water capacity is high. The permeability in the Wulfert soil is rapid, and the available water capacity is moderate. The water table fluctuates with the tide. It is within a depth of 12 inches for most of the year. The soil is subject to tidal flooding.

The natural vegetation consists of red, white, and black mangroves.

**(52) Kesson muck, frequently flooded.** This level, very poorly drained soil is in frequently flooded tidal marshes. Individual areas are elongated and irregular in shape, and they range from 300 to 1,000 acres in size. The slope is 0 to 1 percent.

Typically, the surface layer is black muck about 5 inches thick. The subsurface layer is dark gray fine sand to a depth of about 10 inches. The substratum is fine sand to a depth of about 80 inches. The upper part of the substratum is gray, the next part is light brownish gray, and the lower part is pale brown.

In 80 percent of the area mapped as Kesson muck, frequently flooded, the Kesson soil makes up 75 to 90 percent of the map unit. In the remaining areas, it makes up either a higher or lower percentage of the mapped areas.

The dissimilar soils in this map unit are small areas of Basinger, Dania, and Peckish soils in landscape positions similar to those of the Kesson soil. These soils make up about 10 to 25 percent of the unit.

The permeability of this soil is rapid to moderately rapid. The available water capacity is high. The water table fluctuates with tidal action and seasonal rainfall. It is at or near the surface for long periods. This soil is frequently flooded.

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The natural vegetation consists of cordgrass, saltgrass, rushes, needlegrass, saltwort, and scattered areas of mangroves.

**(53) Estero and Peckish soils, frequently flooded.** These level, very poorly drained soils are in frequently flooded tidal marshes. Individual areas are elongated and irregular in shape, and they range from 300 to 1,000 acres in size. The slopes are 0 to 1 percent.

Typically, the Estero soil has a surface layer of black muck about 6 inches thick. The subsurface layer is fine sand to a depth of about 40 inches. The upper part of the subsurface layer is black, and lower part is dark grayish brown. The subsoil is dark brown and very dark brown fine sand to a depth of about 62 inches.

Typically, the Peckish soil has a surface layer of very dark grayish brown mucky fine sand about 9 inches thick. The subsurface layer is grayish brown fine sand to a depth of about 37 inches. The subsoil is dark brown fine sand to a depth of about 42 inches. The substratum is light brownish gray fine sand to a depth of about 80 inches.

Mapped areas can consist entirely of the Estero soil, entirely of the Peckish soil, or any combination of the two soils. The two soils were not separated in mapping because of similar management needs resulting from the flooding.

The dissimilar soils in this map unit are small areas of Wulfert soils in similar landscape positions. These soils make up about 0 to 5 percent of the unit.

The permeability in the Estero soil is moderately rapid, and the available water capacity is moderate. The permeability in the Peckish soil is rapid, and the available water capacity is moderate. The water table fluctuates with tidal action and seasonal rainfall. It is at or near the surface for long periods. These soils are frequently flooded.

The natural vegetation consists of cordgrass, saltgrass, rushes, needlegrass, saltwort, and scattered mangrove.

**Addendum 4—Plant And Animal List**

## Collier-Seminole State Park

### Plants

Common Name	Scientific Name	Primary Habitat Codes (for designated species)
<b>FERNS</b>		
Golden leather fern	<i>Acrostichum aureum</i>	75,76
Giant leather fern	<i>Acrostichum danaeifolium</i>	
Wild birdnest fern	<i>Asplenium serratum</i>	12
Toothed mid-sorus fern	<i>Blechnum serrulatum</i>	
Strap fern	<i>Campyloneurum phyllitidis</i>	
Nodding club-moss	<i>Lycopodiella cernua</i>	41
Climbing fern *	<i>Lygodium microphyllum</i>	
Giant sword fern	<i>Nephrolepis biserrata</i>	12,39
Boston sword fern	<i>Nephrolepis exaltata</i>	
Hand fern	<i>Ophioglossum palmatum</i>	12,39
Golden polypody	<i>Phlebodium aureum</i>	
Resurrection fern	<i>Pleopeltis polypodioides var. michauxiana</i>	
Whisk fern; Fork fern	<i>Psilotum nudum</i>	
Bracken fern	<i>Pteridium aquilinum var. caudatum</i>	
Giant ladderbrake *	<i>Pteris tripartita</i>	
Ladderbrake *	<i>Pteris vittata</i>	
Willdenow's maiden fern	<i>Thelypteris interrupta</i>	
Widespread maiden fern	<i>Thelypteris kunthii</i>	
Marsh fern	<i>Thelypteris palustris var. pubescens</i>	
Shoestring fern	<i>Vittaria lineata</i>	
Virginia chain fern	<i>Woodwardia virginica</i>	
<b>GYMNOSPERMS AND CYCADS</b>		
Slash pine	<i>Pinus elliottii</i>	
Pond cypress	<i>Taxodium ascendens</i>	
Bald cypress	<i>Taxodium distichum</i>	
<b>MONOCOTS</b>		
Yellow colic-root	<i>Aletris lutea</i>	
Blue maidencane	<i>Amphicarpum muhlenbergianum</i>	
Glaucous bushy bluestem	<i>Andropogon glomeratus var. glaucopsis</i>	
Bushy bluestem	<i>Andropogon glomeratus var. pumilus</i>	
Splitbeard bluestem	<i>Andropogon ternarius</i>	
Tall threeawn	<i>Aristida patula</i>	
Purple feather	<i>Aristida purpurascens</i>	
Bottlebrush threeawn	<i>Aristida spiciformis</i>	
Wiregrass	<i>Aristida stricta var. beyrichiana</i>	
Giant reed *	<i>Arundo donax</i>	
Common carpetgrass	<i>Axonopus fissifolius</i>	
Big carpet grass	<i>Axonopus furcatus</i>	
Pine pink	<i>Bletia purpurea</i>	39,41
Pitted bluestem *	<i>Bothriochloa pertusa</i>	
Watergrass *	<i>Bulbostylis barbata</i>	
Capillary hairsedge	<i>Bulbostylis ciliatifolia</i>	
Tuberous grass pink	<i>Calopogon tuberosus</i>	

\* Non-native Species

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### Plants

Common Name	Scientific Name	Primary Habitat Codes (for designated species)
Golden canna	<i>Canna flaccida</i>	
Coastal sandbur	<i>Cenchrus spinifex</i>	
Jamaican sawgrass	<i>Cladium jamaicense</i>	
Coconut palm *	<i>Cocos nucifera</i>	
Wrinkled jointtail	<i>Coelorachis rugosa</i>	
Dayflower	<i>Commelina diffusa</i>	
Erect dayflower	<i>Commelina erecta</i>	
String-lily; Swamp-lily	<i>Crinum americanum</i>	
Bermuda grass *	<i>Cynodon dactylon</i>	
Baldwin's flatsedge	<i>Cyperus croceus</i>	
Sheathed flatsedge	<i>Cyperus haspan</i>	
Alabama swamp flat sedge	<i>Cyperus ligularis</i>	
Fragrant flatsedge	<i>Cyperus odoratus</i>	
Many-spike flat sedge	<i>Cyperus polystachyos</i>	
Pinebarrens flatsedge	<i>Cyperus retrorsus</i>	
Tropical flatsedge	<i>Cyperus surinamensis</i>	
Cowhorn orchid; Cigar orchid	<i>Cyrtopodium punctatum</i>	39
Durbana crowfoot grass *	<i>Dactyloctenium aegyptium</i>	
Ghost Orchid	<i>Dendrophylax lindenii</i>	39,12
Needleleaf witchgrass	<i>Dichantherium aciculare</i>	
Variable witchgrass	<i>Dichantherium commutatum</i>	
Cypress witch grass	<i>Dichantherium dichotomum</i>	
Witch grass	<i>Dichantherium portoricense</i>	
Slender crabgrass	<i>Digitaria filiformis</i>	
Air potato *	<i>Dioscorea bulbifera</i>	
Seashore salt grass	<i>Distichlis spicata</i>	
Florida cockspur	<i>Echinochloa paludigena</i>	
Baldwin's spike rush	<i>Eleocharis baldwinii</i>	
Gulfcrest spike rush	<i>Eleocharis cellulosa</i>	
Canada spikerush	<i>Eleocharis geniculata</i>	
Knotted spikerush	<i>Eleocharis interstincta</i>	
Indian goose grass *	<i>Eleusine indica</i>	
Pan-american balsamscale	<i>Elionurus tripsacoides</i>	
Tampa butterfly orchid	<i>Encyclia tampensis</i>	12,39
Dingy-flowered epidendrum	<i>Epidendrum anceps</i>	38,39
Umbelled epidendrum	<i>Epidendrum floridense</i>	38
Night-scent orchid	<i>Epidendrum nocturnum</i>	38
Rigid epidendrum	<i>Epidendrum rigidum</i>	38
Thalia love grass *	<i>Eragrostis atrovirens</i>	
Gophertail lovegrass *	<i>Eragrostis ciliaris</i>	
Centipede grass *	<i>Eremochloa ophiuroides</i>	
Hatpins; Flattened pipewort	<i>Eriocaulon compressum</i>	
Ten-angle pipewort	<i>Eriocaulon decangulare</i>	
Wild coco; Ground coco	<i>Eulophia alta</i>	
Saltmarsh finger grass	<i>Eustachys glauca</i>	
Pinewoods finger grass	<i>Eustachys petraea</i>	

\* Non-native Species

## Collier-Seminole State Park

### Plants

Common Name	Scientific Name	Primary Habitat Codes (for designated species)
Slender fimbry	<i>Fimbristylis autumnalis</i>	
Hurricanegrass	<i>Fimbristylis cymosa</i>	
Marsh fimbry	<i>Fimbristylis spadicea</i>	
Saltmarsh umbrella sedge	<i>Fuirena breviseta</i>	
Southern umbrella sedge	<i>Fuirena scirpoidea</i>	
Hammock false rein orchid	<i>Habenaria distans</i>	12
Snowy orchid; Bog torch	<i>Platanthera nivea</i>	41
Long-horn false rein orchid	<i>Habenaria quinqueseta</i>	
Threadroot orchid	<i>Harrisella porrecta</i>	39
West Indian marsh grass *	<i>Hymenachne amplexicaulis</i>	
Mangrove spider-lily	<i>Hymenocallis latifolia</i>	
Jaragua*	<i>Hyparrhenia rufa</i>	
Shorerush	<i>Juncus marginatus</i>	
Big-head rush	<i>Juncus megacephalus</i>	
Needle rush; black rush	<i>Juncus roemerianus</i>	
Shortleaf spikesedge *	<i>Kyllinga brevifolia</i>	
Asian spikesedge	<i>Kyllinga squamulata</i>	
Bloodroot; Carolina redroot	<i>Lachnanthes carolina</i>	
Whitehead bogbutton	<i>Lachnocaulon anceps</i>	
Florida tibisee; Small cane	<i>Lasiacis divaricata</i>	
Pine lily; Catesby's lily	<i>Lilium catesbaei</i>	8,41
Awned halfchaff sedge	<i>Lipocarpa aristulata</i>	
Hairawn muhly	<i>Muhlenbergia capillaris</i>	
Nakedstem dewflower *	<i>Murdannia nudiflora</i>	
Banana *	<i>Musa Xparadisiaca</i>	
Southern water nymph	<i>Najas guadalupensis</i>	
Silk reed; Burma reed *	<i>Neyraudia reynaudiana</i>	
Monk orchid; Ground orchid *	<i>Oeceoclades maculata</i>	
Woods grass; Short-leaf basket grass	<i>Oplismenus hirtellus</i>	
Beaked panicum	<i>Panicum anceps</i>	
Fall panicum	<i>Panicum dichotomiflorum</i>	
Maidencane	<i>Panicum hemitomom</i>	
Gaping panicum	<i>Panicum hians</i>	
Torpedo grass *	<i>Panicum repens</i>	
Redtop panicum	<i>Panicum rigidulum</i>	
Switch grass; Wand-shape panicum	<i>Panicum virgatum</i>	
Egyptian paspalidium	<i>Paspalidium geminatum</i>	
Gulfdune paspalum	<i>Paspalum monostachyum</i>	
Bahia grass	<i>Paspalum notatum</i>	
Water paspalum	<i>Paspalum repens</i>	
Thin paspalum	<i>Paspalum setaceum</i>	
Vasey grass *	<i>Paspalum urvillei</i>	
Seashore paspalum	<i>Paspalum vaginatum</i>	
Senegal date palm *	<i>Phoenix reclinata</i>	
Common reed	<i>Phragmites australis</i>	

\* Non-native Species



## Collier-Seminole State Park

### Plants

Common Name	Scientific Name	Primary Habitat Codes (for designated species)
Florida needle grass	<i>Piptochaetium avenacioides</i>	
Pale-flowered polystachya	<i>Polystachya concreta</i>	38,39
Pickernelweed	<i>Pontederia cordata</i>	
Red Natal grass *	<i>Rhynchelytrum repens</i>	
Falling beak sedge	<i>Rhynchospora caduca</i>	
White-tops; Star-rush	<i>Rhynchospora colorata</i>	
Narrow-fruit horned beaksedge	<i>Rhynchospora inundata</i>	
Sand-swamp white-tops; Star-rush	<i>Rhynchospora latifolia</i>	
Southern beaksedge	<i>Rhynchospora microcarpa</i>	
Millet beak sedge	<i>Rhynchospora miliacea</i>	
Shortbeak beaksedge; baldrush	<i>Rhynchospora nitens</i>	
Fragrant beaksedge	<i>Rhynchospora odorata</i>	
Fairy beaksedge	<i>Rhynchospora pusilla</i>	
Tracy's beak sedge	<i>Rhynchospora tracyi</i>	
Florida royal palm	<i>Roystonea regia</i>	12,39
Cabbage palm	<i>Sabal palmetto</i>	
Sugarcane plumegrass	<i>Saccharum giganteum</i>	
American cupscale	<i>Sacciolepis striata</i>	
Grass-leaf arrowhead	<i>Sagittaria graminea</i>	
Chapman's arrowhead	<i>Sagittaria graminea var. chapmanii</i>	
Bull-tongue arrowhead	<i>Sagittaria lancifolia</i>	
Broadleaf arrowhead	<i>Sagittaria latifolia</i>	
Sunnybells	<i>Schoenolirion albiflorum</i>	
Black sedge	<i>Schoenus nigricans</i>	
Seaside bulrush	<i>Scirpus robustus</i>	
Netted nut rush	<i>Scleria reticularis</i>	
Saw palmetto	<i>Serenoa repens</i>	
Knotroot foxtail	<i>Setaria parviflora</i>	
Narrow-leaf blueeyed-grass	<i>Sisyrinchium angustifolium</i>	
Ear-leaf greenbrier	<i>Smilax auriculata</i>	
Saw greenbrier	<i>Smilax bona-nox</i>	
Laurel greenbrier	<i>Smilax laurifolia</i>	
Lopsided Indian grass	<i>Sorghastrum secundum</i>	
Sand cord grass; Bunch cord grass	<i>Spartina bakeri</i>	
Fragrant ladies'-tresses	<i>Spiranthes odorata</i>	
Spring ladies'-tresses	<i>Spiranthes vernalis</i>	
Smut grass *	<i>Sporobolus indicus var. pyramidalis</i>	
Seashore dropseed	<i>Sporobolus virginicus</i>	
St. Augustine grass *	<i>Stenotaphrum secundatum</i>	
Bantam-buttons; Yellow hatpins	<i>Syngonanthus flavidulus</i>	
Arrowhead vine *	<i>Syngonium podophyllum</i>	
Fireflag; Alligator-flag	<i>Thalia geniculata</i>	
Medusahead air plant	<i>Tillandsia balbisiiana</i>	12,39
Cardinal air plant; Stiff-leaved wild pine	<i>Tillandsia fasciculata</i>	12,39,41
Twisted air plant	<i>Tillandsia flexuosa</i>	11,76

