



Florida Department of Environmental Protection

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July 9, 2015

Ms. Sine Murray
Division of Recreation and Parks
Department of Environmental Protection
3900 Commonwealth Boulevard, MS 525
Tallahassee, Florida 32399-3000

RE: Cockroach Bay Preserve State Park - Lease #4140

Dear Ms. Murray:

On **June 19, 2015**, the Acquisition and Restoration Council recommended approval of the **Cockroach Bay Preserve State Park** management plan. Therefore, the Division of State Lands, Office of Environmental Services, acting as agent for the Board of Trustees of the Internal Improvement Trust Fund, hereby approves the Cockroach Bay Preserve State Park management plan. The next management plan update is due June 19, 2025.

Approval of this land management plan does not waive the authority or jurisdiction of any governmental entity that may have an interest in this project. Implementation of any upland activities proposed by this management plan may require a permit or other authorization from federal and state agencies having regulatory jurisdiction over those particular activities. Pursuant to the conditions of your lease, please forward copies of all permits to this office upon issuance.

Sincerely,

A handwritten signature in cursive script, appearing to read "M. Gengenbach", is written over a horizontal line.

Marianne S. Gengenbach
Office of Environmental Services
Division of State Lands

Cockroach Bay Preserve State Park

APPROVED

Unit Management Plan

**STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL
PROTECTION**

**Division of Recreation and Parks
July 9 2015**



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INTRODUCTION

Cockroach Bay Preserve State Park is located in Hillsborough County (see Vicinity Map). Access to the park is from Cockroach Bay Road, which is accessed from U.S. Highway 41 (see Reference Map). The Vicinity Map also reflects significant land and water resources existing near the park.

The park was acquired in 1997 under the Conservation and Recreation Lands (CARL) program using Preservation 2000 (P2000) funds (see Addendum 1). Since the 1997 initial acquisition, the Board of Trustees of the Internal Improvement Trust Fund of the State of Florida (Trustees) have not acquired any new lands to add to Cockroach Bay Preserve State Park. As the result, the area of the park, 615 acres, has not changed. The park was originally managed by Florida Coastal Office (FCO) (formerly Coastal and Aquatic Managed Areas); management of the park was transferred to the Division of Recreation and Parks (DRP) in 2003.

At Cockroach Bay Preserve State Park, 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 property.

Purpose and Significance of the Park

The purpose of Cockroach Bay Preserve State Park is to protect the resources of the Cockroach Bay Aquatic Preserve and provides opportunities for natural resource-based recreation for the benefit of the people of Florida.

Park Significance

- The park protects the Little Cockroach Key archaeological site (8HI38), which is considered eligible for listing on the National Register of Historic Places, and the Cockroach Key Shell Midden (8HI12209). Together with nearby Big Cockroach Mound (8HI2), these sites may be among the northernmost extension of the Glades cultural area (BCE 500 - CE 1750), generally seen in South Florida up to Collier County.
- The park protects and provides habitat for three imperiled plant species, ten bird species, two reptiles and the Florida manatee.
- The park contains a series of barrier and river islands that are predominantly tidally submerged mangrove swamps, offering a unique opportunity for residents and visitors to experience these islands in a substantially natural condition.

Cockroach Bay Preserve State Park is classified as a State Preserve in the DRP's unit classification system. In the management of a State Preserve, preservation and enhancement of natural conditions is all important. Resource considerations are given priority over user considerations and development is restricted to the minimum necessary for ensuring its protection and maintenance, limited access, user safety and convenience, and appropriate interpretation. Permitted uses are

primarily of a passive nature, related to the aesthetic, educational and recreational enjoyment of the preserve, although other compatible uses are permitted in limited amounts. Program emphasis is placed on interpretation of the natural and cultural attributes of the preserve.

Purpose and Scope of the Plan

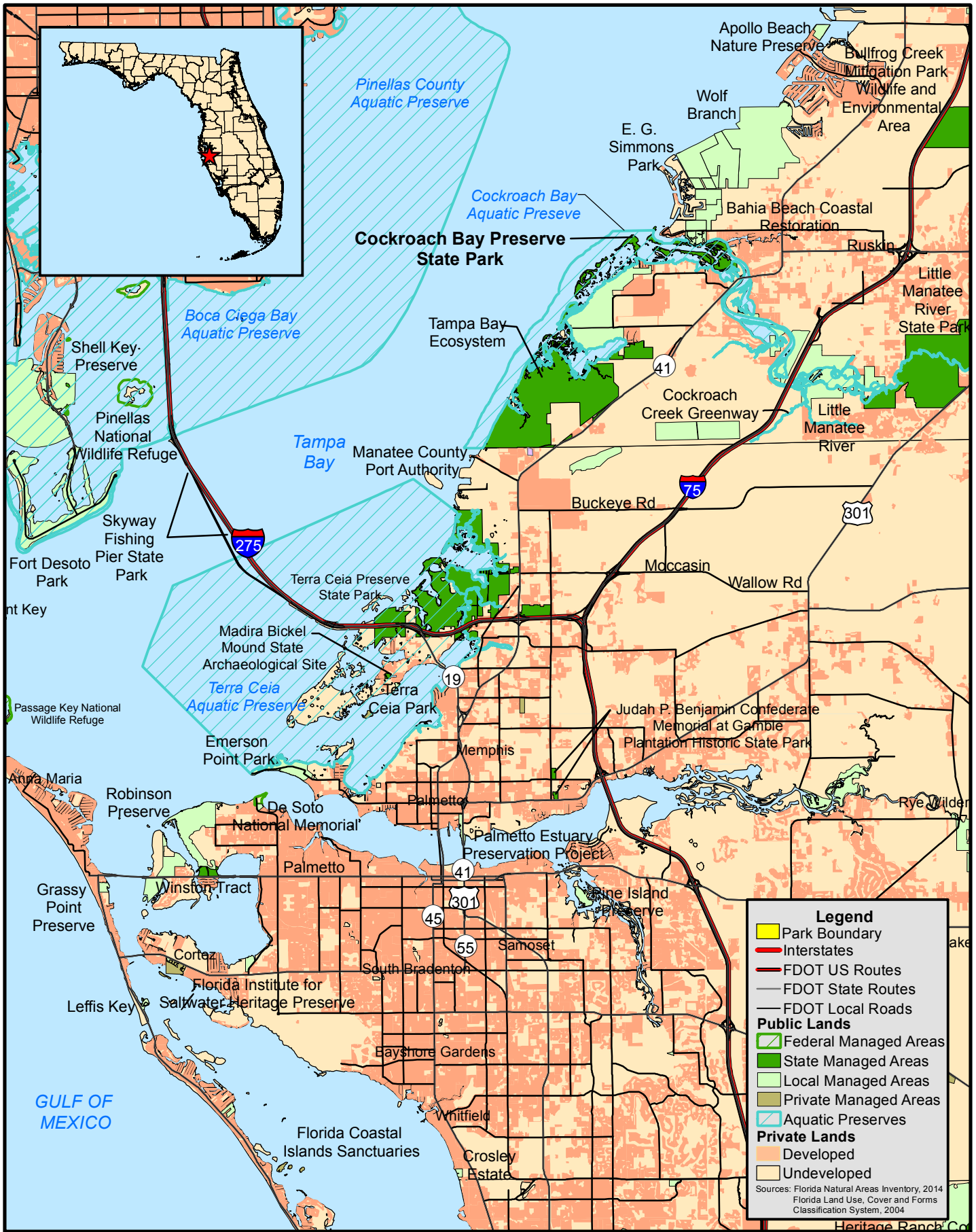
This plan serves as the basic statement of policy and direction for the management of Cockroach Bay Preserve State Park as a unit of Florida's state park system. It identifies the goals, objectives, actions and criteria or standards that guide each aspect of park administration, and sets forth the specific measures that will be implemented to meet management objectives and provide balanced public utilization. The plan is intended to meet the requirements of Sections 253.034 and 259.032, Florida Statutes, Chapter 18-2, Florida Administrative Code, and is intended to be consistent with the State Lands Management Plan. Upon approval, this management plan will replace the 2004 approved plan.