\* Non-native Species

## Collier-Seminole State Park

### Plants

Common Name	Scientific Name	Primary Habitat Codes (for designated species)
Air plant; Wild pine	<i>Tillandsia paucifolia</i>	
Fuzzy-wuzzy air plant	<i>Tillandsia pruinosa</i>	12,38,39
Ball moss	<i>Tillandsia recurvata</i>	
Grass-leaved air plant	<i>Tillandsia setacea</i>	
Spanish-moss	<i>Tillandsia usneoides</i>	
Spreading air plant	<i>Tillandsia utriculata</i>	11,12,39,41
Soft-leaved wild pine	<i>Tillandsia variabilis</i>	12
Recurved air plant	<i>Tillandsia Xfloridana</i>	
Three-rib arrowgrass	<i>Triglochin striata</i>	
Eastern gama grass	<i>Tripsacum dactyloides</i>	
Southern cattail	<i>Typha domingensis</i>	
Para grass *	<i>Urochloa mutica</i>	
Coastalplain yellow-eyed-grass	<i>Xyris ambigua</i>	
Short-leaved yellow-eyed-grass	<i>Xyris brevifolia</i>	
Carolina yellow-eyed-grass	<i>Xyris caroliniana</i>	
Elliott's yellow-eyed-grass	<i>Xyris elliotii</i>	
Savannah yellow-eyed-grass	<i>Xyris flabelliformis</i>	
Richard's yellow-eyed-grass	<i>Xyris jupicai</i>	
Spanish bayonet; aloe yucca	<i>Yucca aloifolia</i>	
Lawn orchid; Soldier's orchid *	<i>Zeuxine strateumatica</i>	
Cutgrass; Southern wild rice	<i>Zizaniopsis miliacea</i>	
<b>DICOTS</b>		
Sweet acacia; Mealy wattle	<i>Acacia farnesiana</i>	
Southern red maple	<i>Acer rubrum</i>	
Creeping spotflower	<i>Acmella oppositifolia</i> var. <i>repens</i>	
Shyleaf	<i>Aeschynomene americana</i>	
Flax-leaf false-foxglove	<i>Agalinis linifolia</i>	
Saltmarsh false-foxglove	<i>Agalinis maritima</i>	
Large purple false-foxglove	<i>Agalinis purpurea</i>	
Yellow chaff-flower	<i>Alternanthera flavescens</i>	
Southern water-hemp	<i>Amaranthus australis</i>	
Common ragweed; Annual ragweed	<i>Ambrosia artemisiifolia</i>	
Pink redstem; Toothcup	<i>Ammannia latifolia</i>	
Pepper vine	<i>Ampelopsis arborea</i>	
Pond apple	<i>Annona glabra</i>	
Island marlberry	<i>Ardisia escallonioides</i>	
Swamp milkweed	<i>Asclepias incarnata</i>	
Few-flower milkweed	<i>Asclepias lanceolata</i>	
Long-leaf milkweed	<i>Asclepias longifolia</i>	
Netted pawpaw	<i>Asimina reticulata</i>	
Sand atriplex; Seabeach orach	<i>Atriplex cristata</i>	
Black mangrove	<i>Avicennia germinans</i>	
Saltwater false-willow	<i>Baccharis angustifolia</i>	
Silverling; Groundsel tree	<i>Baccharis glomeruliflora</i>	
Saltbush; Groundsel tree	<i>Baccharis halimifolia</i>	
Blue water-hyssop; Lemon bacopa	<i>Bacopa caroliniana</i>	

\* Non-native Species

Collier-Seminole State Park

Plants

Common Name	Scientific Name	Primary Habitat Codes (for designated species)
Coastal water-hyssop	<i>Bacopa monnieri</i>	
Saltwort	<i>Batis maritima</i>	
Rattan vine	<i>Berchemia scandens</i>	
Spanish needles; Beggar-ticks	<i>Bidens alba var. radiata</i>	
Browne's blechum *	<i>Blechnum pyramidatum</i>	
Small-spike false-nettle; Bog hemp	<i>Boehmeria cylindrica</i>	
Red spiderling; Wine-flower	<i>Boerhavia diffusa</i>	
Erect spiderling	<i>Boerhavia erecta</i>	
False-aster; Small-head doll's daisy	<i>Boltonia diffusa</i>	
Sea daisies; Sea oxeye	<i>Borrchia frutescens</i>	
American blueheart	<i>Buchnera americana</i>	
Gumbo-limbo	<i>Bursera simaruba</i>	
Gray nicker	<i>Caesalpinia bonduc</i>	
American beautyberry	<i>Callicarpa americana</i>	
Florida bellflower	<i>Campanula floridana</i>	
Seaside bean; Bay bean	<i>Canavalia rosea</i>	
Caper	<i>Caperonia castaneifolia</i>	
Jamaica caper-tree	<i>Capparis cynophallophora</i>	
Bay-leaved caper-tree	<i>Capparis flexuosa</i>	
Tabasco pepper *	<i>Capsicum frutescens</i>	
Bitter cress	<i>Cardamine sp.</i>	
Papaya *	<i>Carica papaya</i>	
Florida paintbrush; Coastalplain chaffhead	<i>Carphephorus corymbosus</i>	
False Vanilla-leaf	<i>Carphephorus odoratissimus var. subtropicanus</i>	
Love vine; Devil's-gut	<i>Cassytha filiformis</i>	
Hackberry; Sugarberry	<i>Celtis laevigata</i>	
Spadeleaf	<i>Centella asiatica</i>	
Spurred butterfly pea	<i>Centrosema virginianum</i>	
Buttonbush	<i>Cephalanthus occidentalis</i>	
Partridge pea; Sleeping plant	<i>Chamaecrista fasciculata</i>	
Wild sensitive plant; Partridge pea	<i>Chamaecrista nictitans var. aspera</i>	
Pillpod sandmat	<i>Chamaesyce hirta</i>	
Graceful sandmat	<i>Chamaesyce hypericifolia</i>	
Prostrate sandmat	<i>Chamaesyce prostrata</i>	
Pineland daisy; Sunbonnets	<i>Chaptalia tomentosa</i>	
Snowberry; West Indies milkberry	<i>Chiococca alba</i>	
Jack-in-the-bush	<i>Chromolaena odorata</i>	
Coco-plum	<i>Chrysobalanus icaco</i>	
Satinleaf	<i>Chrysophyllum oliviforme</i>	12
Horrid thistle; Purple thistle	<i>Cirsium horridulum</i>	
Thistle	<i>Cirsium nuttallii</i>	
Possum-grape	<i>Cissus verticillata</i>	
Key lime *	<i>Citrus Xaurantiifolia</i>	
Pigeon-plum; Tie-tongue	<i>Coccoloba diversifolia</i>	
Seagrape	<i>Coccoloba uvifera</i>	

\* Non-native Species

Collier-Seminole State Park

Plants

Common Name	Scientific Name	Primary Habitat Codes (for designated species)
Buttonwood; Button-mangrove	<i>Conocarpus erectus</i>	
Blue mistflower	<i>Conoclinium coelestinum</i>	
Dwarf horseweed	<i>Conyza canadensis var. pusilla</i>	
Leavenworth's tickseed; Coreopsis	<i>Coreopsis leavenworthii</i>	
Stiff cornel; Swamp dogwood	<i>Cornus foemina</i>	
Rabbit-bells	<i>Crotalaria rotundifolia</i>	
Tropical croton	<i>Croton glandulosus</i>	
Columbian waxweed *	<i>Cuphea carthagenensis</i>	
Gulfcoast swallowwort	<i>Cynanchum angustifolium</i>	
Leafless swallowwort	<i>Cynanchum scoparium</i>	
Coin-vine	<i>Dalbergia ecastaphyllum</i>	
Whitetassels	<i>Dalea carnea</i>	
Beggar tick; Zarzabacoa comun	<i>Desmodium incanum</i>	
Panicled tick-trefoil	<i>Desmodium paniculatum</i>	
Threeflower tick-trefoil *	<i>Desmodium triflorum</i>	
Carolina pony-foot; False-pennywort	<i>Dichondra carolinensis</i>	
Crimson dicliptera; Seven-angle foldwing	<i>Dicliptera sexangularis</i>	
Virginia buttonweed	<i>Diodia virginiana</i>	
Persimmon	<i>Diospyros virginiana</i>	
Pink sundew	<i>Drosera capillaris</i>	
Drymary; West Indian chickweed	<i>Drymaria cordata</i>	
Guiana-plum	<i>Drypetes lateriflora</i>	12
Pineland twinflower	<i>Dyschoriste angusta</i>	
Twinflower; Oblong-leaf snakeherb	<i>Dyschoriste oblongifolia</i>	
False daisy	<i>Eclipta prostrata</i>	
Tall elephant's-foot	<i>Elephantopus elatus</i>	
Tassel flower *	<i>Emilia sonchifolia</i>	
Fireweed; American burn	<i>Erechtites hieraciifolius</i>	
Southern fleabane; Oakleaf fleabane	<i>Erigeron quercifolius</i>	
Early white-top fleabane	<i>Erigeron vernus</i>	
Baldwin's eryngium	<i>Eryngium baldwinii</i>	
Button snakeroot; Rattlesnake-master	<i>Eryngium yuccifolium</i>	
Southeastern coral bean; Cherokee bean	<i>Erythrina herbacea</i>	
White stopper	<i>Eugenia axillaris</i>	
Spanish stopper	<i>Eugenia foetida</i>	
Surinam-cherry *	<i>Eugenia uniflora</i>	
Dog-fennel	<i>Eupatorium capillifolium</i>	
False-fennel	<i>Eupatorium leptophyllum</i>	
Semaphore thoroughwort	<i>Eupatorium mikanioides</i>	
Mohr's thoroughwort	<i>Eupatorium mohrii</i>	
Late-flowering thoroughwort	<i>Eupatorium serotinum</i>	
Slender grass-leaf goldenrod	<i>Euthamia caroliniana</i>	

\* Non-native Species

Collier-Seminole State Park

Plants

Common Name	Scientific Name	Primary Habitat Codes (for designated species)
Silver dwarf morning-glory	<i>Evolvulus sericeus</i>	
Inkwood; Butterbough	<i>Exothea paniculata</i>	
Florida strangler fig; Golden fig	<i>Ficus aurea</i>	
Wild banyan tree	<i>Ficus citrifolia</i>	
Cuban laurel *	<i>Ficus microcarpa</i>	
Florida yellowtops	<i>Flaveria floridana</i>	
Narrowleaf yellowtops	<i>Flaveria linearis</i>	
Florida privet	<i>Forestiera segregata</i>	
Carolina ash; Pop ash; Water ash	<i>Fraxinus caroliniana</i>	
Elliott's milk pea	<i>Galactia elliottii</i>	
Eastern milk pea; Florida milk pea	<i>Galactia regularis</i>	
Milk pea	<i>Galactia volubilis</i>	
Coastal bedstraw	<i>Galium hispidulum</i>	
Southern gaura; Southern beeblossom	<i>Gaura angustifolia</i>	
Cudweed	<i>Gnaphalium sp.</i>	
Wild cotton	<i>Gossypium hirsutum</i>	3
Rough hedge-hyssop	<i>Gratiola hispida</i>	
Branched hedge-hyssop	<i>Gratiola ramosa</i>	
Scarlet bush; Fire bush	<i>Hamelia patens</i>	
Southeastern sneezeweed	<i>Helenium pinnatifidum</i>	
Seaside heliotrope	<i>Heliotropium polyphyllum</i>	
Swamp hibiscus; Swamp rose- mallow	<i>Hibiscus grandiflorus</i>	
Hibiscus *	<i>Hibiscus rosa-sinensis</i>	
Hawkweed; Queendevil	<i>Hieracium gronovii</i>	
Hippocratea	<i>Hippocratea volubilis</i>	
Innocence; Round-leaf bluet	<i>Houstonia procumbens</i>	
Manyflower marsh pennywort	<i>Hydrocotyle umbellata</i>	
Whorled pennywort	<i>Hydrocotyle verticillata</i>	
Skyflower	<i>Hydrolea corymbosa</i>	
Night-blooming cereus *	<i>Hylocereus undatus</i>	
Coastal plain St. John's-wort	<i>Hypericum brachyphyllum</i>	
Round-pod St. John's-wort	<i>Hypericum cistifolium</i>	
Peel-bark St. John's-wort; Sandweed	<i>Hypericum fasciculatum</i>	
St. Andrew's-cross	<i>Hypericum hypericoides</i>	
Four-petal St. John's-wort; St. Peter's-wort	<i>Hypericum tetrapetalum</i>	
Musky mint; Cluster bush mint	<i>Hyptis alata</i>	
Dahoon holly	<i>Ilex cassine</i>	
Inkberry; Gallberry	<i>Ilex glabra</i>	
Moonflower; Tropical white morning-glory	<i>Ipomoea alba</i>	
Ocean-blue morning-glory	<i>Ipomoea indica var. acuminata</i>	
Glade morning-glory	<i>Ipomoea sagittata</i>	

\* Non-native Species

## Collier-Seminole State Park

### Plants

Common Name	Scientific Name	Primary Habitat Codes (for designated species)
Juba's bush; Blood-leaf	<i>Iresine diffusa</i>	
Big-leaf marsh-elder	<i>Iva frutescens</i>	
Beach elder; Seacoast marsh-elder	<i>Iva imbricata</i>	
Piedmont marsh-elder	<i>Iva microcephala</i>	
Pineland water-willow	<i>Justicia angusta</i>	
Senegal mahogany; African mahogany *	<i>Khaya senegalensis</i>	
Saltmarsh mallow; Virginia fen-rose	<i>Kosteletzkya virginica</i>	
White mangrove	<i>Laguncularia racemosa</i>	
Piedmont pinweed	<i>Lechea torreyi</i>	
Poorman's-pepper	<i>Lepidium virginicum</i>	
White leadtree; Leadtree; Jumbie *	<i>Leucaena leucocephala</i>	
Garber's blazing star; Garber's gayfeather	<i>Liatris garberi</i>	
Carolina sea-lavender	<i>Limonium carolinianum</i>	
Canada toadflax	<i>Linaria canadensis</i>	
Malaysian false pimpernel *	<i>Lindernia crustacea</i>	
Savannah false pimpernel	<i>Lindernia grandiflora</i>	
Stiff yellow flax	<i>Linum medium var. texanum</i>	
Bay lobelia	<i>Lobelia feayana</i>	
Glade lobelia	<i>Lobelia glandulosa</i>	
White lobelia	<i>Lobelia paludosa</i>	
Southeastern primrose-willow	<i>Ludwigia linifolia</i>	
Seaside primrose-willow	<i>Ludwigia maritima</i>	
Smallfruit primrose-willow	<i>Ludwigia microcarpa</i>	
Mexican primrose-willow	<i>Ludwigia octovalvis</i>	
Peruvian primrose-willow	<i>Ludwigia peruviana</i>	
Creeping primrose-willow	<i>Ludwigia repens</i>	
Christmasberry; Carolina desert-thorn	<i>Lycium carolinianum</i>	
Coastal plain staggerbush	<i>Lyonia fruticosa</i>	
Wild tamarind	<i>Lysiloma latisiliquum</i>	
Wing-angle loosestrife	<i>Lythrum alatum var. lanceolatum</i>	
Sweet bay	<i>Magnolia virginiana</i>	
Texas wax mallow; Turk's-cap mallow *	<i>Malvaviscus penduliflorus</i>	
Mango *	<i>Mangifera indica</i>	
Punk tree; Cajeput; Paper tree *	<i>Melaleuca quinquenervia</i>	
Snow squarrestem	<i>Melanthera nivea</i>	
Chocolate weed; Bretonica peluda	<i>Melochia spicata</i>	
Creeping cucumber	<i>Melothria pendula</i>	
Poorman's-patch	<i>Mentzelia floridana</i>	
Florida key hempvine	<i>Mikania cordifolia</i>	
Climbing hempvine	<i>Mikania scandens</i>	
Miterwort; Lax hornpod	<i>Mitreola petiolata</i>	