The plan consists of three interrelated components: the Resource Management Component, the Land Use Component and the Implementation Component. 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 measurable management objectives are established for each of the park's management goals and resource types. This component provides guidance on the application of such measures as prescribed burning, exotic species removal, imperiled species management, cultural resource management and restoration of natural conditions.

The Land Use Component is the recreational resource allocation plan for the park. Based on considerations such as access, population, adjacent land uses, the natural and cultural resource base of the park, current public uses and existing development, measurable objectives are set to achieve the desired allocation of the physical space of the park. These objectives locate use areas and propose the types of facilities and programs and the volume of public use to be provided.

The Implementation Component consolidates the measurable objectives and actions for each of the park's management goals. An implementation schedule and cost estimates are included for each objective and action. Included in this table are (1) measures that will be used to evaluate the DRP's implementation progress, (2) timeframes for completing actions and objectives, (3) estimated costs to complete each action and objective.

All development and resource alteration proposed 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.



COCKROACH BAY PRESERVE STATE PARK

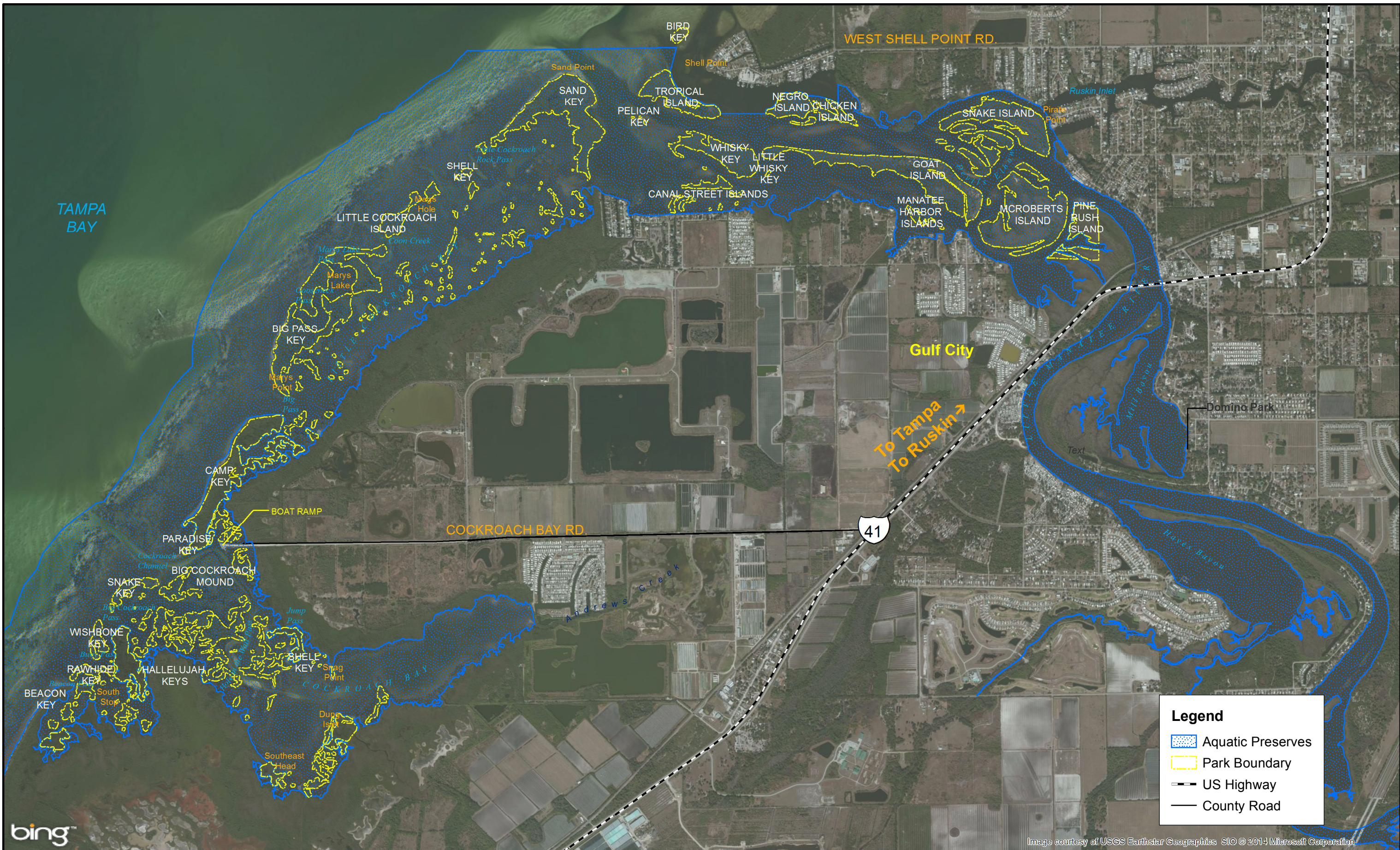


VICINITY MAP

Legend

- Park Boundary
- Interstates
- FDOT US Routes
- FDOT State Routes
- FDOT Local Roads
- Public Lands**
- Federal Managed Areas
- State Managed Areas
- Local Managed Areas
- Private Managed Areas
- Aquatic Preserves**
- Aquatic Preserves
- Private Lands**
- Developed
- Undeveloped

Sources: Florida Natural Areas Inventory, 2014
Florida Land Use, Cover and Forms Classification System, 2004



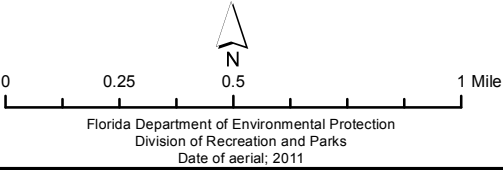
Legend

- Aquatic Preserves
- Park Boundary
- US Highway
- County Road

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COCKROACH BAY PRESERVE STATE PARK



REFERENCE MAP

In the development of this plan, the potential of the park to accommodate secondary management purposes was analyzed. These secondary purposes were considered within the context of the DRP's statutory responsibilities and the resource needs and values of the park. This analysis considered the park's natural and cultural resources, management needs, aesthetic values, and visitation and visitor experience. 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 (other than those forest management activities specifically identified in this plan) are not consistent with this plan.