\* Non-native Species

Collier-Seminole State Park

Plants

Common Name	Scientific Name	Primary Habitat Codes (for designated species)
Miterwort; Swamp hornpod	<i>Mitreola sessilifolia</i>	
Redgal	<i>Morinda royoc</i>	
Red mulberry	<i>Morus rubra</i>	
Simpson's stopper	<i>Myrcianthes fragrans</i>	12
Wax myrtle; Southern bayberry	<i>Myrica cerifera</i>	
Royal blue waterlily	<i>Nymphaea elegans</i>	
Fragrant white waterlily	<i>Nymphaea odorata</i>	
Floating hearts	<i>Nymphoides aquatica</i>	
Lancewood	<i>Ocotea coriacea</i>	
Seaside evening-primrose	<i>Oenothera humifusa</i>	
Flat-top bluet *	<i>Oldenlandia corymbosa</i>	
Clustered bluet	<i>Oldenlandia uniflora</i>	
Erect prickly-pear cactus	<i>Opuntia stricta</i>	3
Water dropwort; Water cowbane	<i>Oxypolis filiformis</i>	
Golden ragwort; Butterweed	<i>Packera glabella</i>	
Coastalplain palafox	<i>Palafoxia integrifolia</i>	
Florida pellitory	<i>Parietaria floridana</i>	
Virginia creeper; Woodbine	<i>Parthenocissus quinquefolia</i>	
Pineland passion vine	<i>Passiflora pallens</i>	12
Corky-stemmed passionflower	<i>Passiflora suberosa</i>	
Sanddune cinchweed	<i>Pectis glaucescens</i>	
Spreading lemongrass	<i>Pectis prostrata</i>	
Wild allamanda	<i>Pentalinon luteum</i>	
Swampbay	<i>Persea palustris</i>	
Frog fruit; Carpetweed; Capeweed	<i>Phyla nodiflora</i>	
Chamber bitter *	<i>Phyllanthus urinaria</i>	
Low hairy ground-cherry	<i>Physalis pubescens</i>	
Starry-hair ground-cherry	<i>Physalis walteri</i>	
Obedient plant	<i>Physostegia purpurea</i>	
American pokeweed; Pokeberry	<i>Phytolacca americana</i>	
Artillery plant	<i>Pilea microphylla</i>	
Wild pennyroyal	<i>Piloblephis rigida</i>	
Small butterwort	<i>Pinguicula pumila</i>	
Piriqueta; Carolina stripeseed	<i>Piriqueta cistoides subsp. caroliniana</i>	
Jamaica-dogwood; Florida fishpoison tree	<i>Piscidia piscipula</i>	
Coastal devil's-claw	<i>Pisonia aculeata</i>	
Cat's-claw; Catclaw blackbead	<i>Pithecellobium unguis-cati</i>	
Grass-leaved goldenaster	<i>Pityopsis graminifolia</i>	
Common plantain	<i>Plantago major</i>	
Saltmarsh fleabane	<i>Pluchea odorata</i>	
Rosy camphorweed	<i>Pluchea rosea</i>	
Baldwin's milkwort	<i>Polygala balduinii</i>	
Drumheads	<i>Polygala cruciata</i>	
Large-flowered polygala	<i>Polygala grandiflora</i>	
Procession flower	<i>Polygala incarnata</i>	

\* Non-native Species

## Collier-Seminole State Park

### Plants

Common Name	Scientific Name	Primary Habitat Codes (for designated species)
Candyroot	<i>Polygala nana</i>	
Wireweed; Hairy jointweed	<i>Polygonella ciliata</i>	
Jointweed; Octoberflower	<i>Polygonella polygama</i>	
Octoberflower	<i>Polygonella polygama</i> var. <i>brachystachya</i>	
Dotted smartweed	<i>Polygonum punctatum</i>	
Rustweed	<i>Polypremum procumbens</i>	
Ghost orchid; Palm polly	<i>Polyradicion lindenii</i>	38,39
Mermaid-weed	<i>Proserpinaca palustris</i>	
Guava *	<i>Psidium guajava</i>	
Wild coffee; Seminole balsamo	<i>Psychotria nervosa</i>	
Sulzner's wild coffee	<i>Psychotria sulzneri</i>	
Rabbit tobacco; Coastal blackroot	<i>Pterocaulon pycnostachyum</i>	
Hairlike mock bishop's-weed	<i>Ptilimnium capillaceum</i>	
Sand live oak	<i>Quercus geminata</i>	
Laurel oak; Diamond oak	<i>Quercus laurifolia</i>	
Dwarf live oak	<i>Quercus minima</i>	
Myrtle oak	<i>Quercus myrtifolia</i>	
Virginia live oak	<i>Quercus virginiana</i>	
White indigo-berry	<i>Randia aculeata</i>	
Myrsine; Guiana colicwood	<i>Rapanea punctata</i>	
Rubber vine	<i>Rhabdadenia biflora</i>	
Red mangrove	<i>Rhizophora mangle</i>	
Winged sumac; Shining sumac	<i>Rhus copallinum</i>	
Rouge plant; Bloodberry	<i>Rivina humilis</i>	
Southern dewberry	<i>Rubus trivialis</i>	
Blackeyed Susan	<i>Rudbeckia hirta</i>	
Britton's wild petunia *	<i>Ruellia tweediana</i>	
Bartram's marsh pink	<i>Sabatia bartramii</i>	
Short-leaf marsh pink	<i>Sabatia brevifolia</i>	
Coastal rose-gentian	<i>Sabatia calycina</i>	
Large-flower rose-gentian	<i>Sabatia grandiflora</i>	
Rose-of-Plymouth	<i>Sabatia stellaris</i>	
Small-flower mock-buckthorn	<i>Sageretia minutiflora</i>	
Perennial glasswort	<i>Salicornia perennis</i>	
Carolina willow; Coastal plain willow	<i>Salix caroliniana</i>	
Elderberry; American elder	<i>Sambucus nigra</i> subsp. <i>canadensis</i>	
Water pimpernel	<i>Samolus ebracteatus</i>	
Southern soapberry; False-dogwood	<i>Sapindus saponaria</i>	
Popcorn tree; Chinese tallow *	<i>Sapium sebiferum</i>	
White vine	<i>Sarcostemma clausum</i>	
Beachberry; Inkberry	<i>Scaevola plumieri</i>	3
Brazilian pepper; Florida-holly *	<i>Schinus terebinthifolius</i>	
Gulf graytwig; Graytwig	<i>Schoepfia chrysophylloides</i>	
Sweet broom; Licorice-weed	<i>Scoparia dulcis</i>	
Florida scrub skullcap	<i>Scutellaria arenicola</i>	

\* Non-native Species



## Collier-Seminole State Park

### Plants

Common Name	Scientific Name	Primary Habitat Codes (for designated species)
Bahama wild sensitive plant	<i>Senna ligustrina</i>	
Danglepod; Bequilla	<i>Sesbania herbacea</i>	
Shoreline sea-purslane	<i>Sesuvium portulacastrum</i>	
Common wireweed; Broomweed	<i>Sida acuta</i>	
Saffron-plum	<i>Sideroxylon celastrinum</i>	
False mastic; Wild-olive	<i>Sideroxylon foetidissimum</i>	
Florida Bully; Milk buckthorn	<i>Sideroxylon reclinatum</i>	
Willow busic	<i>Sideroxylon salicifolium</i>	
Tough bully; Scrub buckthorn	<i>Sideroxylon tenax</i>	
Paradise tree	<i>Simarouba glauca</i>	
Common nightshade	<i>Solanum americanum</i>	
Mullein nightshade	<i>Solanum donianum</i>	11,12
Potato tree	<i>Solanum erianthum</i>	
Pinebarren goldenrod	<i>Solidago fistulosa</i>	
Chapman's goldenrod	<i>Solidago odora</i> var. <i>chapmanii</i>	
Seaside goldenrod	<i>Solidago sempervirens</i>	
Wand goldenrod	<i>Solidago stricta</i>	
Common sow-thistle *	<i>Sonchus oleraceus</i>	
Yellow necklace pod	<i>Sophora tomentosa</i> var. <i>truncata</i>	
African tulip tree *	<i>Spathodea campanulata</i>	
Woodland false-buttonweed	<i>Spermacoce assurgens</i>	
False-buttonweed *	<i>Spermacoce verticillata</i>	
Creeping oxeye *	<i>Sphagneticola trilobata</i>	
Blue porterweed; Blueflower	<i>Stachytarpheta jamaicensis</i>	
Sweet shaggytuft	<i>Stenandrium dulce</i>	
Corkwood; Water toothleaf	<i>Stillingia aquatica</i>	
Cheesytoes	<i>Stylosanthes hamata</i>	
Bay-cedar	<i>Suriana maritima</i>	
West Indian mahogany	<i>Swietenia mahagoni</i>	12
Scale-leaf aster	<i>Symphotrichum adnatum</i>	
Climbing aster	<i>Symphotrichum carolinianum</i>	
Rice-button aster	<i>Symphotrichum dumosum</i>	
Simmond's aster	<i>Symphotrichum simmondsii</i>	
Annual saltmarsh aster	<i>Symphotrichum subulatum</i>	
Jambolan-plum *	<i>Syzygium cumini</i>	
Rose-apple *	<i>Syzygium jambos</i>	
Wood sage; American germander	<i>Teucrium canadense</i>	
Chiggery grapes; Soldier vine	<i>Tournefortia hirsutissima</i>	12
Eastern poison ivy	<i>Toxicodendron radicans</i>	
Jamaican nettle tree; Florida tremma	<i>Trema micranthum</i>	
Forked blue-curls	<i>Trichostema dichotomum</i>	
Caesar weed *	<i>Urena lobata</i>	
Horned bladderwort	<i>Utricularia cornuta</i>	
Floating bladderwort	<i>Utricularia inflata</i>	
Eastern purple bladderwort	<i>Utricularia purpurea</i>	
Eastern purple bladder	<i>Utricularia subulata</i>	

\* Non-native Species

## Collier-Seminole State Park

### Plants

<b>Common Name</b>	<b>Scientific Name</b>	<b>Primary Habitat Codes (for designated species)</b>
Darrow's blueberry	<i>Vaccinium darrowii</i>	
Shiny blueberry	<i>Vaccinium myrsinites</i>	
Frostweed; White crownbeard	<i>Verbesina virginica</i>	
Four-leaf vetch	<i>Vicia acutifolia</i>	
Piedmont cow pea	<i>Vigna luteola</i>	
Long-leaf violet; Bog white violet	<i>Viola lanceolata</i>	
Summer grape	<i>Vitis aestivalis</i>	
Southern fox grape	<i>Vitis rotundifolia</i>	
Calusa grape	<i>Vitis shuttleworthii</i>	
Tallowwood; Hog-plum	<i>Ximenia americana</i>	
Wild-lime; Lime prickly-ash	<i>Zanthoxylum fagara</i>	

## Collier-Seminole State Park

### Animals

Common Name	Scientific Name	Primary Habitat Codes (for all species)
<b>AMPHIBIANS</b>		
Southern toad	<i>Bufo terrestris</i>	8,41
Oak toad	<i>Bufo quercicus</i>	8,41
Green treefrog	<i>Hyla cinerea</i>	8,41,11,12,39
Cuban treefrog	<i>Osteopilus septentrionalis</i> *	11,12
Pig frog	<i>Rana grylio</i>	36
Southern leopard frog	<i>Rana sphenocephala</i>	36
Eastern narrowmouth toad	<i>Gastrophryne carolinensis</i>	39
<b>REPTILES</b>		
American alligator	<i>Alligator mississippiensis</i>	39
American crocodile	<i>Crocodylus acutus</i>	64,65
Florida snapping turtle	<i>Chelydra serpentina osceola</i>	39
Striped mud turtle	<i>Kinosternon bauri palmarum</i>	36
Florida mud turtle	<i>Kinosternon subrubrum steindachneri</i>	36
Florida box turtle	<i>Terrapene carolina bauri</i>	8,41
Diamondback terrapin	<i>Malaclemys terrapin</i>	64,65
Florida chicken turtle	<i>Deirochelys reticularia chrysea</i>	39
Gopher tortoise	<i>Gopherus polyphemus</i>	15
Florida softshell	<i>Trionyx ferox</i>	39
Green anole	<i>Anolis carolinensis carolinensis</i>	11,12
Cuban brown anole	<i>Anolis sagrei sagrei</i> *	11,12
Indo-Pacific gecko	<i>Hemidactylus garnotii</i> *	82
Ashy gecko	<i>Sphaerodactylus elegans</i> *	82
Six-lined racerunner	<i>Cnemidophorus sexlineatus sexlineatus</i>	15
Southeastern five-lined skink	<i>Eumeces inexpectatus</i>	11,12
Brown water snake	<i>Nerodia taxispilota</i>	39
Mangrove water snake	<i>Nerodia fasciata compressicauda</i>	65
Eastern garter snake	<i>Thamnophis sirtalis sirtalis</i>	8
Peninsula ribbon snake	<i>Thamnophis sauritus sackeni</i>	39
Southern ringneck snake	<i>Diadophis punctatus punctatus</i>	8
Southern black racer	<i>Coluber constrictor priapus</i>	8,11,12
Eastern indigo snake	<i>Drymarchon corais couperi</i>	All Types
Corn snake	<i>Elaphe guttata guttata</i>	8,41,11,12
Yellow rat snake	<i>Elaphe obsoleta quadrivittata</i>	8,41,11,12
Common kingsnake	<i>Lampropeltis getulus</i>	8,41,11,12
Scarlet kingsnake	<i>Lampropeltis triangulum elapsoides</i>	8,41
Florida scarlet snake	<i>Cemophora coccinea coccinea</i>	39
Florida cottonmouth	<i>Agkistrodon piscivorus conanti</i>	39
Dusky pigmy rattlesnake	<i>Sistrurus miliarius barbouri</i>	36
Eastern diamondback rattlesnake	<i>Crotalus adamanteus</i>	8,41
<b>BIRDS</b>		
Common loon	<i>Gavia immer</i>	64,65
Pied-billed grebe	<i>Podilymbus podiceps</i>	36

\* Non-native Species

## Collier-Seminole State Park

### Animals

Common Name	Scientific Name	Primary Habitat Codes (for all species)
American white pelican	<i>Pelecanus erythrorhynchos</i>	64,65
Eastern brown pelican	<i>Pelecanus occidentalis carolinensis</i>	64,65
Double-crested cormorant	<i>Phalacrocorax auritus</i>	64,65
Anhinga	<i>Anhinga anhinga</i>	65
Great white heron	<i>Ardea herodias occidentalis</i>	64,65
Great blue heron	<i>Ardea herodias</i>	39,63,65
Green heron	<i>Butorides virescens</i>	39,65
Cattle egret	<i>Bubulcus ibis</i> *	81
Little blue heron	<i>Egretta caerulea</i>	39,65
Great egret	<i>Ardea alba</i>	36,39,65
Snowy egret	<i>Egretta thula</i>	36
Tricolored heron	<i>Egretta tricolor</i>	36
Black-crowned night heron	<i>Nycticorax nycticorax</i>	39
Yellow-crowned night heron	<i>Nycticorax violaceus</i>	39
American bittern	<i>Botaurus lentiginosus</i>	36
Wood stork	<i>Mycteria americana</i>	36,65
Glossy ibis	<i>Plegadis falcinellus</i>	36
White ibis	<i>Eudocimus albus</i>	36
Roseate spoonbill	<i>Ajaia ajaja</i>	36,65
Mottled duck	<i>Anas fulvigula</i>	36
Green-winged teal	<i>Anas crecca</i>	65
Blue-winged teal	<i>Anas discors</i>	65
Northern shoveler	<i>Anas clypeata</i>	65
Ring-necked duck	<i>Aythya collaris</i>	65
Lesser scaup	<i>Aythya affinis</i>	65
Muscovy duck	<i>Cairina moschata</i> *	MTC
Turkey vulture	<i>Cathartes aura</i>	All Types
Black vulture	<i>Coragyps atratus</i>	All Types
Swallow-tailed kite	<i>Elanoides forficatus</i>	8,41,39
Snail kite	<i>Rostrhamus sociabilis</i>	OF
Sharp-shinned hawk	<i>Accipiter striatus</i>	8,41
Cooper's hawk	<i>Accipiter cooperii</i>	8,41
Red-tailed hawk	<i>Buteo jamaicensis</i>	8,41
Red-shouldered hawk	<i>Buteo lineatus</i>	All Types
Broad-winged hawk	<i>Buteo platypterus</i>	11,12
Short-tailed hawk	<i>Buteo brachyurus</i>	8,41,39
Southern bald eagle	<i>Haliaeetus leucocephalus</i>	8, OF
Northern harrier	<i>Circus cyaneus</i>	36
Osprey	<i>Pandion haliaetus</i>	63,64,65
Peregrine falcon	<i>Falco peregrinus tundrius</i>	75
Eastern American kestrel	<i>Falco sparverius sparverius</i>	8,41
Northern bobwhite	<i>Colinus virginianus</i>	8
Wild turkey	<i>Meleagris gallopavo</i>	8,41
Sandhill crane	<i>Grus canadensis</i>	OF
Limpkin	<i>Aramus guarauna</i>	75
King rail	<i>Rallus elegans</i>	36