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.

The DRP may provide the services and facilities outlined in this plan either with its own funds and staff or through an outsourcing contract. Private contractors may provide assistance with natural resource management and restoration activities or a Visitor Service Provider (VSP) may provide services to park visitors in order to enhance the visitor experience. For example, a VSP could be authorized to sell merchandise and food and to rent recreational equipment for use in the park. A VSP may also be authorized to provide specialized services, such as interpretive tours, or overnight accommodations when the required capital investment exceeds that which the DRP can elect to incur. Decisions regarding outsourcing, contracting with the private sector, the use of VSPs, etc. are made on a case-by-case basis in accordance with the policies set forth in the DRP's Operations Manual (OM).

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.

Many operating procedures, used system-wide, are outlined in the DRP's Operations Manual (OM).

Park Management Goals

The following park goals express the DRP's long-term intent in managing the state park:

- Provide administrative support for all park functions.
- Protect water quality and quantity in the park, restore hydrology to the extent feasible and maintain the restored condition.
- Restore and maintain the natural communities/habitats of the park.
- Maintain, improve or restore imperiled species populations and habitats in the park.
- Remove exotic and invasive plants and animals from the park and conduct needed maintenance-control.
- Protect, preserve and maintain the cultural resources of the park.
- Provide public access and recreational opportunities in the park.
- Develop and maintain the capital facilities and infrastructure necessary to meet the goals and objectives of this management plan.

Management Coordination

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

The Florida Fish and Wildlife Conservation Commission (FWC) assists staff in the enforcement of state laws pertaining to wildlife, freshwater fish and other aquatic life existing within the park. In addition, the FWC aids the DRP with wildlife management programs, including imperiled species management. The Florida Department of State (FDOS), Division of Historical Resources (DHR) assists staff to ensure protection of archaeological and historical sites. The Florida Department of Environmental Protection (DEP), Florida Coastal Office (FCO) aids staff in aquatic preserves management programs. In addition, the Bureau of Beaches and Coastal Systems aid the staff in the development of erosion control projects.

Hillsborough County's Environmental Lands Acquisition and Protection Program (ELAPP) manages much of the nearby upland as conservation land. The DRP intends to reestablish a previous partnership with ELAPP on exotic plant control and potential fire management in the park. The Tampa Port Authority (TPA) owns the

submerged lands surrounding the park. The TPA has designated the submerged lands within the Cockroach Bay Aquatic Preserve as a Resource Protection area, which affords greater protection, via local regulation, from activities, which may have a negative impact on natural resources. The Southwest Florida Water Management District's Surface Water Improvement and Management (SWIM) program is very active in restoring and creating habitat in adjacent mainland areas affected by shell mining and agriculture.

Public Participation

DRP provided an opportunity for public input by conducting a public workshop and Advisory Group meetings to present the draft management plan to the public. The first meetings were held on November 19 and 20, 2014, respectively. The second meetings was held on January 6 and 7, 2015, respectively and notices were published in the Florida Administrative Register, December 19, 2014, Volume 40/ Issue 246, included on the Department Internet Calendar, posted in clear view at the park, and promoted locally. The purpose of the Advisory Group meeting is to provide the Advisory Group members an opportunity to discuss the draft management plan (see Addendum 2).

Other Designations

Cockroach Bay Preserve State Park is not within an Area of Critical State Concern as defined in Section 380.05, Florida Statutes, and it is not presently under study for such designation. The park is a designated component of the Florida Greenways and Trails system, administered by the Department's Office of Greenways and Trails.

All waters within the park have been designated as Outstanding Florida Waters, pursuant to Chapter 62-302, Florida Administrative Code. Surface waters in this park are also classified as Class II waters by the Department. This park is surrounded by Cockroach Bay Aquatic Preserve as designated under the Florida Aquatic Preserve Act of 1975 (Section 258.35, Florida Statutes).

The Coastal Barrier Resources Act (CBRA) of 1982 established the Coastal Barrier Resources System (CBRS), a system of undeveloped coastal barriers along the Atlantic and Gulf of Mexico coasts. The intent of the CBRA was to remove from undeveloped coastal barriers Federal incentives for new development. The islands located south of the Little Manatee River are within the CBRS Cockroach Bay Unit FL-83.

The park is within the Tampa Bay National Estuary in the area designated as Middle Tampa Bay. This area includes south Hillsborough County, and the Hillsborough/ Manatee County line is its southern boundary. This area is considered one of the more pristine parts of the estuary.

RESOURCE MANAGEMENT COMPONENT

Introduction

The Florida Department of Environmental Protection (DEP), Division of Recreation and Parks (DRP) in accordance with Chapter 258, Florida Statutes, 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. Management measures expressed in this plan are consistent with the DRP's overall mission in natural systems management. Cited references are contained in Addendum 3.

The DRP's philosophy of resource management is natural systems management. Primary emphasis is placed on restoring and maintaining, to the degree possible, the natural processes that shaped the structure, function and species composition of Florida's diverse natural communities as they occurred in the original domain. Single species management for imperiled species is appropriate in state parks when the maintenance, recovery or restoration of a species or population is complicated due to constraints associated with long-term restoration efforts, unnaturally high mortality or insufficient habitat. Single species management should be compatible with the maintenance and restoration of natural processes and should not imperil other native species or seriously compromise the park values.

The DRP's management goal for cultural resources is to preserve sites and objects that represent Florida's cultural periods, significant historic events or persons. This goal often entails 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 can be affected by conditions and events that occur beyond park boundaries. Ecosystem management is implemented through a resource management evaluation program that assesses resource conditions, evaluates management activities and refines management actions, and reviews local comprehensive plans and development permit applications for park/ecosystem impacts.