\* Non-native Species

## Collier-Seminole State Park

### Animals

Common Name	Scientific Name	Primary Habitat Codes (for all species)
Virginia rail	<i>Rallus limicola</i>	63
Clapper rail	<i>Rallus longirostris</i>	63
Common moorhen	<i>Gallinula chloropus</i>	36
American coot	<i>Fulica americana</i>	36
American oystercatcher	<i>Haematopus palliatus</i>	65
Semipalmated plover	<i>Charadrius semipalmatus</i>	65
Killdeer	<i>Charadrius vociferus</i>	82
Black-bellied plover	<i>Pluvialis squatarola</i>	65
American woodcock	<i>Scolopax minor</i>	39
Common snipe	<i>Gallinago gallinago</i>	36
Whimbrel	<i>Numenius phaeopus</i>	65
Spotted sandpiper	<i>Actitis macularia</i>	65
Greater yellowlegs	<i>Tringa melanoleuca</i>	36
Lesser yellowlegs	<i>Tringa flavipes</i>	36
Willet	<i>Catoptrophorus semipalmatus</i>	65
Least sandpiper	<i>Calidris minutilla</i>	36
Dunlin	<i>Calidris alpina</i>	65
Semipalmated sandpiper	<i>Calidris pusilla</i>	65
Short-billed dowitcher	<i>Limnodromus griseus</i>	65
Black-necked stilt	<i>Himantopus mexicanus</i>	36
Ring-billed gull	<i>Larus delawarensis</i>	65
Laughing gull	<i>Larus atricilla</i>	65
Forster's tern	<i>Sterna forsteri</i>	65
Common tern	<i>Sterna hirundo</i>	65
Least tern	<i>Sterna antillarum</i>	65
Royal tern	<i>Sterna maxima</i>	65
Sandwich tern	<i>Sterna sandvicensis</i>	65
Caspian tern	<i>Sterna caspia</i>	65
White-crowned pigeon	<i>Columba leucocephala</i>	64
Mourning dove	<i>Zenaida macroura</i>	8
Common ground-dove	<i>Columbina passerina</i>	15
Monk parakeet	<i>Myiopsitta monachus</i> *	81
Mangrove cuckoo	<i>Coccyzus minor</i>	64
Yellow-billed cuckoo	<i>Coccyzus americanus</i>	12
Smooth-billed ani	<i>Crotophaga ani</i> *	81
Barn owl	<i>Tyto alba</i>	11,12
Eastern screech-owl	<i>Otus asio</i>	8,41,11,12
Great horned owl	<i>Bubo virginianus</i>	8
Barred owl	<i>Strix varia</i>	8,15,41,39,11,12
Chuck-will's-widow	<i>Caprimulgus carolinensis</i>	8
Whip-poor-will	<i>Caprimulgus vociferus</i>	11,12
Common nighthawk	<i>Chordeiles minor</i>	8,36
Ruby-throated hummingbird	<i>Archilochus colubris</i>	82
Belted kingfisher	<i>Ceryle alcyon</i>	63
Northern flicker	<i>Colaptes auratus</i>	8
Pileated woodpecker	<i>Dryocopus pileatus</i>	11,12

\* Non-native Species

## Collier-Seminole State Park

### Animals

Common Name	Scientific Name	Primary Habitat Codes (for all species)
Red-bellied woodpecker	<i>Melanerpes carolinus</i>	8,41,11,12
Yellow-bellied sapsucker	<i>Sphyrapicus varius</i>	11,12
Southern hairy woodpecker	<i>Picoides villosus audubonii</i>	8,41
Downy woodpecker	<i>Picoides pubescens</i>	11,12
Red-cockaded woodpecker	<i>Picoides borealis</i>	8,41
Eastern kingbird	<i>Tyrannus tyrannus</i>	8,41
Gray kingbird	<i>Tyrannus dominicensis</i>	64
Western kingbird	<i>Tyrannus verticalis</i>	82
Scissor-tailed flycatcher	<i>Tyrannus forficatus</i>	82
Great crested flycatcher	<i>Myiarchus crinitus</i>	11,12
Eastern phoebe	<i>Sayornis phoebe</i>	12
Tree swallow	<i>Tachycineta bicolor</i>	All Types
Bank swallow	<i>Riparia riparia</i>	36
Barn swallow	<i>Hirundo rustica</i>	36
Purple martin	<i>Progne subis</i>	OF
Blue jay	<i>Cyanocitta cristata</i>	All Types
American crow	<i>Corvus brachyrhynchos</i>	All Types
Fish crow	<i>Corvus ossifragus</i>	All Types
Tufted titmouse	<i>Parus bicolor</i>	11,12
Brown-headed nuthatch	<i>Sitta pusilla</i>	8,41
House wren	<i>Troglodytes aedon</i>	8
Carolina wren	<i>Thryothorus ludovicianus</i>	11,12
Sedge wren	<i>Cistothorus platensis</i>	36
Northern mockingbird	<i>Mimus polyglottos</i>	MTC
Gray catbird	<i>Dumetella carolinensis</i>	11,12
Brown thrasher	<i>Toxostoma rufum</i>	11,12
American robin	<i>Turdus migratorius</i>	8,41,12,36
Hermit thrush	<i>Catharus guttatus</i>	11,12
Eastern bluebird	<i>Sialia sialis</i>	8,41
Blue-gray gnatcatcher	<i>Polioptila caerulea</i>	11,12
Ruby-crowned kinglet	<i>Regulus calendula</i>	11,12
Cedar waxwing	<i>Bombycilla cedrorum</i>	11,12
Loggerhead shrike	<i>Lanius ludovicianus</i>	8,41
White-eyed vireo	<i>Vireo griseus</i>	11,12,39
Blue-headed vireo	<i>Vireo solitarius</i>	11,12,39
Black-whiskered vireo	<i>Vireo altiloquus</i>	64
Red-eyed vireo	<i>Vireo olivaceus</i>	39
Black and white warbler	<i>Mniotilta varia</i>	11,12,39
Blue-winged warbler	<i>Vermivora pinus</i>	11,12,39
Tennessee warbler	<i>Vermivora peregrina</i>	11,12,39
Orange-crowned warbler	<i>Vermivora celata</i>	11,12,39
Northern parula	<i>Parula americana</i>	11,12,39
Black-throated blue warbler	<i>Dendroica caerulescens</i>	11,12,39
Yellow-rumped warbler	<i>Dendroica coronata</i>	11,12,39
Black-throated green warbler	<i>Dendroica virens</i>	11,12,39
Yellow-throated warbler	<i>Dendroica dominica</i>	11,12,39

\* Non-native Species

## Collier-Seminole State Park

### Animals

Common Name	Scientific Name	Primary Habitat Codes (for all species)
Blackpoll warbler	<i>Dendroica striata</i>	11,12,39
Pine warbler	<i>Dendroica pinus</i>	8,41
Florida prairie warbler	<i>Dendroica discolor paludicola</i>	64
Palm warbler	<i>Dendroica palmarum</i>	11,12,39
Ovenbird	<i>Seiurus aurocapillus</i>	11,12,39
Common yellowthroat	<i>Geothlypis trichas</i>	8,36
American redstart	<i>Setophaga ruticilla ruticilla</i>	11,12,39
Eastern meadowlark	<i>Sturnella magna</i>	36
Red-winged blackbird	<i>Agelaius phoeniceus</i>	36
Boat-tailed grackle	<i>Quiscalus major</i>	36
Common grackle	<i>Quiscalus quiscula</i>	36,39
Northern cardinal	<i>Cardinalis cardinalis</i>	11,12
Rose-breasted grosbeak	<i>Pheucticus ludovicianus</i>	82
Painted bunting	<i>Passerina ciris</i>	MTC
Eastern towhee	<i>Pipilo erythrophthalmus</i>	8
Savannah sparrow	<i>Passerculus sandwichensis</i>	36
Swamp sparrow	<i>Melospiza georgiana</i>	36
Song sparrow	<i>Melospiza melodia</i>	36
American goldfinch	<i>Carduelis tristis</i>	36

### MAMMALS

Virginia opossum	<i>Didelphis virginiana</i>	All Types
Short-tailed shrew	<i>Blarina brevicauda</i>	11,12
Eastern mole	<i>Scalopus aquaticus</i>	8,81
Nine-banded armadillo	<i>Dasybus novemcinctus</i> *	11,12
Marsh rabbit	<i>Sylvilagus palustris</i>	36
Gray squirrel	<i>Sciurus carolinensis</i>	11,12,39
Big Cypress fox squirrel	<i>Sciurus niger avicennia</i>	64
Marsh rice rat	<i>Oryzomys palustris</i>	36
Cotton mouse	<i>Peromyscus gossypinus gossypinus</i>	11,12
Hispid cotton rat	<i>Sigmodon hispidus</i>	8
Gray fox	<i>Urocyon cinereoargenteus</i>	All Types
Florida black bear	<i>Ursus americanus floridanus</i>	All Types
Raccoon	<i>Procyon lotor</i>	All Types
River otter	<i>Lutra canadensis</i>	64,65
Long-tailed weasel	<i>Mustela frenata olivacea</i>	MTC
Eastern spotted skunk	<i>Spilogale putorius</i>	41
Spotted skunk	<i>Mephitis mephitis</i>	12,81
Florida panther	<i>Puma concolor</i>	All Types
Bobcat	<i>Felis rufus</i>	All Types
West Indian manatee	<i>Trichechus manatus</i>	64,65
Atlantic bottle-nosed dolphin	<i>Tursiops truncatus</i>	65
Wild pig	<i>Sus scrofa</i> *	8,41
White-tailed deer	<i>Odocoileus virginianus</i>	8,41

\* Non-native Species

## Habitat Codes

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### 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. Coastal Grasslands
10. Pine Rockland
11. Prairie Hammock
12. Rockland Hammock
13. Sandhill
14. Scrub
15. Scrubby Flatwoods
16. Shell Mound
17. Sinkhole
18. Slope Forest
19. Upland Glade
20. Upland Hardwood Forest
21. Upland Mixed Forest
22. Upland Pine Forest
23. Xeric Hammock

### Palustrine

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

### Lacustrine

43. Clastic Upland Lake
44. Coastal Dune Lake
45. Coastal Rockland Lake
46. Flatwood/Prairie Lake
47. Marsh Lake

### Lacustrine—Continued

48. River Floodplain Lake
49. Sandhill Upland Lake
50. Sinkhole Lake
51. Swamp Lake

### Riverine

52. Alluvial Stream
53. Blackwater Stream
54. Seepage Stream
55. Spring-Run Stream

### Estuarine

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

### Marine

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

### Subterranean

79. Aquatic Cave
80. Terrestrial Cave

### Miscellaneous

81. Ruderal
82. Developed

MTC Many Types Of Communities

OF Overflying



**Addendum 5—Designated Species List**

**Rank Explanations  
For FNAI Global Rank, Fnai State Rank, Federal Status,  
And State Status**

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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

**Rank Explanations  
For FNAI Global Rank, FNAI State Rank, Federal Status,  
And State Status**

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- 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)

**LEGAL STATUS**

- N = Not currently listed, nor currently being considered for listing, by state or federal agencies.

**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.

Collier-Seminole State Park

Designated Species

Plants

Common Name/ <i>Scientific Name</i>	<u>Designated Species Status</u>		
	FDA	USFWS	FNAI
Golden leather fern <i>Acrostichum aureum</i>	LT		G5,S3
Wild birdnest fern <i>Asplenium serratum</i>	LE		G4,S1
Pine pink <i>Bletia purpurea</i>	LT		
Satinleaf <i>Chrysophyllum oliviforme</i>	LT		
Cowhorn orchid; Cigar orchid <i>Cyrtopodium punctatum</i>	LE		G5?,S1
Guiana-plum <i>Drypetes lateriflora</i>	LT		
Tampa butterfly orchid <i>Encyclia tampensis</i>	CE		
Dingy-flowered epidendrum <i>Epidendrum anceps</i>	LE		
Umbelled epidendrum <i>Epidendrum floridense</i>	LE		
Night-scent orchid <i>Epidendrum nocturnum</i>	LE		G4G5,S2
Rigid epidendrum <i>Epidendrum rigidum</i>	LE		
Wild cotton <i>Gossypium hirsutum</i>	LE		G4G5,S3
Hammock false-rein orchid <i>Habenaria distans</i>	LE		G5S1
Snowy orchid; Bog torch <i>Habenaria nivea</i>	LT		
Jingle-bell orchid <i>Harrisella porrecta</i>	LT		
Pine lily; Catesby's lily <i>Lilium catesbaei</i>	LT		
Nodding club-moss <i>Lycopodiella cernua</i>	CE		
Simpson's stopper <i>Myrcianthes fragrans</i>	LT		
Giant sword fern <i>Nephrolepis biserrata</i>	LT		
Hand fern <i>Ophioglossum palmatum</i>	LE		G4,S2
Erect prickly-pear cactus <i>Opuntia stricta</i>	LT		
Pineland passion vine <i>Passiflora pallens</i>	LE		G3G4,S2
Ghost orchid <i>Dendrophylax lindenii</i>	LE		G2G4,S2

Collier-Seminole State Park

Designated Species

Plants

Common Name/ <i>Scientific Name</i>	<u>Designated Species Status</u>		
	FDA	USFWS	FNAI
Pale-flowered polystachya <i>Polystachya concreta</i>	LE		
Florida royal palm <i>Roystonea regia</i>	LE	MC	G2,S2
Beachberry; Inkberry <i>Scaevola plumieri</i>	LT		
Mullein nightshade <i>Solanum donianum</i>	LT		
West Indian mahogany <i>Swietenia mahagoni</i>	LT		G3G4,S3
Medusahead air plant <i>Tillandsia balbisiana</i>	LT		
Cardinal air plant; Stiff-leaved wild pine <i>Tillandsia fasciculata</i>	LE		
Twisted air plant <i>Tillandsia flexuosa</i>	LT		G5,S3
Fuzzy-wuzzy air plant <i>Tillandsia pruinosa</i>	LE		G4,S1
Spreading air plant <i>Tillandsia utriculata</i>	LE		
Soft-leaved wild pine <i>Tillandsia variabilis</i>	LT		
Chiggery grapes; Soldier vine <i>Tournefortia hirsutissima</i>	LE		

**Collier-Seminole State Park**

**Designated Species**

**Animals**

<b>Common Name/ Scientific Name</b>	<b>Designated Species Status</b>		
	<b>FFWCC</b>	<b>USFWS</b>	<b>FNAI</b>
<b>REPTILES</b>			
American alligator <i>Alligator mississippiensis</i>	LS	T(S/A)	G5/S4
American crocodile <i>Crocodylus acutus</i>	LE	LE	G2/S1
Gopher tortoise <i>Gopherus polyphemus</i>	LS		G3/S3
Eastern indigo snake <i>Drymarchon corais</i>	LT	LT	G4T3/S3
<b>BIRDS</b>			
Eastern brown pelican <i>Pelecanus occidentalis</i>	LS		G4/S3
Great white heron <i>Ardea herodias</i>			G5T2/S2
Little blue heron <i>Egretta caerulea</i>	LS		G5S4
Great egret <i>Ardea alba</i>			G5/S4
Snowy egret <i>Egretta thula</i>	LS		G5/S3
Tricolored heron <i>Egretta tricolor</i>	LS		G5/S4
Black-crowned night heron <i>Nycticorax nycticorax</i>			G5/S3
Yellow-crowned night heron <i>Nycticorax violaceus</i>			G5/S3
Wood stork <i>Mycteria americana</i>	LE	LE	G4/S2
Glossy ibis <i>Plegadis falcinellus</i>			G5/S3
White ibis <i>Eudocimus albus</i>	LS		G5/S4
Roseate spoonbill <i>Ajaia ajaja</i>	LS		G5/S2
Snail kite <i>Rostramus sociabilis</i>	LE	LE	G4G5T2/S2
Cooper's hawk <i>Accipiter cooperii</i>			G5/S3
Short-tailed hawk <i>Buteo brachyurus</i>			G4G5/S1
Southern bald eagle <i>Haliaeetus leucocephalus</i>	LT	LT	G4/S3
Osprey <i>Pandion haliaetus</i>			G5/S3S4

**Collier-Seminole State Park**

**Designated Species**

**Animals**

<b>Common Name/ Scientific Name</b>	<b>Designated Species Status</b>		
	<b>FFWCC</b>	<b>USFWS</b>	<b>FNAI</b>
Peregrine falcon <i>Falco peregrinus</i>	LE		G4/S2
Limpkin <i>Aramus guarauna</i>	LS		G5/S3
American oystercatcher <i>Haematopus palliatus</i>	LS		G5/S2
Least tern <i>Sterna antillarum</i>	LT		G4/S3
Royal tern <i>Sterna maxima</i>			G5/S3
Sandwich tern <i>Sterna sandvicensis</i>			G5/S2
Caspian tern <i>Sterna caspia</i>			G5/S2
White-crowned pigeon <i>Columba leucocephala</i>	LT		G3/S3
Mangrove cuckoo <i>Coccyzus minor</i>			G5/S3
Southern hairy woodpecker <i>Picoides villosus</i>			G5/S3
Red-cockaded woodpecker <i>Picoides borealis</i>	LT	LE	G3/S2
Black-whiskered vireo <i>Vireo altiloquus</i>			G5/S3
Florida prairie warbler <i>Dendroica discolor</i>			G5T3/S3
American redstart <i>Setophaga ruticilla</i>			G5/S2
<b>MAMMALS</b>			
Mangrove fox squirrel <i>Sciurus niger avicennia</i>	LT		G5T2/S2
Florida black bear <i>Ursus americanus</i>	LT		G5T2/S2
Long-tailed weasel <i>Mustela frenata</i>			G5T3/S3
Florida panther <i>Puma concolor</i>	LE	LE	G5T1/S1
West Indian manatee <i>Trichechus manatus</i>	LE	LE	G2/S2

**Addendum 6—Priority Schedule And Cost Estimates**



**Collier-Seminole State Park  
Priority Schedule And Cost Estimates**

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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.