The entire park is divided into management zones that delineate areas on the ground that are used to reference management activities (see Management Zones Map). The shape and size of each zone may be based on natural community type, burn zone, and the location of existing roads and natural fire breaks. It is important to note that all burn zones are management zones; however, not all management zones include fire-dependent natural communities. Table 1 reflects the management zones with the acres of each zone.

Table 1. Cockroach Bay Preserve State Park Management Zones			
Management Zone	Acreage	Managed with Prescribed Fire	Contains Known Cultural Resources
CB-01	23.22	N	N
CB-02	115.31	N	N
CB-03	4.53	N	N
CB-04	55.98	N	N
CB-05	148.62	N	Y
CB-06	22.04	N	Y
CB-07	18.50	N	N
CB-08	0.33	N	N
CB-10	7.89	N	N
CB-11	23.47	N	N
CB-12	2.31	N	N
CB-13	0.26	N	N
CB-14	53.74	N	N
CB-15	56.91	N	N
CB-16	64.18	N	N
CB-17	17.58	N	N
CB-18	17.57	N	N

Resource Description and Assessment

Natural Resources

Topography

The Cockroach Bay Preserve State Park is within the Gulf Coast Lowlands in the northern zone of the state. More specifically, it is in the Gulf Coastal Lowlands, adjacent to the Central Highlands.

The series of barrier and river islands that make up the preserve are predominantly tidally submerged mangrove swamps. Elevations of the islands range from 0 to 5 feet above the Mean High Water Level (MHWL). The islands adjacent to Tampa Bay have a narrow sand ridge with widths ranging from one to 60 feet and elevations from approximately ½ foot to 1½ feet above the MHWL.

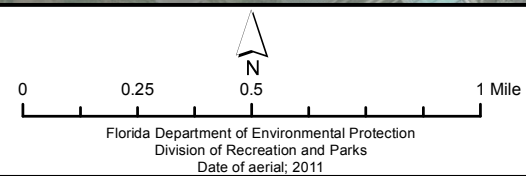
Snake and McRoberts Islands possess black needle rush (*Juncus roemerianus*) salt marsh communities that are surrounded by a slightly higher ridge. The interior appears to be below the MHWL; however, the ridge (one and a half feet above MHWL) prevents it from being tidally inundated on a frequent basis.



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COCKROACH BAY PRESERVE STATE PARK



MANAGEMENT ZONES MAP

The southern ridge on McRoberts Island is approximately 50-75 feet wide and approximately 2 ½ to 3 feet above the MHWL. Snake and Goat Islands have similar elevations but are consolidated into a greater area. Goat Island has the highest elevations due to filling with spoil material (dredge materials deposited) on its northeast side. The highest estimated elevation for Goat Island is five feet above the MHWL.

Geology

Regionally, deposits of varied origin underlie the area. According to a management plan for the aquatic preserve prepared by the Southwest Florida Water Management District (CBAPMAT 1999), the Cockroach Bay/Little Manatee River area is underlain by a series of Cretaceous and Tertiary carbonate rocks with an overlying sequence of carbonate and clastic deposits. The primary hydro-geological units of the adjacent aquatic preserve are the surficial aquifer, the intermediate aquifer, and the Floridan aquifer. The upper Floridan aquifer is the principal water-bearing unit in the region. It consists of limestone made of shells and shell fragments of marine origin, with many solution cavities and faulted features. The Upper Floridan aquifer is approximately 1200-1300 feet thick and is separated from the surficial aquifer by a 75-150 foot thick confining layer of clays and weathering products. This confining layer severely restricts the downward movement of water from the surficial to the lower layers, and limits recharge throughout the area. Layers of unconsolidated material in the range of 25-50 feet thick overlay the confining units. The local layer, known as the Hawthorne Formation, also limits the potential effects of karst activity in the area. Although the Little Manatee River watershed is near the northern limit of the Hawthorne Formation, only a few sinkholes have been recorded in the area.

Coastal environments are very susceptible to weather, gravitational tides, upland drainage patterns, and anthropocentric use. All of these influences have combined to form three distinct coastal estuarine systems within the park.

The southernmost system, known as Cockroach Bay, is very low energy and relatively shallow. It consists predominantly of open water and numerous small mangrove-dominated islands (Management Zones: CB-01, 02, 03, and 04). The genesis of these islands is from mollusk bars that have trapped sediments (see Kesson Series in the Soils Description). The main freshwater input is from Little Cockroach Creek, which is located in the northeastern corner of the system.

The central section of the Preserve consists of mangrove-dominated barrier islands that are generally orientated parallel to the shoreline (Management Zone CB-05). This area is known as Little Cockroach Bay and is less protected and subject to higher energy than its southern counterpart. This higher energy environment is a result of wave-action from the Tampa Bay shipping channel, longshore currents, and flows from the Little Manatee River. A coastal berm community has evolved on the Tampa Bay side of these islands.

The area where the Little Manatee River meets Tampa Bay is typical of a tide dominated, drowned river valley or coastal plains estuarine ecosystem. It is likely that these islands have ties to the mainland and were once just sandy ridges in a greater upland community. The influence of sea level ebb and flow combined with a meandering river system over time would have cut these ridges off from the mainland creating the islands we see today. This process is evident in the upland communities present on Snake, Goat, McRoberts and Pine Rush islands.

There are also some recent and historical artificial geological features at the park. These are in the form of dredge spoil piles and Native American shell mounds.

Soils

In the United States Department of Agriculture (USDA) soil survey of 1918, the series of islands that comprise the preserve were all considered tidal marsh soil, which is made up of "recent soil materials, still in the process of formation" (USDA 1918). Since then, more recent soil surveys have identified several natural soil types within the Cockroach Bay Preserve State Park (USDA 1989). The primary one of these is Kesson muck, frequently flooded, and secondary is Myakka fine sand (See Soils Map). There are also areas of altered and "made land" created by dredge deposits.

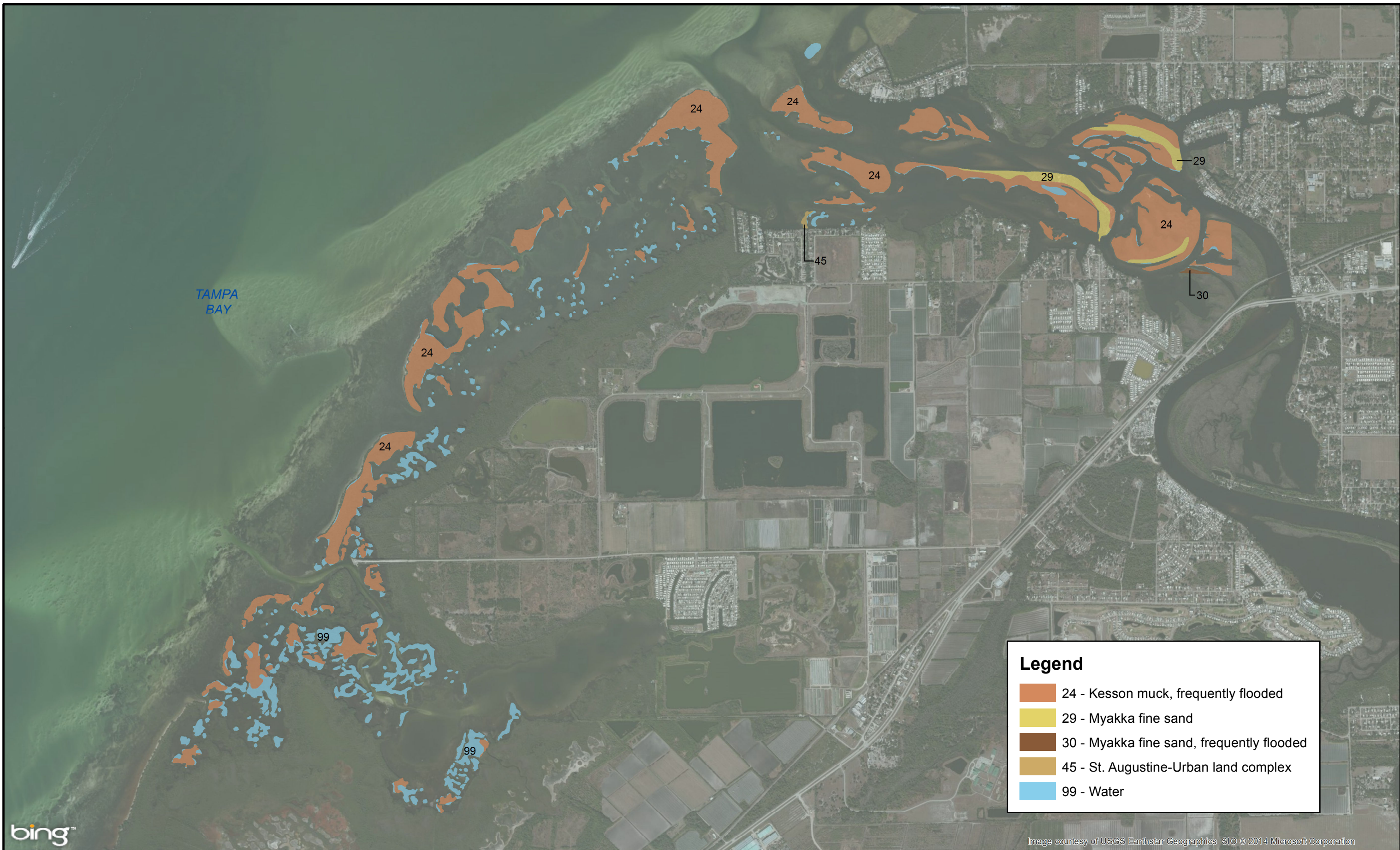
All of the barrier islands of Cockroach and Little Cockroach Bay and some of the Little Manatee River islands are identified as consisting of Kesson muck. This is the soil type of tidal swamps and marshes, areas that are relatively level with typically less than 1 percent slope, but subject to shallow flooding by the highest of normal tides as well as the occasional deep flooding by storm tides. The surface layer is of black muck, with underlying materials of gray, fine sand and then, below that, light olive gray, mottled fine sand. In some areas, this soil type develops when small to fine particles of sediment become entrapped in a hardened structure, typically a mollusk bar, leading to the genesis of salt marshes, flats, and mangrove swamps.

The park's upland ridges, predominantly found on Goat Island, Snake Island and McRobert's Island are classified as Myakka fine sand. This soil type is poorly drained and nearly level with a typical slope of 0 to 2 percent. When this soil is found inland, it generally supports flatwoods natural communities; however, at Cockroach Bay Preserve State Park, the marine conditions are more conducive to coastal berm communities or possibly even sparse maritime hammock over time.

Present to a lesser degree are bits of Myakka fine sand, frequently flooded, and St. Augustine-Urban land complex soils.

Minerals

There are no known mineral resources of commercial importance. If commercial quantities of sand or shell were present, their removal would do unacceptable damage to the geomorphology and biota of the islands.



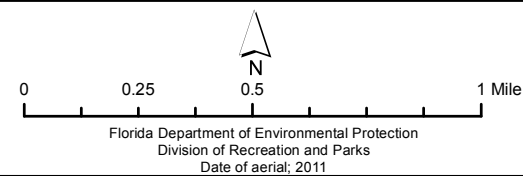
Legend

- 24 - Kesson muck, frequently flooded
- 29 - Myakka fine sand
- 30 - Myakka fine sand, frequently flooded
- 45 - St. Augustine-Urban land complex
- 99 - Water

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COCKROACH BAY PRESERVE STATE PARK



SOILS MAP

Hydrology

The water bodies adjacent to the park have received Aquatic Preserve and Outstanding Florida Waters designations. These designations afford the highest regulatory protection possible with the intent of protecting natural resources and maintaining existing water quality. Outstanding Florida Waters (OFW) are defined as waters designated by the Environmental Regulation Commission as worthy of special protection because of their natural attributes. No degradation of water quality, other than that allowed by rule, is to be permitted.

Cockroach Bay Preserve State Park is completely surrounded by the Cockroach Bay Aquatic Preserve. This aquatic preserve was designated in June of 1976 and is comprised of 8,583 acres of predominately unspoiled submerged and wetland areas. Aquatic preserves are bodies of water that were set aside by state legislation for the purpose of being preserved in an essentially natural or existing condition so that their aesthetic, biological, and scientific values may endure for the enjoyment of future generations. This is the only aquatic preserve in Florida in which the submerged land of the preserve is not state-owned. The submerged lands are owned by the Tampa Port Authority.

There are three other aquatic preserves in the Tampa Bay region as well. Also located on the east side of the bay, and approximately 3.5 miles to the south of the park is the 27,000-acre Terra Ceia Aquatic Preserve. The Pinellas County Aquatic Preserve and the Boca Ciega Bay Aquatic Preserve are on the west side of the bay and provide additional protection to approximately 350,000 acres combined. Aquatic preserves are managed by the FCO. A management plan has been approved for the Cockroach Bay Aquatic Preserve and is currently being revised and updated.

Waters adjacent to Sand Key and in the Little Manatee River are classified as Class III waters. Water quality in Class III waters is protected to provide for recreation, and propagation and maintenance of fish and wildlife. The waters to the south of Sand Key are classified as Class II waters. Water quality in Class II waters is protected to provide for shellfish propagation or harvesting. This is in addition to the Class III water designation that protects recreation, propagation and maintenance of fish and wildlife. Within the preserve Class II waters are currently designated as prohibited to shellfish harvesting.