**ADMINISTRATION**

1. Two FTE positions. 10 years. **Estimated cost:** **\$448,000.**

**RESOURCE MANAGEMENT**

2. Procure new brush truck. 0-1 years. **Estimated cost:** **\$50,000.**  
3. Prescribed burning program to maintain and restore natural communities,  
0-10 years. **Estimated Cost: \$5110/yr. Reoccurring (10 yrs):** **\$51,100.**  
4. Exotic plant removal/control. **Estimated Cost: \$4000/yr. Reoccurring (10 yrs):** **\$40,000.**

**Total Estimated Cost:** **\$ 589,100.**

**Collier-Seminole State Park  
Priority Schedule And Cost Estimates**

<b>Item</b>	<b>Quantity</b>	<b>Unit</b>	<b>Unit Price</b>	<b>Multiplier</b>	<b>Amount</b>
<b>NEW FACILITY CONSTRUCTION</b>					
<b>Boat Basin and Picnic Area</b>					
Concrete Sidewalks	2000.000	SF	\$4.00	1.25	\$10,000.00
Relocated Concession Building	1.000	ea.	\$90,000.00	1.25	\$112,500.00
Dock Improvements	1.000	ea.	\$180,000.00	1.25	\$225,000.00
Screened Pavilion and BBQ Pit	1.000	ea.	\$60,000.00	1.25	\$75,000.00
Replace Medium Picnic Restroom	1.000	ea.	\$105,000.00	1.25	\$131,250.00
Replace Playground Equipment	1.000	ea.	\$24,000.00	1.25	\$30,000.00
Replace Small Picnic Shelters	4.000	ea.	\$21,000.00	1.25	\$105,000.00
Waiting Shelter	1.000	ea.	\$60,000.00	1.25	\$75,000.00
<b>Campground</b>					
Redesign and Upgrade Standard Camping Area	1.000	ea.	\$500,000.00	1.25	\$625,000.00
<b>Support Facilities</b>					
Ranger Residence	1.000	ea.	\$165,000.00	1.25	\$206,250.00
<b>Trails and Interpretation</b>					
Replace Nature Trail Boardwalk	2640.000	LF	\$75.00	1.25	\$247,500.00
Upgrade Interpretive Center Exhibits	1.000	LS	\$70,000.00	1.25	\$87,500.00
Interpretive Signs	6.000	ea.	\$5,000.00	1.25	\$37,500.00
Expand Shared-Use Trail	5280.000	LF	\$1.00	1.25	\$6,600.00
Safety Signs / Crosswalk	1.000	ea.	\$15,000.00	1.25	\$18,750.00

Sub-Total \$1,992,850.00

20 Percent Design, Permitting and Contingency Fee  
\$398,570.00

**Total \$2,391,420.00**

**NOTE: These preliminary cost estimates, based on Divisions standards, do not include costs for site-specific elements not evident at the conceptual level of planning. Additional costs should be investigated before finalizing budget estimates. All items fall in the new facility construction category © of the uniform cost accounting system required by ch. 259.037 F.S.**

## Descriptions Of Natural Communities Developed By FNAI

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This summary presents the hierarchical classification and brief descriptions of 82 Natural Communities developed by Florida Natural Areas Inventory and identified as collectively constituting the original, natural biological associations of Florida.

A Natural Community is defined as a distinct and recurring assemblage of populations of plants, animals, fungi and microorganisms naturally associated with each other and their physical environment. For more complete descriptions, see Guide to the Natural Communities of Florida, available from Florida Department of Natural Resources.

The levels of the hierarchy are:

**Natural Community Category** - defined by hydrology and vegetation.

**Natural Community Groups** - defined by landform, substrate, and vegetation.

**Natural Community Type** - defined by landform and substrate; soil moisture condition; climate; fire; and characteristic vegetation.

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### TERRESTRIAL COMMUNITIES

XERIC UPLANDS  
COASTAL UPLANDS  
MESIC UPLANDS  
ROCKLANDS  
MESIC FLATLANDS

### PALUSTRINE COMMUNITIES

WET FLATLANDS  
SEEPAGE WETLANDS  
FLOODPLAIN WETLANDS  
BASIN WETLANDS

### LACUSTRINE COMMUNITIES

#### RIVERINE COMMUNITIES

#### SUBTERRANEAN COMMUNITIES

#### MARINE/ESTUARINE COMMUNITIES

#### Definitions of Terms Used in Natural Community Descriptions

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**TERRESTRIAL** - Upland habitats dominated by plants which are not adapted to anaerobic soil conditions imposed by saturation or inundation for more than 10% of the growing season.

**XERIC UPLANDS** - very dry, deep, well-drained hills of sand with xeric-adapted vegetation.

**Sandhill** - upland with deep sand substrate; xeric; temperate; frequent fire (2-5 years); longleaf pine and/or turkey oak with wiregrass understory.

**Scrub** - old dune with deep fine sand substrate; xeric; temperate or subtropical; occasional or rare fire (20 - 80 years); sand pine and/or scrub oaks and/or rosemary and lichens.

**Xeric Hammock** - upland with deep sand substrate; xeric-mesic; temperate or subtropical; rare or no fire; live oak and/or sand live oak and/or laurel oak and/or other oaks, sparkleberry, saw palmetto.

**COASTAL UPLANDS** - substrate and vegetation influenced primarily by such coastal (maritime) processes as erosion, deposition, salt spray, and storms.

**Beach Dune** - active coastal dune with sand substrate; xeric; temperate or subtropical; occasional or rare fire; sea oats and/or mixed salt-spray tolerant grasses and herbs.

## Descriptions Of Natural Communities Developed By FNAI

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**Coastal Berm** - old bar or storm debris with sand/shell substrate; xeric-mesic; subtropical or temperate; rare or no fire; buttonwood, mangroves, and/or mixed halophytic herbs and/or shrubs and trees.

**Coastal Grassland** - coastal flatland with sand substrate; xeric-mesic; subtropical or temperate; occasional fire; grasses, herbs, and shrubs with or without slash pine and/or cabbage palm.

**Coastal Rock Barren** - flatland with exposed limestone substrate; xeric; subtropical; no fire; algae, mixed halophytic herbs and grasses, and/or cacti and stunted shrubs and trees.

**Coastal Strand** - stabilized coastal dune with sand substrate; xeric; subtropical or temperate; occasional or rare fire; dense saw palmetto and/or seagrape and/or mixed stunted shrubs, yucca, and cacti.

**Maritime Hammock** - stabilized coastal dune with sand substrate; xeric-mesic; subtropical or temperate; rare or no fire; mixed hardwoods and/or live oak.

**Shell Mound** - Indian midden with shell substrate; xeric-mesic; subtropical or temperate; rare or no fire; mixed hardwoods.

**MESIC UPLANDS** - dry to moist hills of sand with varying amounts of clay, silt or organic material; diverse mixture of broadleaved and needleleaved temperate woody species.

**Bluff** - steep slope with rock, sand, and/or clay substrate; hydric-xeric; temperate; sparse grasses, herbs and shrubs.

**Slope Forest** - steep slope on bluff or in sheltered ravine; sand/clay substrate; mesic-hydric; temperate; rare or no fire; magnolia, beech, spruce pine, Shumard oak, Florida maple, mixed hardwoods.

**Upland Glade** - upland with calcareous rock and/or clay substrate; hydric-xeric; temperate; sparse mixed grasses and herbs with occasional stunted trees and shrubs, e.g., eastern red cedar.

**Upland Hardwood Forest** - upland with sand/clay and/or calcareous substrate; mesic; temperate; rare or no fire; spruce pine, magnolia, beech, pignut hickory, white oak, and mixed hardwoods.

**Upland Mixed Forest** - upland with sand/clay substrate; mesic; temperate; rare or no fire; loblolly pine and/or shortleaf pine and/or laurel oak and/or magnolia and spruce pine and/or mixed hardwoods.

**Upland Pine Forest** - upland with sand/clay substrate; mesic-xeric; temperate; frequent or occasional fire; longleaf pine and/or loblolly pine and/or shortleaf pine, southern red oak, wiregrass.

**ROCKLANDS** - low, generally flat limestone outcrops with tropical vegetation; or limestone exposed through karst activities with tropical or temperate vegetation.

**Pine Rockland** - flatland with exposed limestone substrate; mesic-xeric; subtropical; frequent fire; south Florida slash pine, palms and/or hardwoods, and mixed grasses and herbs.

**Rockland Hammock** - flatland with limestone substrate; mesic; subtropical; rare or no

## Descriptions Of Natural Communities Developed By FNAI

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fire; mixed tropical hardwoods, often with live oak.

**Sinkhole** - karst feature with steep limestone walls; mesic-hydric; subtropical or temperate; no fire; ferns, herbs, shrubs, and hardwoods.

**MESIC FLATLANDS** - flat, moderately well-drained sandy substrates with admixture of organic material, often with a hard pan.

**Dry Prairie** - flatland with sand substrate; mesic-xeric; subtropical or temperate; annual or frequent fire; wiregrass, saw palmetto, and mixed grasses and herbs.

**Mesic Flatwoods** - flatland with sand substrate; mesic; subtropical or temperate; frequent fire; slash pine and/or longleaf pine with saw palmetto, gallberry and/or wiregrass or cutthroat grass understory.

**Prairie Hammock** - flatland with sand/organic soil over marl or limestone substrate; mesic; subtropical; occasional or rare fire; live oak and/or cabbage palm.

**Scrubby Flatwoods** - flatland with sand substrate; xeric-mesic; subtropical or temperate; occasional fire; longleaf pine or slash pine with scrub oaks and wiregrass understory.

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**PALUSTRINE** - Wetlands dominated by plants adapted to anaerobic substrate conditions imposed by substrate saturation or inundation during 10% or more of the growing season. Includes non-tidal wetlands; tidal wetlands with ocean derived salinities less than 0.5 ppt and dominance by salt-intolerant species; small (less than 8 ha), shallow (less than 2 m deep at low water) water bodies without wave-formed or bedrock shoreline; and inland brackish or saline wetlands.

**WET FLATLANDS** - flat, poorly drained sand, marl or limestone substrates.

**Hydric Hammock** - lowland with sand/clay/organic soil, often over limestone; mesic-hydric; subtropical or temperate; rare or no fire; water oak, cabbage palm, red cedar, red maple, bays, hackberry, hornbeam, blackgum, needle palm, and mixed hardwoods.

**Marl Prairie** - flatland with marl over limestone substrate; seasonally inundated; tropical; frequent to no fire; sawgrass, spikerush, and/or mixed grasses, sometimes with dwarf cypress.

**Wet Flatwoods** - flatland with sand substrate; seasonally inundated; subtropical or temperate; frequent fire; vegetation characterized by slash pine or pond pine and/or cabbage palm with mixed grasses and herbs.

**Wet Prairie** - flatland with sand substrate; seasonally inundated; subtropical or temperate; annual or frequent fire; maidencane, beakrush, spikerush, wiregrass, pitcher plants, St. John's wort, mixed herbs.

**SEEPAGE WETLANDS** - sloped or flat sands or peat with high moisture levels maintained by downslope seepage; wetland and mesic woody and/or herbaceous vegetation.

**Baygall** - wetland with peat substrate at base of slope; maintained by downslope seepage, usually saturated and occasionally inundated; subtropical or temperate; rare or no fire; bays and/or dahoon holly and/or red maple and/or mixed hardwoods.

**Seepage Slope** - wetland on or at base of slope with organic/sand substrate; maintained

## Descriptions Of Natural Communities Developed By FNAI

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by downslope seepage, usually saturated but rarely inundated; subtropical or temperate; frequent or occasional fire; sphagnum moss, mixed grasses and herbs or mixed hydrophytic shrubs.

**FLOODPLAIN WETLANDS** - flat, alluvial sand or peat substrates associated with flowing water courses and subjected to flooding but not permanent inundation; wetland or mesic woody and herbaceous vegetation.

**Bottomland Forest** - flatland with sand/clay/organic substrate; occasionally inundated; temperate; rare or no fire; water oak, red maple, beech, magnolia, tuliptree, sweetgum, bays, cabbage palm, and mixed hardwoods.

**Floodplain Forest** - floodplain with alluvial substrate of sand, silt, clay or organic soil; seasonally inundated; temperate; rare or no fire; diamondleaf oak, overcup oak, water oak, swamp chestnut oak, blue palmetto, cane, and mixed hardwoods.

**Floodplain Marsh** - floodplain with organic/sand/alluvial substrate; seasonally inundated; subtropical; frequent or occasional fire; maidencane, pickerelweed, sagittaria spp., buttonbush, and mixed emergents.

**Floodplain Swamp** - floodplain with organic/alluvial substrate; usually inundated; subtropical or temperate; rare or no fire; vegetation characterized by cypress, tupelo, black gum, and/or pop ash.

**Freshwater Tidal Swamp** - river mouth wetland, organic soil with extensive root mat; inundated with freshwater in response to tidal cycles; rare or no fire; cypress, bays, cabbage palm, gums and/or cedars.

**Slough** - broad, shallow channel with peat over mineral substrate; seasonally inundated, flowing water; subtropical; occasional or rare fire; pop ash and/or pond apple or water lily.

**Strand Swamp** - broad, shallow channel with peat over mineral substrate; seasonally inundated, flowing water; subtropical; occasional or rare fire; cypress and/or willow.

**Swale** - broad, shallow channel with sand/peat substrate; seasonally inundated, flowing water; subtropical or temperate; frequent or occasional fire; sawgrass, maidencane, pickerelweed, and/or mixed emergents.

**BASIN WETLANDS** - shallow, closed basin with outlet usually only in time of high water; peat or sand substrate, usually inundated; wetland woody and/or herbaceous vegetation.

**Basin Marsh** - large basin with peat substrate; seasonally inundated; temperate or subtropical; frequent fire; sawgrass and/or cattail and/or buttonbush and/or mixed emergents.

**Basin Swamp** - large basin with peat substrate; seasonally inundated, still water; subtropical or temperate; occasional or rare fire; vegetation characterized by cypress, blackgum, bays and/or mixed hardwoods.