There are two major basins that empty into and coalesce between the barrier and riverine islands of the park before ultimately flowing west and south through Tampa Bay and emptying into the Gulf of Mexico. These two features are the Little Manatee River and Cockroach Bay. The watershed for Cockroach Bay consists of 8,500 acres that are predominantly used for agriculture. The Little Manatee River watershed, which is almost 10 times larger, covers 83,200 acres to its mouth at Tampa Bay. These two watersheds provide the integral freshwater input that has allowed for the evolution of diverse estuarine ecosystems throughout the park.

Groundwater in southern Hillsborough County and northern Manatee County has exhibited depressed potentiometric surface levels over past decades. Seasonal drought conditions which result in low natural recharge rates, combined with an increased consumption, has likely contributed to the impacted condition. Although the confining layer of the Hawthorne Formation protects surface water features such as wetlands and streams from excessive stress caused by lowered groundwater levels, saltwater intrusion can occur as a result of this impact.

Most of the preserve is subjected to varying degrees of periodic tidal wash and storm related flooding. There are no known freshwater sources within the Preserve's boundary. Furthermore, no springs have been identified in the aquatic preserve or the associated watersheds, although artesian flows in coastal wells were common in the past.

Goat Island appears to be the only location that has received any major hydrological alterations. Deposition of spoil on the northeastern part of the island, likely to have occurred in the 1960s, has left an eroding shoreline. A channel cut parallel to the southern margin of the island has been colonized by mangroves, and appears to be functioning as valuable low-energy habitat. There are also remnants of a former bridge along the southeastern section of the island, where there is a section of the former bridge approach that juts into the river channel and alters flow. This filled area has a hardened shoreline of remnant seawall or concrete debris that deflects water in combination with an abandoned mid-channel concrete bridge support. A plan should be developed with the FCO to remove the concrete debris and remaining concrete structure that is within the aquatic preserve.

Natural Communities

This section of the management plan describes and assesses each of the natural communities found in the state park. It also describes the desired future condition (DFC) of each natural community and identifies the actions that will be required to bring the community to its DFC. Specific management objectives and actions for natural community management, exotic species management, and imperiled species management are discussed in the Resource Management Program section of this component.

The system of classifying natural communities employed in this plan was developed by the Florida Natural Areas Inventory (FNAI). The premise of this system is that physical factors such as climate, geology, soil, hydrology and fire frequency generally determine the species composition of an area, and that areas that are similar with respect to those factors will tend to have natural communities with similar species compositions. Obvious differences in species composition can occur, however, 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. Some physical influences, such as fire frequency, may vary from FNAI's descriptions for certain natural communities in this plan.

When a natural community within a park reaches the desired future condition, it is considered to be in a "maintenance condition." Required actions for sustaining a community's maintenance condition may include; maintaining optimal fire return intervals for fire dependent communities, ongoing control of non-native plant and animal species, maintaining natural hydrological functions (including historic water flows and water quality), preserving a community's biodiversity and vegetative structure, protecting viable populations of plant and animal species (including those that are imperiled or endemic), and preserving intact ecotones that link natural communities across the landscape.

The park contains seven distinct natural communities, as well as an altered landcover type (see Natural Communities Map). A list of known plants and animals occurring in the park is contained in Addendum 5.

Coastal Berm

Desired Future Condition: A shrub thicket or short forest growing on storm deposited ridges of sand and shell fragments. The canopy and understory vegetation is variable and ever-changing depending on the time since a storm event, and is frequently composed of a mixture of sea grape (*Coccoloba uvifera*), live oak (*Quercus virginiana*), cabbage palm (*Sabal palmetto*), red cedar (*Juniperus virginiana*), Spanish stopper (*Eugenia foetida*), white stopper (*Eugenia axillaris*), myrsine (*Myrsine cubana*), marlberry (*Ardisia escallonioides*), and white indigoberry (*Randia aculeata*). The typical groundcover found in these beach-like areas includes shoreline seapurslane (*Sesuvium portulacastrum*), saltgrass (*Distichlis spicata*), marsh hay grass (*Spartina patens*), bushy seaside oxeye (*Borrchia frutescens*) and seashore dropseed (*Sporobolus virginicus*). The cover of invasive exotic plant species will be less than five percent.

Description and Assessment: Coastal berm habitats have evolved on the Tampa Bay side of most of the larger barrier islands, in Management Zones CB-02, 04, and 05. Depending on the height of the storm surge that formed them, this community can be found immediately on the interface between the mangroves and the bay, or a little bit further inland. At the park, there are approximately 17 acres of this natural community.

Vegetative structure and composition varies slightly from island to island, depending on elevation and time since the last storm event. For instance, the larger and more stable berms in CB-05 have allowed for the growth of more hammock-like species such as live oak, cabbage palm, saw palmetto and southern red cedar. More seaward berms or those more recently affected by storm deposition support a suite of plants similar to beaches. Characteristic shrub and short tree species include Spanish and white stopper, myrsine, marlberry, white indigoberry, sea grape, and saffron plum (*Sideroxylon celastrinum*). There are also intermixed dense thickets of mangrove swamp species such as buttonwood (*Conocarpus erectus*),

black, red, and white mangroves (*Avicennia germinans*, *Rhizophora mangle*, and *Laguncularia racemosa*, respectively) in this community type.

Brazilian pepper (*Schinus terebinthifolius*) and Australian pine (*Casuarina equisetifolia*) are the most commonly found invasive exotic species on the coastal berms at Cockroach Bay Preserve State Park. Undesirable vegetation should be carefully treated in a manner that does not affect the natural processes of erosion and accretion in this community. To prevent this undesirable vegetation from falling over and further destabilizing the soils, where feasible, invasive exotic species should be stump cut. Since these communities are subject to periodic flooding, only aquatic approved herbicide will be used when inundated.

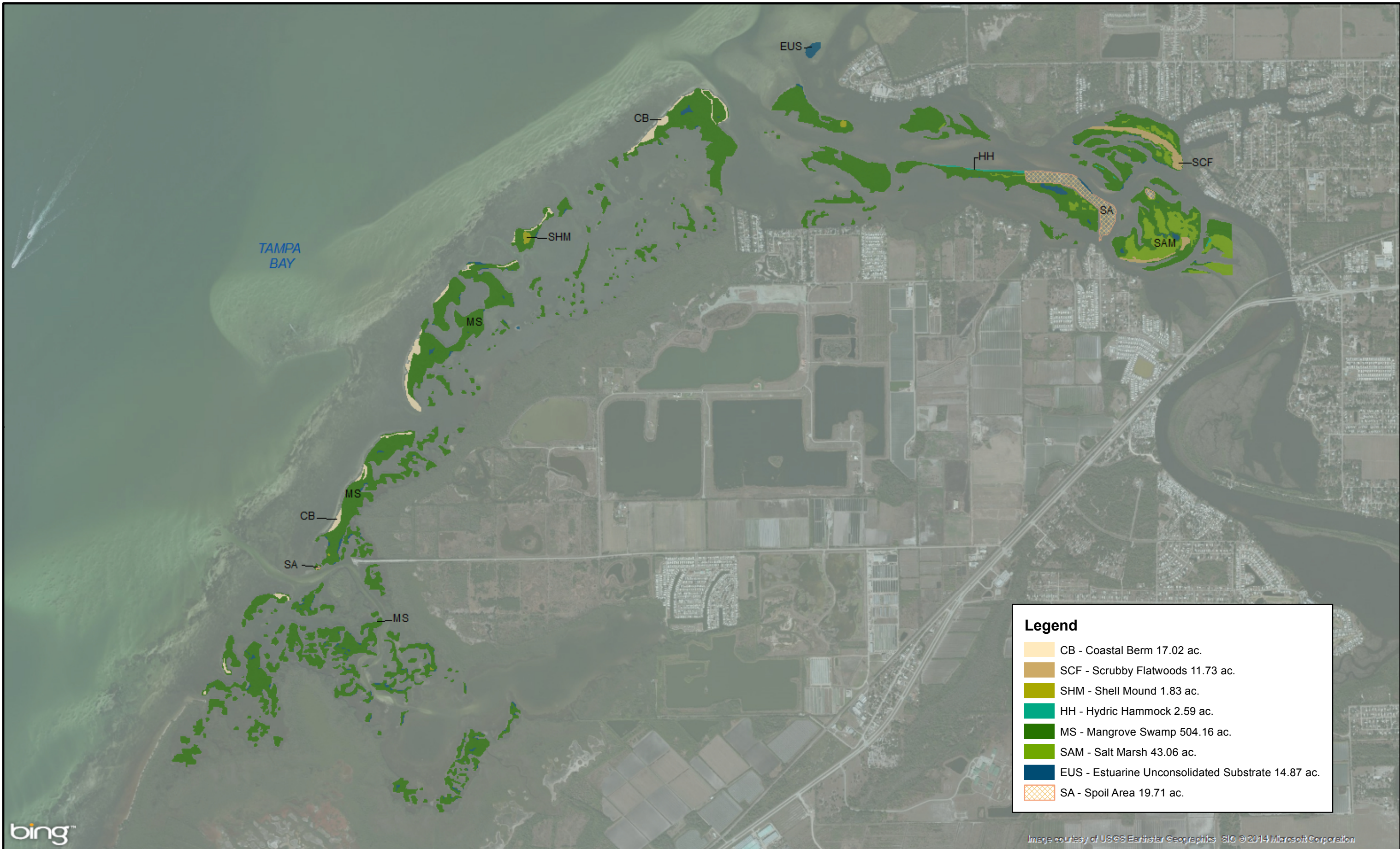
The same natural processes that are responsible for the generation of this ecosystem also deposit undesirable debris and trash. These objects include creosote, telephone poles, railroad ties, styrofoam cups, and glass/plastic bottles. Cleanup projects will be necessary to remove this debris, especially after a storm event.

General Management Measures: Treat invasive exotic plants and maintain at low levels. Remove undesirable debris and trash.

Scrubby Flatwoods

Desired Future Condition: A sparse canopy of widely spaced South Florida slash pines (*Pinus elliottii* var. *densa*) with an understory of saw palmetto, myrtle oak (*Quercus myrtifolia*), sand live oak (*Quercus geminata*) and a groundcover of wiregrass (*Aristida stricta* var. *beyrichiana*) and other grass species. The coverage of invasive exotic plant species will be less than five percent.

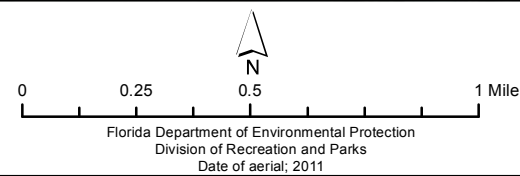
Description and Assessment: Historically, the park islands that are located in the Little Manatee River were once connected to the mainland. Over time the natural sinuous meandering of the Little Manatee River has incised the shoreline, effectively fragmenting and isolating these upland communities. This segregation has been reinforced through sea level rise and the dredging of navigational channels. There are approximately 12 acres of scrubby flatwoods communities in management zones CB-14 & 16. These communities are found on relatively thin, ribbon-like ridges of Myakka fine sands that are sandwiched between poorly-drained and periodically-flooded Kesson muck. The topography of these upland ridges has allowed them to survive while the surrounding communities were drowned by the river. The slight relief of these areas has also permitted the vegetation to stratify. Scrubby species such as sand live oak and myrtle oak occupy the highest elevation, while South Florida slash pine, live oaks and saw palmetto dominate the slightly lower areas. Intermixed in these shrubby-scrubby zones are blueberries (*Vaccinium* spp.), fetterbush (*Lyonia lucida*), and patches of exposed sand. The transitional areas between the flatwoods and adjacent salt marsh and mangrove swamp communities are periodically flooded by storm or supratidal events. This area of the flatwoods provides ideal habitat for southern red cedar, wax myrtle (*Myrica cerifera*), and sand cordgrass (*Spartina bakeri*).



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COCKROACH BAY PRESERVE STATE PARK



NATURAL COMMUNITIES MAP

Because this small remnant upland natural community has been isolated on islands in the park, the natural fire return interval would be greater than scrubby flatwoods adjacent to natural communities that burn more frequently. Storms and natural lightning-set fires will continue to affect this community's succession. Lightning-set fires will be allowed to burn.

Brazilian pepper, cogon grass (*Imperata cylindrica*), and melaleuca are the biggest threats to this community. Most of the invasive exotic vegetation is limited to the ecotones between the scrubby flatwoods and adjacent wetlands, but cogon grass is starting to creep into the higher elevations. Any undesirable vegetation should be carefully treated in a manner that does not affect the natural processes in this community.

The remnant scrubby flatwoods would be considered in fair condition compared to fire maintained early successional scrubby flatwoods. The community has succeeded enough towards hammock that it would be impractical to return it to optimal condition.

General Management Measures: Treat and remove invasive exotic plant species. Allow lightning started fires to burn these remnant communities that are isolated on islands.