**Bog** - wetland on deep peat substrate; moisture held by sphagnum mosses, soil usually saturated, occasionally inundated; subtropical or temperate; rare fire; sphagnum moss and titi and/or bays and/or dahoon holly, and/or mixed hydrophytic shrubs.

**Coastal Interdunal Swale** - long narrow depression wetlands in sand/peat-sand substrate; seasonally inundated, fresh to brackish, still water; temperate; rare fire;

## Descriptions Of Natural Communities Developed By FNAI

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graminoids and mixed wetland forbs.

**Depression Marsh** - small rounded depression in sand substrate with peat accumulating toward center; seasonally inundated, still water; subtropical or temperate; frequent or occasional fire; maidencane, fire flag, pickerelweed, and mixed emergents, may be in concentric bands.

**Dome Swamp** - rounded depression in sand/limestone substrate with peat accumulating toward center; seasonally inundated, still water; subtropical or temperate; occasional or rare fire; cypress, blackgum, or bays, often tallest in center.

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**LACUSTRINE** - Non-flowing wetlands of natural depressions lacking persistent emergent vegetation except around the perimeter.

**Clastic Upland Lake** - generally irregular basin in clay uplands; predominantly with inflows, frequently without surface outflow; clay or organic substrate; colored, acidic, soft water with low mineral content (sodium, chloride, sulfate); oligo-mesotrophic to eutrophic.

**Coastal Dune Lake** - basin or lagoon influenced by recent coastal processes; predominantly sand substrate with some organic matter; salinity variable among and within lakes, and subject to saltwater intrusion and storm surges; slightly acidic, hard water with high mineral content (sodium, chloride).

**Coastal Rockland Lake** - shallow basin influence by recent coastal processes; predominantly barren oolitic or Miami limestone substrate; salinity variable among and within lakes, and subject to saltwater intrusion, storm surges and evaporation (because of shallowness); slightly alkaline, hard water with high mineral content (sodium, chloride).

**Flatwoods/Prairie Lake** - generally shallow basin in flatlands with high water table; frequently with a broad littoral zone; still water or flow-through; sand or peat substrate; variable water chemistry, but characteristically colored to clear, acidic to slightly alkaline, soft to moderately hard water with moderate mineral content (sodium, chloride, sulfate); oligo-mesotrophic to eutrophic.

**Marsh lake** - generally shallow, open water area within wide expanses of freshwater marsh; still water or flow-through; peat, sand or clay substrate; occurs in most physiographic regions; variable water chemistry, but characteristically highly colored, acidic, soft water with moderate mineral content (sodium, chloride, sulfate); oligo-mesotrophic to eutrophic.

**River Floodplain Lake** - meander scar, backwater, or larger flow-through body within major river floodplains; sand, alluvial or organic substrate; colored, alkaline or slightly acidic, hard or moderately hard water with high mineral content (sulfate, sodium, chloride, calcium, magnesium); mesotrophic to eutrophic.

**Sandhill Upland Lake** - generally rounded solution depression in deep sandy uplands or sandy uplands shallowly underlain by limestone; predominantly without surface inflows/outflows; typically sand substrate with organic accumulations toward middle; clear, acidic moderately soft water with varying mineral content; ultra-oligotrophic to mesotrophic.

**Sinkhole Lake** - typically deep, funnel-shaped depression in limestone base; occurs in most physiographic regions; predominantly without surface inflows/outflows, but frequently with connection to the aquifer; clear, alkaline, hard water with high mineral content (calcium, bicarbonate, magnesium).

## Descriptions Of Natural Communities Developed By FNAI

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**Swamp Lake** - generally shallow, open water area within basin swamps; still water or flow-through; peat, sand or clay substrate; occurs in most physiographic regions; variable water chemistry, but characteristically highly colored, acidic, soft water with moderate mineral content (sodium, chloride, sulfate); oligo-mesotrophic to eutrophic.

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**RIVERINE** - Natural, flowing waters from their source to the downstream limits of tidal influence and bounded by channel banks.

**Alluvial Stream** - lower perennial or intermittent/seasonal watercourse characterized by turbid water with suspended silt, clay, sand and small gravel; generally with a distinct, sediment-derived (alluvial) floodplain and a sandy, elevated natural levee just inland from the bank.

**Blackwater Stream** - perennial or intermittent/seasonal watercourse characterized by tea-colored water with a high content of particulate and dissolved organic matter derived from drainage through swamps and marshes; generally lacking an alluvial floodplain.

**Seepage Stream** - upper perennial or intermittent/seasonal watercourse characterized by clear to lightly colored water derived from shallow groundwater seepage.

**Spring-run Stream** - perennial watercourse with deep aquifer headwaters and characterized by clear water, circumneutral pH and, frequently, a solid limestone bottom.

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**SUBTERRANEAN** - Twilight, middle and deep zones of natural chambers overlain by the earth's crust and characterized by climatic stability and assemblages of trogloneic, trogliphilic, and troglobitic organisms.

**Aquatic Cave** - cavernicolous area permanently or periodically submerged; often characterized by troglobitic crustaceans and salamanders; includes high energy systems which receive large quantities of organic detritus and low energy systems.

**Terrestrial Cave** - cavernicolous area lacking standing water; often characterized by bats, such as *Myotis* spp., and other terrestrial vertebrates and invertebrates; includes interstitial areas above standing water such as fissures in the ceiling of caves.

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**MARINE/ESTUARINE** (The distinction between the Marine and Estuarine Natural Communities is often subtle, and the natural communities types found under these two community categories have the same descriptions. For these reasons they have been grouped together.) - Subtidal, intertidal and supratidal zones of the sea, landward to the point at which seawater becomes significantly diluted with freshwater inflow from the land.

**Consolidated Substrate** - expansive subtidal, intertidal and supratidal area composed primarily of nonliving compacted or coherent and relatively hard, naturally formed mass of mineral matter (e.g., coquina limerock and relic reefs); octocorals, sponges, stony corals, nondrift macrophytic algae, blue-green mat-forming algae and seagrasses sparse, if present.

**Unconsolidated Substrate** - expansive subtidal, intertidal and supratidal area composed primarily of loose mineral matter (e.g., coralgall, gravel, marl, mud, sand and shell); octocorals, sponges, stony corals, nondrift macrophytic algae, blue-green mat-forming algae and seagrasses sparse, if present.



## Descriptions Of Natural Communities Developed By FNAI

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**Octocoral Bed** - expansive subtidal area occupied primarily by living sessile organisms of the Class Anthozoa, Subclass Octocorallia (e.g., soft corals, horny corals, sea fans, sea whips, and sea pens); sponges, stony corals, nondrift macrophytic algae and seagrasses sparse, if present.

**Sponge Bed** - expansive subtidal area occupied primarily by living sessile organisms of the Phylum Porifera (e.g., sheepswool sponge, Florida loggerhead sponge and branching candle sponge); octocorals, stony corals, nondrift macrophytic algae and seagrasses sparse, if present.

**Coral Reef** - expansive subtidal area with elevational gradient or relief and occupied primarily by living sessile organisms of the Class Hydrozoa (e.g., fire corals and hydrocorals) and Class Anthozoa, Subclass Zoantharia (e.g., stony corals and black corals); includes deepwater bank reefs, fringing barrier reefs, outer bank reefs and patch reefs, some of which may contain distinct zones of assorted macrophytes, octocorals, & sponges.

**Mollusk Reef** - substantial subtidal or intertidal area with relief from concentrations of sessile organisms of the Phylum Mollusca, Class Bivalvia (e.g., molluscs, oysters, & worm shells); octocorals, sponges, stony corals, macrophytic algae and seagrasses sparse, if present.

**Worm Reef** - substantial subtidal or intertidal area with relief from concentrations of sessile, tubicolous organisms of the Phylum Annelida, Class Polychaeta (e.g., chaetopterids and sabellarids); octocorals, sponges, stony corals, macrophytic algae and seagrasses sparse, if present.

**Algal Bed** - expansive subtidal, intertidal or supratidal area, occupied primarily by attached thallophytic or mat-forming prokaryotic algae (e.g., halimeda, blue-green algae); octocorals, sponges, stony corals and seagrasses sparse, if present.

**Grass Bed** - expansive subtidal or intertidal area, occupied primarily by rooted vascular macrophytes, (e.g., shoal grass, halophila, widgeon grass, manatee grass and turtle grass); may include various epiphytes and epifauna; octocorals, sponges, stony corals, and attached macrophytic algae sparse, if present.

**Composite Substrate** - expansive subtidal, intertidal, or supratidal area, occupied primarily by Natural Community elements from more than one Natural Community category (e.g., Grass Bed and Algal Bed species; Octocoral and Algal Bed species); includes both patchy and evenly distributed occurrences.

**Tidal Marsh** - expansive intertidal or supratidal area occupied primarily by rooted, emergent vascular macrophytes (e.g., cord grass, needlerush, saw grass, saltwort, saltgrass and glasswort); may include various epiphytes and epifauna.

**Tidal Swamp** - expansive intertidal and supratidal area occupied primarily by woody vascular macrophytes (e.g., black mangrove, buttonwood, red mangrove, and white mangrove); may include various epiphytes and epifauna.

**DEFINITIONS OF TERMS Terrestrial and Palustrine Natural Communities**

**Physiography**

**Upland** - high area in region with significant topographic relief; generally undulating

**Lowland** - low area in region with or without significant topographic relief; generally flat to gently sloping

**Flatland** - generally level area in region without significant topographic relief; flat to gently sloping

**Basin** - large, relatively level lowland with slopes confined to the perimeter or isolated interior locations

**Depression** - small depression with sloping sides, deepest in center and progressively shallower towards the perimeter

**Floodplain** - lowland adjacent to a stream; topography influenced by recent fluvial processes

**Bottomland** - lowland not on active floodplain; sand/clay/organic substrate

**Hydrology**

**occasionally inundated** - surface water present only after heavy rains and/or during flood stages

**seasonally inundated** - surface water present during wet season and flood periods

**usually inundated** - surface water present except during droughts

**Climatic Affinity of the Flora**

**tropical** - community generally occurs in practically frost-free areas

**subtropical** - community generally occurs in areas that experience occasional frost, but where freezing temperatures are not frequent enough to cause true winter dormancy

**temperate** - community generally occurs in areas that freeze often enough that vegetation goes into winter dormancy

**Fire**

**annual fire** - burns about every 1-2 years

**frequent fire** - burns about every 3-7 years

**occasional fire** - burns about every 8-25 years

**rare fire** - burns about every 26-100 years

**no fire** - community develops only when site goes more than 100 years without burning

**LATIN NAMES OF PLANTS MENTIONED IN NATURAL COMMUNITY DESCRIPTIONS**

anise - *Illicium floridanum*

bays:

swamp bay - *Persea palustris*

gordonia - *Gordonia lasianthus*

sweetbay - *Magnolia virginiana*

beakrush - *Rhynchospora* spp.

beech - *Fagus grandifolia*

blackgum - *Nyssa biflora*

blue palmetto - *Sabal minor*

bluestem - *Andropogon* spp.

buttonbush - *Cephalanthus occidentalis*

cabbage palm - *Sabal palmetto*

cacti - *Opuntia* and *Harrisia* spp.,

predominantly *stricta* and

*pentagonus*

cane - *Arundinaria gigantea* or *A. tecta*

cattail - *Typha* spp.

cedars:

red cedar - *Juniperus silicicola*

white cedar - *Chamaecyparis*

*thyoides* or *C. henryi*

cladonia - *Cladonia* spp.

cypress - *Taxodium distichum*

dahoon holly - *Ilex cassine*

diamondleaf oak - *Quercus laurifolia*

fire flag - *Thalia geniculata*

Florida maple - *Acer barbatum*

gallberry - *Ilex glabra*

gums:

tupelo - *Nyssa aquatica*

blackgum - *Nyssa biflora*

Ogeechee gum - *Nyssa ogeche*

hackberry - *Celtis laevigata*

hornbeam - *Carpinus caroliniana*

laurel oak - *Quercus hemisphaerica*

live oak - *Quercus virginiana*

loblolly pine - *Pinus taeda*

longleaf pine - *Pinus palustris*

magnolia - *Magnolia grandiflora*

maidencane - *Panicum hemitomon*

needle palm - *Rhapidophyllum hystrix*

overcup oak - *Quercus lyrata*

pickerel weed - *Pontederia cordata* or *P. lanceolata*

pignut hickory - *Carya glabra*

pop ash - *Fraxinus caroliniana*

pond apple - *Annona glabra*

pond pine - *Pinus serotina*

pyramid magnolia - *Magnolia pyramidata*

railroad vine - *Ipomoea pes-caprae*

red cedar - *Juniperus silicicola*

red maple - *Acer rubrum*

red oak - *Quercus falcata*

rosemary - *Ceratiola ericoides*

sagittaria - *Sagittaria lancifolia*

sand pine - *Pinus clausa*

saw palmetto - *Serenoa repens*

sawgrass - *Cladium jamaicensis*

scrub oaks - *Quercus geminata*, *Q. chapmanii*, *Q. myrtifolia*, *Q. inopina*

sea oats - *Uniola paniculata*

seagrape - *Coccoloba uvifera*

shortleaf pine - *Pinus echinata*

Shumard oak - *Quercus shumardii*

slash pine - *Pinus elliotii*

sphagnum moss - *Sphagnum* spp.

spikerush - *Eleocharis* spp.

spruce pine - *Pinus glabra*

St. John's wort - *Hypericum* spp.

swamp chestnut oak - *Quercus prinus*

sweetgum - *Liquidambar styraciflua*

titi - *Cyrilla racemiflora*, and *Cliftonia monophylla*

tuliptree - *Liriodendron tulipifera*

tupelo - *Nyssa aquatica*

turkey oak - *Quercus laevis*

water oak - *Quercus nigra*

waterlily - *Nymphaea odorata*

white cedar - *Chamaecyparis thyoides*

white oak - *Quercus alba*

willow - *Salix caroliniana*

yucca - *Yucca aloifolia*

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**A. GENERAL DISCUSSION**

Archaeological and historic sites are defined collectively in 267.021(3), F.S., as "historic properties" or "historic resources." They have several essential characteristics that must be recognized in a management program.

First of all, they are a finite and non-renewable resource. Once destroyed, presently existing resources, including buildings, other structures, shipwreck remains, archaeological sites and other objects of antiquity, cannot be renewed or revived. Today, sites in the State of Florida are being destroyed by all kinds of land development, inappropriate land management practices, erosion, looting, and to a minor extent even by well-intentioned professional scientific research (e.g., archaeological excavation). Measures must be taken to ensure that some of these resources will be preserved for future study and appreciation.

Secondly, sites are unique because individually they represent the tangible remains of events that occurred at a specific time and place.

Thirdly, while sites uniquely reflect localized events, these events and the origin of particular sites are related to conditions and events in other times and places. Sites can be understood properly only in relation to their natural surroundings and the activities of inhabitants of other sites. Managers must be aware of this "systemic" character of historic and archaeological sites. Also, it should be recognized that archaeological sites are time capsules for more than cultural history; they preserve traces of past biotic communities, climate, and other elements of the environment that may be of interest to other scientific disciplines.

Finally, the significance of sites, particularly archaeological ones, derives not only from the individual artifacts within them, but equally from the spatial arrangement of those artifacts in both horizontal and vertical planes. When archaeologists excavate, they recover, not merely objects, but also a record of the positions of these objects in relation to one another and their containing matrix (e.g., soil strata). Much information is sacrificed if the so-called "context" of archaeological objects is destroyed or not recovered, and this is what archaeologists are most concerned about when a site is threatened with destruction or damage. The artifacts themselves can be recovered even after a site is heavily disturbed, but the context -- the vertical and horizontal relationships -- cannot. Historic structures also contain a wealth of cultural (socio-economic) data that can be lost if historically sensitive maintenance, restoration or rehabilitation procedures are not implemented, or if they are demolished or extensively altered without appropriate documentation. Lastly, it should not be forgotten that historic structures often have associated potentially significant historic archaeological features that must be considered in land management decisions.

**B. STATUTORY AUTHORITY**

Chapter 253, Florida Statutes ("State Lands") directs the preparation of "single-use" or "multiple-use" land management plans for all state-owned lands and state-owned sovereignty submerged lands. In this document, 253.034(4), F.S., specifically requires that "all management plans, whether for single-use or multiple-use properties, shall specifically describe how the managing agency plans to identify, locate, protect and preserve, or

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otherwise use fragile non-renewable resources, such as archaeological and historic sites, as well as other fragile resources..."

Chapter 267, Florida Statutes is the primary historic preservation authority of the state. The importance of protecting and interpreting archaeological and historic sites is recognized in 267.061(1)(a), F.S.:The rich and unique heritage of historic properties in this state, representing more than 10,000 years of human presence, is an important legacy to be valued and conserved for present and future generations. The destruction of these nonrenewable historic resources will engender a significant loss to the state's quality of life, economy, and cultural environment. It is therefore declared to be state policy to:

1. Provide leadership in the preservation of the state's historic resources; [and]
2. Administer state-owned or state-controlled historic resources in a spirit of stewardship and trusteeship;...

Responsibilities of the Division of Historical Resources in the Department of State pursuant to 267.061(3), F.S., include the following:

1. Cooperate with federal and state agencies, local Governments, and private organizations and individuals to direct and conduct a comprehensive statewide survey of historic resources and to maintain an inventory of such responses.
2. Develop a comprehensive statewide historic preservation plan.
3. Identify and nominate eligible properties to the National Register of Historic Places and otherwise administer applications for listing properties in the National Register of Historic Places.
4. Cooperate with federal and state agencies, local governments, and organizations and individuals to ensure that historic resources are taken into consideration at all levels of planning and development.
5. Advise and assist, as appropriate, federal and state agencies and local governments in carrying out their historic preservation responsibilities and programs.
6. Carry out on behalf of the state the programs of the National Historic Preservation Act of 1966, as amended, and to establish, maintain, and administer a state historic preservation program meeting the requirements of an approved program and fulfilling the responsibilities of state historic preservation programs as provided in subsection 101(b) of that act.
7. Take such other actions necessary or appropriate to locate, acquire, protect, preserve, operate, interpret, and promote the location, acquisition, protection, preservation, operation, and interpretation of historic resources to foster an appreciation of Florida history and culture. Prior to the acquisition, preservation, interpretation, or operation of a historic property by a state agency, the Division shall be provided a reasonable opportunity to review and comment on the proposed undertaking and shall determine that there exists historic authenticity and a feasible means of providing for the preservation, interpretation and operation of such property.
8. Establish professional standards for the preservation, exclusive of acquisition, of historic resources in state ownership or control.
9. Establish guidelines for state agency responsibilities under subsection (2).

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Responsibilities of other state agencies of the executive branch, pursuant to 267.061(2), F.S., include:

1. Each state agency of the executive branch having direct or indirect jurisdiction over a proposed state or state-assisted undertaking shall, in accordance with state policy and prior to the approval of expenditure of any state funds on the undertaking, consider the effect of the undertaking on any historic property that is included in, or eligible for inclusion in, the National Register of Historic Places. Each such agency shall afford the division a reasonable opportunity to comment with regard to such an undertaking.
2. Each state agency of the executive branch shall initiate measures in consultation with the division to assure that where, as a result of state action or assistance carried out by such agency, a historic property is to be demolished or substantially altered in a way that adversely affects the character, form, integrity, or other qualities that contribute to [the] historical, architectural, or archaeological value of the property, timely steps are taken to determine that no feasible and prudent alternative to the proposed demolition or alteration exists, and, where no such alternative is determined to exist, to assure that timely steps are taken either to avoid or mitigate the adverse effects, or to undertake an appropriate archaeological salvage excavation or other recovery action to document the property as it existed prior to demolition or alteration.
3. In consultation with the division [of Historical Resources], each state agency of the executive branch shall establish a program to locate, inventory, and evaluate all historic properties under the agency's ownership or control that appear to qualify for the National Register. Each such agency shall exercise caution to assure that any such historic property is not inadvertently transferred, sold, demolished, substantially altered, or allowed to deteriorate significantly.
4. Each state agency of the executive branch shall assume responsibility for the preservation of historic resources that are owned or controlled by such agency. Prior to acquiring, constructing, or leasing buildings for the purpose of carrying out agency responsibilities, the agency shall use, to the maximum extent feasible, historic properties available to the agency. Each agency shall undertake, consistent with preservation of such properties, the mission of the agency, and the professional standards established pursuant to paragraph (3)(k), any preservation actions necessary to carry out the intent of this paragraph.
5. Each state agency of the executive branch, in seeking to acquire additional space through new construction or lease, shall give preference to the acquisition or use of historic properties when such acquisition or use is determined to be feasible and prudent compared with available alternatives. The acquisition or use of historic properties is considered feasible and prudent if the cost of purchase or lease, the cost of rehabilitation, remodeling, or altering the building to meet compliance standards and the agency's needs, and the projected costs of maintaining the building and providing utilities and other services is less than or equal to the same costs for available alternatives. The agency shall request the division to assist in determining if the acquisition or use of a historic property is feasible and prudent. Within 60 days after making a determination that additional space is needed, the agency shall request the division to assist in identifying buildings within the appropriate geographic area that are historic properties suitable for acquisition or lease by the agency, whether or

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- not such properties are in need of repair, alteration, or addition.
6. Consistent with the agency's mission and authority, all state agencies of the executive branch shall carry out agency programs and projects, including those under which any state assistance is provided, in a manner which is generally sensitive to the preservation of historic properties and shall give consideration to programs and projects which will further the purposes of this section.

Section 267.12 authorizes the Division to establish procedures for the granting of research permits for archaeological and historic site survey or excavation on state-owned or controlled lands, while Section 267.13 establishes penalties for the conduct of such work without first obtaining written permission from the Division of Historical Resources. The Rules of the Department of State, Division of Historical Resources, for research permits for archaeological sites of significance are contained in Chapter 1A-32, F.A.C.

Another Florida Statute affecting land management decisions is Chapter 872, F.S. Section 872.02, F.S., pertains to marked grave sites, regardless of age. Many state-owned properties contain old family and other cemeteries with tombstones, crypts, etc. Section 872.05, F.S., pertains to unmarked human burial sites, including prehistoric and historic Indian burial sites. Unauthorized disturbance of both marked and unmarked human burial site is a felony.

**C. MANAGEMENT POLICY**

The choice of a management policy for archaeological and historic sites within state-owned or controlled land obviously depends upon a detailed evaluation of the characteristics and conditions of the individual sites and groups of sites within those tracts. This includes an interpretation of the significance (or potential significance) of these sites, in terms of social and political factors, as well as environmental factors. Furthermore, for historic structures architectural significance must be considered, as well as any associated historic landscapes.

Sites on privately owned lands are especially vulnerable to destruction, since often times the economic incentives for preservation are low compared to other uses of the land areas involved. Hence, sites in public ownership have a magnified importance, since they are the ones with the best chance of survival over the long run. This is particularly true of sites that are state-owned or controlled, where the basis of management is to provide for land uses that are minimally destructive of resource values.

It should be noted that while many archaeological and historical sites are already recorded within state--owned or controlled--lands, the majority of the uplands areas and nearly all of the inundated areas have not been surveyed to locate and assess the significance of such resources. The known sites are, thus, only an incomplete sample of the actual resources - i.e., the number, density, distribution, age, character and condition of archaeological and historic sites - on these tracts. Unfortunately, the lack of specific knowledge of the actual resources prevents formulation of any sort of detailed management or use plan involving decisions about the relative historic value of individual sites. For this reason, a generalized policy of conservation is recommended until the resources have been better addressed.

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The generalized management policy recommended by the Division of Historical Resources includes the following:

1. State land managers shall coordinate all planned activities involving known archaeological or historic sites or potential site areas closely with the Division of Historical Resources in order to prevent any kind of disturbance to significant archaeological or historic sites that may exist on the tract. Under 267.061(1)(b), F.S., the Division of Historical Resources is vested with title to archaeological and historic resources abandoned on state lands and is responsible for administration and protection of such resources. The Division will cooperate with the land manager in the management of these resources. Furthermore, provisions of 267.061(2) and 267.13, F.S., combined with those in 267.061(3) and 253.034(4), F.S., require that other managing (or permitting) agencies coordinate their plans with the Division of Historical Resources at a sufficiently early stage to preclude inadvertent damage or destruction to known or potentially occurring, presently unknown archaeological and historic sites. The provisions pertaining to human burial sites must also be followed by state land managers when such remains are known or suspected to be present (see 872.02 and 872.05, F.S., and 1A-44, F.A.C.)
2. Since the actual resources are so poorly known, the potential impact of the managing agency's activities on historic archaeological sites may not be immediately apparent. Special field survey for such sites may be required to identify the potential endangerment as a result of particular management or permitting activities. The Division may perform surveys, as its resources permit, to aid the planning of other state agencies in their management activities, but outside archaeological consultants may have to be retained by the managing agency. This would be especially necessary in the cases of activities contemplating ground disturbance over large areas and unexpected occurrences. It should be noted, however, that in most instances Division staff's knowledge of known and expected site distribution is such that actual field surveys may not be necessary, and the project may be reviewed by submitting a project location map (preferably a 7.5 minute U.S.G.S. Quadrangle map or portion thereof) and project descriptive data, including detailed construction plans. To avoid delays, Division staff should be contacted to discuss specific project documentation review needs.
3. In the case of known significant sites, which may be affected by proposed project activities, the managing agency will generally be expected to alter proposed management or development plans, as necessary, or else make special provisions to minimize or mitigate damage to such sites.
4. If in the course of management activities, or as a result of development or the permitting of dredge activities (see 403.918(2)(6)a, F.S.), it is determined that valuable historic or archaeological sites will be damaged or destroyed, the Division reserves the right, pursuant to 267.061(1)(b), F.S., to require salvage measures to mitigate the destructive impact of such activities to such sites. Such salvage measures would be accomplished before the Division would grant permission for destruction of the affected site areas. The funding needed to implement salvage measures would be the responsibility of the managing agency planning the site destructive activity. Mitigation of historic structures at a minimum involves the preparation of measured



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- drawings and documentary photographs. Mitigation of archaeological resources involves the excavation, analysis and reporting of the project findings and must be planned to occur sufficiently in advance to avoid project construction delays. If these services are to be contracted by the state agency, the selected consultant will need to obtain an Archaeological Research Permit from the Division of Historical Resources, Bureau of Archaeological Research (see 267.12, F.S. and Rules 1A-32 and 1A-46 F.A.C.).
5. For the near future, excavation of non-endangered (i.e., sites not being lost to erosion or development) archaeological site is discouraged. There are many endangered sites in Florida (on both private and public lands) in need of excavation because of the threat of development or other factors. Those within state-owned or controlled lands should be left undisturbed for the present - with particular attention devoted to preventing site looting by "treasure hunters". On the other hand, the archaeological and historic survey of these tracts is encouraged in order to build an inventory of the resources present, and to assess their scientific research potential and historic or architectural significance.
  6. The cooperation of land managers in reporting sites to the Division that their field personnel may discover is encouraged. The Division will help inform field personnel from other resource managing agencies about the characteristics and appearance of sites. The Division has initiated a cultural resource management training program to help accomplish this. Upon request the Division will also provide to other agencies archaeological and historical summaries of the known and potentially occurring resources so that information may be incorporated into management plans and public awareness programs (See Management Implementation).
  7. Any discovery of instances of looting or unauthorized destruction of sites must be reported to the agent for the Board of Trustees of the Internal Improvement Trust Fund and the Division so that appropriate action may be initiated. When human burial sites are involved, the provisions of 872.02 and 872.05, F. S. and Rule 1A-44, F.A.C., as applicable, must also be followed. Any state agent with law enforcement authority observing individuals or groups clearly and incontrovertibly vandalizing, looting or destroying archaeological or historic sites within state-owned or controlled lands without demonstrable permission from the Division will make arrests and detain those individuals or groups under the provisions of 267.13, 901.15, and 901.21, F.S., and related statutory authority pertaining to such illegal activities on state-owned or controlled lands. County Sheriffs' officers are urged to assist in efforts to stop and/or prevent site looting and destruction.

In addition to the above management policy for archaeological and historic sites on state-owned land, special attention shall be given to those properties listed in the National Register of Historic Places and other significant buildings. The Division recommends that the Secretary of the Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings (Revised 1990) be followed for such sites.

The following general standards apply to all treatments undertaken on historically significant properties.

1. A property shall be used for its historic purpose or be placed in a new use that requires

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- minimal change to the defining characteristics of the building and its site and environment.
2. The historic character of a property shall be retained and preserved. The removal of historic materials or alterations of features and spaces that characterize a property shall be avoided.
  3. Each property shall be recognized as a physical record of its time, place and use. Changes that create a false sense of historical development, such as adding conjectural features or architectural elements from other buildings, shall not be undertaken.
  4. Most properties change over time; those changes that have acquired historic significance in their own right shall be retained and preserved.
  5. Distinctive features, finishes, and construction techniques or examples of craftsmanship that characterize a historic property shall be preserved.
  6. Deteriorated historic features shall be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature shall match the old in design, color, texture, and other visual qualities and, where possible, materials. Replacement of missing features shall be substantiated by documentary, physical, or pictorial evidence.
  7. Chemical or physical treatments, such as sandblasting, that cause damage to historic materials shall not be used. The surface cleaning of structures, if appropriate, shall be undertaken using the gentlest means possible.
  8. Significant archaeological resources affected by a project shall be protected and preserved. If such resources must be disturbed, mitigation measures shall be undertaken.
  9. New additions, exterior alterations, or related new construction shall not destroy materials that characterize the property. The new work shall be differentiated from the old and shall be compatible with the massing, size, scale, and architectural features to protect the historic integrity of the property and its environment.
  10. New additions and adjacent or related new construction shall be undertaken in such a manner that if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired. (see Secretary of the Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings [Revised 1990]).

Divisions of Historical Resources staff are available for technical assistance for any of the above listed topics. It is encouraged that such assistance be sought as early as possible in the project planning.

**D. MANAGEMENT IMPLEMENTATION**

As noted earlier, 253.034(4), F.S., states that "all management plans, whether for single-use or multiple-use properties, shall specifically describe how the managing agency plans to identify, locate, protect and preserve, or otherwise use fragile non-renewable resources, such as archaeological and historic sites..." The following guidelines should help to fulfill that requirement.

1. All land managing agencies should contact the Division and send U.S.G.S. 7.5 minute quadrangle maps outlining the boundaries of their various properties.

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2. The Division will in turn identify site locations on those maps and provide descriptions for known archaeological and historical sites to the managing agency.
3. Further, the Division may also identify on the maps areas of high archaeological and historic site location probability within the subject tract. These are only probability zones, and sites may be found outside of these areas. Therefore, actual ground inspections of project areas may still be necessary.
4. The Division will send archaeological field recording forms and historic structure field recording forms to representatives of the agency to facilitate the recording of information on such resources.
5. Land managers will update information on recorded sites and properties.
6. Land managers will supply the Division with new information as it becomes available on previously unrecorded sites that their staff locate. The following details the kind of information the Division wishes to obtain for any new sites or structures that the land managers may report:

**A. Historic Sites**

- (1) Type of structure (dwelling, church, factory, etc.).
- (2) Known or estimated age or construction date for each structure and addition.
- (3) Location of building (identify location on a map of the property, and building placement, i.e., detached, row, etc.).
- (4) General Characteristics: (include photographs if possible) overall shape of plan (rectangle, "L" "T" "H" "U", etc.); number of stories; number of vertical divisions of bays; construction materials (brick, frame, stone, etc.); wall finish (kind of bond, coursing, shingle, etc.); roof shape.
- (5) Specific features including location, number and appearance of:
  - (a) Important decorative elements;
  - (b) Interior features contributing to the character of the building;
  - (c) Number, type, and location of outbuildings, as well as date(s) of construction;
  - (d) Notation if property has been moved;
  - (e) Notation of known alterations to building.

**B. Archaeological Sites**

- (1) Site location (written narrative and mapped location).
- (2) Cultural affiliation and period.
- (3) Site type (midden, burial mound, artifact scatter, building rubble, etc.).
- (4) Threats to site (deterioration, vandalism, etc.).
- (5) Site size (acreage, square meters, etc.).
- (6) Artifacts observed on ground surface (pottery, bone, glass, etc.).
- (7) Description of surrounding environment.
7. No land disturbing activities should be undertaken in areas of known archaeological or historic sites or areas of high site probability without prior review by the Division early in the project planning.
8. Ground disturbing activities may proceed elsewhere but land managers should stop disturbance in the immediate vicinity of artifact finds and notifies the Division if previously unknown archaeological or historic remains are uncovered. The provisions

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- of Chapter 872, F.S., must be followed when human remains are encountered.
9. Excavation and collection of archaeological and historic sites on state lands without a permit from the Division are a violation of state law and shall be reported to a law enforcement officer. The use of metal detectors to search for historic artifacts shall be prohibited on state lands except when authorized in a 1A-32, F.A.C., research permit from the Division.
  10. Interpretation and visitation which will increase public understanding and enjoyment of archaeological and historic sites without site destruction or vandalism is strongly encouraged.
  11. Development of interpretive programs including trails, signage, kiosks, and exhibits is encouraged and should be coordinated with the Division.
  12. Artifacts found or collected on state lands are by law the property of the Division. Land managers shall contact the Division whenever such material is found so that arrangements may be made for recording and conservation. This material, if taken to Tallahassee, can be returned for public display on a long term loan.

**E. ADMINISTERING AGENCY**

Questions relating to the treatment of archaeological and historic resources on state lands may be directed to:

Compliance Review Section  
Bureau of Historic Preservation  
Division of Historical Resources  
R.A. Gray Building  
500 South Bronough Street  
Tallahassee, Florida 32399-0250

**Contact Person:**

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**Final Land Management Review Report**  
**LMR Review Date---January 27, 1999**

# Florida Department of Memorandum Environmental Protection

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April 13, 1999

TO: Mr. Robert Clark, Program Administrator  
Division of State Lands

FROM: Dana C. Bryan, Chief, Bureau of Natural  
& Cultural Resources  
Albert Gregory, Chief, Office of Park Planning  
Division of Recreation and Parks

SUBJECT: Response to Land Management Review (LMR);  
Collier-Seminole State Park

The Land Management Review dated March 15, 1999, determined that the management of the Collier-Seminole State Park meets the two tests prescribed by law. The review team concluded that the land is being managed for the purposes for which it was acquired and in accordance with the land management plan.

The following comments are provided by field staff and our offices in response to specific concerns and, where appropriate, recommendations that were included in the LMR. We have identified land management plan revisions and field management actions we plan to take to address the review team's concerns.

## Checklist Results - Plan Review:

- I.B.1.a. - West Indian manatee, Inventory: Disagree. \*
- I.B.1.b. - West Indian manatee, Monitoring: Disagree. \*
- I.B.2.a. - Crocodile, Inventory: Disagree. \*
- I.B.2.b. - Crocodile, Monitoring: Disagree. \*
- I.B.3.a. - Florida black bear, Inventory: Disagree. \*
- I.B.4.a. - Florida panther, Inventory: Disagree. \*
- I.B.4.b. - Florida panther, Monitoring: Disagree. \*
- I.B.5.a. - Red-cockaded woodpecker, Inventory: Disagree. \*
- I.B.5.b. - Red-cockaded woodpecker, Monitoring: Disagree. \*
- I.B.6.a. - Big Cypress fox squirrel, Inventory: Disagree. \*
- I.B.6.b. - Big Cypress fox squirrel, Monitoring: Disagree. \*
- I.B.7.a. - Bald eagle, Inventory: Disagree. \*

\*It is appropriate to respond to this section on listed species collectively rather than separately. All of the selected listed species have been identified in the plan. We don't see a need to inventory or monitor any of these listed species. The typical inventory and monitoring performed by the Florida Park Service consists of recording observations on forms filled out by staff, biologists, and qualified volunteers and visitors. We occasionally make special efforts to inventory and monitor certain species or populations (scrub jays or gopher tortoises, for example) when we determine that a specific need exists. There doesn't appear to be any need for the park to conduct special studies for any of the listed species mentioned above. West Indian manatees are comprehensively monitored statewide by another branch of our agency; crocodiles, Florida black bears, Florida panthers, and

bald eagles are comprehensively monitored by the Florida Game and Fresh Water Fish Commission; and red-cockaded woodpeckers and Big Cypress fox squirrels are rarely observed at this park.

- III.E.4.a. - Ground water quality, Monitoring: Agree. \*\*
- III.E.4.b. - Ground water quantity, Monitoring: Agree. \*\*
- III.E.5.a. - Surface water quality, Monitoring: Agree. \*\*
- III.E.5.b. - Surface water quantity, Monitoring: Agree \*\*

\*\*Concerns about hydrology are emphasized in the UMP. Additional commentary will be inserted in the next updated plan to address the above items.

III.F.1.a. - Unauthorized use, ATV trespassing: Agree. This will be addressed in the next updated plan.

III.H.1.a. - Adjacent Property Concerns, Fiddler's Creek subdivision: Agree. Issues related to the adjacent Fiddler's Creek subdivision will be covered in the next updated plan. Unfortunately, if this development is constructed it will complicate smoke management and hamper prescribed burning activities.

III.H.1.b. - Adjacent Property Concerns, Agricultural field: Agree. The issue of excess water being pumped onto the park from the diked agricultural field will be addressed in the next updated plan. However, efforts will be made to resolve this problem prior to the next plan revision.

III.H.1.c. - Adjacent Property Concerns, Airboat operator: Agree. This matter will be mentioned in the next updated plan.

#### Checklist Results - Field Review:

III.B.1. - Restoration, All natural communities: Agree. The RMC of the plan covers hydrological restoration in a regional context, specifying that the South Florida Water Management District should be involved in any actions affecting hydrology.

III.B.2. - Restoration, Diked wetlands: Agree. Efforts should be made to restore the wetland area that is currently diked. This is identified as a desired action in the text of the RMC, although it was not specifically identified in the goals and objectives.

III.D.2.a. - Non-native Invasive Species, Plants, Control: Agree. Additional efforts will be made to control invasive exotic plants as more funding and resources become available.

III.H.1.a - Adjacent Property Concerns, Fiddler's Creek subdivision: Agree. See above comments. The adjacent subdivision will cause problems with smoke management. We will make efforts to reach understandings with the local government, the developer, and residents to support our need to continue to protect and manage natural resources of the park using prescribed fire.

III.H.1.b - Adjacent Property Concerns, Agricultural field: Agree. The agricultural field discharges excess water onto the park through a three-foot diameter pipe. The owners claim that they have the right to continue to discharge the water. Efforts should be taken to see what, if any, action can be taken to either eliminate the discharge or to minimize the flows/impacts.

III.I.3.a. - Buildings: Agree. Additional buildings, especially a shop compound, are needed. The existing shop is a metal building which is deteriorating due to rust. It is small, frequently flooded,

and cannot be used during heavy rains because of electrical hazards. Although funding for construction will be pursued, construction of buildings is contingent on DRP and DEP budget resources and priorities and also on legislative action.

III.I.3.b. - Equipment: Agree. A new and better fire truck is needed. The park acquires new and used equipment as needed relative to other DRP priorities and budgetary limitations.

III.I.4. - Staff: Agree. Operational needs have increased over the years with the addition of a concession, off-site interpretive programs, increased training programs for staff, new invasive exotic plant problems (like climbing fern) with no increases in staff. Additional staff, especially park rangers, are needed for resource management. The park is under its identified staffing needs. However, no new staff can be assigned to this or any park unit unless the new positions are appropriated by the Legislature or reassigned from other units. Additional staff is needed by many of our parks which is why we regularly seek positions, volunteers, and partners to help us overcome staff deficiencies.

III.I.5. - Funding: Agree. Additional funds will be pursued. Funding is always contingent on DRP and DEP budget resources and priorities and also on legislative action.

Recommendations: (those not covered by responses to checklist items)

- 1) Coordinate with Collier County on smoke management and greenline issues: Efforts will be made to contact county planners and inform them about the greenlines and their purpose. In particular, we will make them aware of importance of using prescribed fire to properly manage natural communities, provide for the public safety, and protect listed species.
- 2) Hydrological restoration and management: We believe the existing plan adequately covers hydrological problems and needs of the park. If we can achieve the hydrological goals outlined in the plan, impacts to the flora and fauna will be reduced substantially. We realize that hydrological restoration in the park is linked to regional restoration needs. Although we cannot design anything to resolve regional problems, we will support the process.
- 3) Ecological management efforts: We can employ ecological management measures to enhance natural resources of the park, but we will encourage others at the local and regional levels to take similar measures to protect and manage resources outside the park.

Thank you for the opportunity to comment on the LMR.

DCB/AG/mb  
cc: Mike Murphy, Chief, Parks District 4



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**Management Review Team Members**

<b>Agency Represented</b>	<b>Team member appointed</b>	<b>Team member in attendance</b>
DEP/DRP	Mr. Ken Alvarez	Mr. Ken Alvarez
DEP South Florida District	Mr. Bruce Boler	Mr. Bruce Boler
DACS/DOF	Mr. Bill Korn	Mr. Bill Korn
GFC	Mr. Jim Schortemeyer	Mr. Jim Schortemeyer
Soil and Water Conservation	Ms. Laurie Mitchell	Ms. Laurie Mitchell
County Commission	Mr. Bill Lorenz	Mr. Mac Hatcher
Conservation Organization	Ms. Rebecca Jetton (Sierra Club)	Ms. Rebecca Jetton
Private Land Manager	Mr. Charley Babb	None

**Process for Implementing Regional Management Review Teams**

Legislative Intent and Guidance:

Chapter 259.036, F. S. was enacted in 1997 to determine whether conservation, preservation, and recreation lands owned by the state Board of Trustees of the Internal Improvement Trust Fund (Board) are being managed properly. It directs the Department of Environmental Protection (DEP) to establish land management review teams to evaluate the extent to which the existing management plan provides sufficient protection to threatened or endangered species, unique or important natural or physical features, geological or hydrological functions, and archaeological features. The teams also evaluate the extent to which the land is being managed for the purposes for which it was acquired and the degree to which actual management practices, including public access, are in compliance with the adopted management plan. If a land management plan has not been adopted, the review shall consider the extent to which the land is being managed for the purposes for which it was acquired and the degree to which actual management practices are in compliance with the management policy statement and management prospectus for that property. If the land management review team determines that reviewed lands are not being managed for the purposes for which they were acquired or in compliance with the adopted land management plan, management policy statement, or management prospectus, DEP shall provide the review findings to the Board, and the managing agency must report to the Board its reasons for managing the lands as it has. A report of the review findings are given to the managing agency under review, the Land Acquisition and Management Advisory Council (LAMAC), and to the Division of State Lands. Also, DEP shall report the annual review findings of its land management review teams to the Board no later than the second board meeting in October of each year.

**Review Site**

The management review of Collier Seminole State Park considered approximately 6,433 acres in Collier County that are managed by DEP/Division of Recreation and Parks. The team evaluated the extent to which current management actions are sufficient, whether the land is being managed for the purpose for which it was acquired, and whether actual management practices, including public access, are in compliance with the management plan. The Division of State Lands approved the management plan on December 5, 1997 and the management plan update is due in December 2002.

**Review Team Analysis**

The management review checklist was analyzed as follows: The checklist consisted of two parts: a plan review section that answered whether or not the management plan sufficiently addressed protection/restoration/ management needs for a series of items; and a field review section that scored to what extent sufficient management actions were being taken for a series of items. For each item in each section the scores for all team members were averaged. Some items received high scores ( $\geq 2.5$ ) in the field review, which indicates that exceptional management actions are being taken.

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**Review Team Findings**

**Exceptional management actions**

III.A.3	Fire: quality	The quality of prescribed burns at the park was excellent--the desired results were achieved.
III.B.3	Restoration: Rockland hammock field	Restoration of the old field to rockland hammock is excellent.
IV.	Education/Public outreach	Efforts toward public education and outreach are outstanding.

**Inadequate items:**

**Plan review**

I.B.1.a	West Indian manatee: Inventory	The inventory of manatees should be addressed in the plan update.
I.B.1.b	West Indian manatee: Monitoring	Monitoring of manatees should be addressed in the plan update.
I.B.2.a	Crocodile: Inventory	The inventory of crocodiles should be addressed in the plan update.
I.B.2.b	Crocodile: Monitoring	Monitoring of crocodiles should be addressed in the plan update.
I.B.3.a	Florida black bear: Inventory	The inventory of Florida black bears should be addressed in the plan update.
I.B.4.a	Florida panther: Inventory	The inventory of Florida panthers should be addressed in the plan update.
I.B.4.b	Florida panther: Monitoring	Monitoring of Florida panthers should be addressed in the plan update.
I.B.5.a	Red-cockaded woodpecker: Inventory	The inventory of red-cockaded woodpeckers should be addressed in the plan update.
I.B.5.b	Red-cockaded woodpecker: Monitoring	Monitoring of red-cockaded woodpeckers should be addressed in the plan update.
I.B.6.a	Big Cypress fox squirrel: Inventory	The inventory of Big Cypress fox squirrels should be addressed in the plan update.
I.B.6.b	Big Cypress fox squirrel: Monitoring	Monitoring of Big Cypress fox squirrels should be addressed in the plan update.
I.B.7.a	Bald eagle: Inventory	The inventory of bald eagles should be addressed in the plan update.
III.E.4.a	Ground water quality	The monitoring of ground water quality should be addressed in the plan update.
III.E.4.b	Ground water quantity	The monitoring of ground water quantity should be addressed in the plan update.
III.E.5.a	Surface water quality	The monitoring of surface water quality should be

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III.E.5.b	Surface water quantity	addressed in the plan update. The monitoring of surface water quantity should be addressed in the plan update.
III.F.1.a	Unauthorized use: ATV trespassing	The problem of ATV trespassing should be addressed in the plan update.
III.H.1.a	Adj. Property concerns: Fiddler's Creek subdivision*	The management problems/concerns caused by the adjacent Fiddler's Creek subdivision should be addressed in the plan update.
III.H.1.b	Adj. Property concerns: Agricultural field*	The management problems/concerns caused by the adjacent agricultural field on the north boundary should be addressed in the plan update.
III.H.1.c	Adj. Property concerns: Airboat operator	The management problems/concerns caused by the adjacent air boat operator should be addressed in the plan update.

**Inadequate items**

**Field review**

III.B.1	Restoration: All natural communities	Hydrological restoration of the entire park is needed and DRP should identify long-term hydrological needs as part of the regional watershed planning effort.
III.B.2	Restoration: Diked Wetlands	Effort should be made to restore the wetland area that is currently diked.
III.D.2.a	Non-native invasive plants: control	Additional effort is needed to control non-native invasive plants, especially old-world climbing fern, Brazilian pepper, and melaleuca.
III.H.1.a	Adj. Property concerns: Fiddler's Creek subdivision*	Effort should be made to minimize the management problems/concerns caused by the adjacent Fiddler's Creek subdivision.
III.H.1.b	Adj. Property concerns: Agricultural field*	Effort should be made to minimize the management problems/concerns caused by the adjacent agricultural field on the north boundary.
III.I.3.a	Buildings	Additional buildings, especially a shop compound, are needed for property management.
III.I.3.b	Equipment	Additional equipment, especially for prescribed burning, is needed.
III.I.4	Staff	Additional staff, especially park rangers, are needed for resource management.
III.I.5.	Funding	Additional funding is needed for all aspects of property management.

**Recommendations to the managing agency**

The following recommendations resulted from a discussion and vote of review team members.

1. The team recommends that the Division of Recreation and Parks coordinate with Collier County on

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- smoke management and greenline issues between the park and adjacent properties.
2. Hydrological restoration and management should be designed to restore and protect regional and locally important floral and faunal communities. Management objectives should identify these values.
  3. Ecological management should be designed to protect and/or restore important local and regional floral and faunal communities.

**Commendations to the managing agency**

The review team commends the efforts of the park manager in the use of inmates, CSO personnel, and volunteers in all park programs, including visitor services, park services, and land management.

1. Is the land being managed for the purpose for which it was acquired?  
**All team members agreed that Collier Seminole State Park is being managed for the purpose for which it was acquired.**
2. Are actual management practices, including public access, in compliance with the management plan?  
**All team members agreed that actual management practices, including public access, were in compliance with the management plan for this site.**