Shell Mound

Desired Future Condition: Shell mound community is largely the result of human activities instead of natural and physical processes. Shell mounds are small hills or mounds made up almost entirely of mollusk shells discarded by Native Americans. The soils will be circumneutral to slightly alkaline, contain minimal organic material, and are very well drained. The shell mound will be undisturbed, and support a variety of hardwood trees and shrubs which include white stopper, live oak, cabbage palm, red cedar, wild lime (*Zanthoxylum fagara*), snowberry, and gumbo limbo (*Bursera simaruba*). Areas where there is evidence of more recent human disturbance (i.e. illegal pits dug by artifact collectors) will be repaired or improved to protect the integrity of the mound. Invasive exotic plant species will be less than five percent coverage.

Description and Assessment: The genesis of a shell mound community requires two very unique ingredients: substrate and seed source. Many years before European settlers arrived, generations of Native Americans utilized the rich waters of the Tampa Bay region. These early inhabitants created burial/ceremonial mounds and kitchen middens. These features were mostly constructed of clam, oyster, and/or whelk shells and are what provide the substrate for this natural community. As for the seed source, Florida, specifically the Tampa Bay region, is a conduit for neo-tropical migratory birds. It is likely that these flyways have facilitated the northern movement of more tropical plant species. The combination of these two exceptional occurrences has provided the proper conditions for the assemblage of calciphilic subtropical plant species that typify the shell mound community as we see today.

At the park, shell mound and coastal berm communities both exist in the mangrove swamp matrix and share some of the same plant species. However, shell mound communities are easily distinguished by existing on mostly shell rather than sand or sand mixed with shell fragments. Shared plant species include Spanish and white stopper, saffron plum, Spanish bayonet and Florida swampprivet (*Forestiera segregata*). Yet, gumbo limbo and Jamaican capertree (*Capparis jamaicensis*) are only found in the shell mound community.

Not all of the shell mounds at the park have shell mound communities. Some of the shell piles are lower in elevation and thereby subjected to diurnal tidal and/or storm flooding. These shell piles might have been lowered through removal for construction material, or simply eroded away.

At one time in the Tampa Bay region, there were many shell mounds dotting the coastal lagoons and estuaries. Unfortunately, many were destroyed for road building in the early part of the last century, others have been removed or filled in for development or disturbed by people looking for artifacts. There is recent evidence, a looter's pit from digging into one of the shell mounds. At the park, these culturally and naturally significant features will be protected from un-natural degradation. Increased vigilance by partner law enforcement agencies would alleviate some of these concerns.

One management conundrum is determining how to responsibly deal with any invasive exotic vegetation growing on top of these mounds. Although they do provide some protection by visually screening the resource, the invasive nature of these species will out-compete the unique shell mound species. Nevertheless, undesirable vegetation should be carefully treated in a manner that does not affect or increase the natural processes of erosion. To prevent treated vegetation from falling over and further destabilizing the substrate, where feasible, invasive exotic species will be stump cut.

General Management Measures: This community should be maintained free of invasive exotic plants. General management measures also include minimizing erosion and protecting sites from illegal digging. A comprehensive assessment of the shell mound natural community should be done with the goal of producing a management strategy to preserve the longevity and integrity of the archaeological resource.

Hydric Hammock

Desired Future Condition: Hydric hammock occurs in low, flat areas where soils are poorly drained and only flood occasionally. Where strips of hydric hammock immediately border salt marsh or other coastal communities, species composition is limited by salinity to mostly cabbage palm, live oak, and red cedar; FNAI considers this pattern a variant of hydric hammock, called coastal hydric hammock. The hydric hammock at the park has the species composition of the coastal variant that occurs on higher ridges adjacent to salt marsh and mangrove swamp. The understory has black needle rush, giant leather fern (*Acrostichum danaeifolium*)

and bushy seaside oxeye. The cover of invasive exotic plant species will be less than five percent.

Description and Assessment: There are approximately three acres of the coastal variant of hydric hammock at the park. This is a transitional community at the park; as sea level rises or weather patterns change, the coastal hydric hammock areas will naturally succeed into salt marsh and mangrove swamp. The areas of coastal hydric hammock exhibit an open canopy of evergreen trees with a groundcover of salt tolerant species. The interpretation of the 1938 black and white aerial photograph, indicate that these areas were the lower sections of sand ridges that are still above the waterline. Sea level rise and natural erosion may have contributed to the general reduction in topography of these areas. This community is currently in good condition, although species composition is limited to those that can survive periodic flood and are salt tolerant. Brazilian pepper is the dominant invasive exotic species, but occurs only sporadically in this community type at the park.

Natural fire occurrence is rare in this community type because of the sparse understory vegetation. Red cedar is not tolerant of fire and their presence indicates a long fire return interval.

General Management Measures: Invasive exotic species are present in this community and should be removed. Any undesirable vegetation should be carefully treated in a manner that does not affect the natural processes of erosion and accretion in this community. To prevent this undesirable vegetation from falling over and further destabilizing the soils, where feasible, invasive exotic species will be stump cut. Since these communities are subject to periodic flooding, only aquatic-approved herbicide will be used in areas that are inundated.

Mangrove Swamp

Desired Future Condition: Mangrove swamps are typically characterized as a dense evergreen forest occurring on mucky soils along relatively flat, low wave energy, marine and estuarine shorelines. The canopy is composed of red mangrove, white mangrove, and black mangrove with buttonwood on higher elevations. As with the other natural communities at the park, this community is subject to natural disturbances and will be impacted by changes in sea level or weather patterns. The cover of invasive exotic plants will be less than five percent.

Description and Assessment: Comprising approximately 504 acres, mangrove swamp is the dominant natural community at the park. The soils of the mangrove swamps are classified as Kesson Muck. These soils are generally anaerobic and saturated with brackish water at all times, becoming inundated at high tides.

The mangrove swamp communities of the park are in good condition. Mangroves will typically occur in dense stands with little to no understory or shrub layer. The overstory species are limited to red mangrove, black mangrove, white mangrove, and buttonwood. These four species may occur either in mixed stands or often in differentiated, mono-specific zones based on varying degrees of tidal influence,

levels of salinity, and types of substrate. Red mangroves will typically dominate the deepest water, followed by black mangrove in the intermediate zone, and white mangroves and buttonwood in the highest, least tidally-influenced zone.

In some of the older mangrove swamps, especially those in the protected waters of the park's estuaries, the red and black mangroves are quite large. A rich layer of peat from decaying plant material (primarily red and black mangrove roots) has built up over the soil. In areas with increased soils and peat accumulation, herbaceous species such as saltwort (*Batis maritima*), shoregrass (*Monanthochloe littoralis*), and giant leather fern can be found. Any other species found intermixed in this dense canopy, such as gray nicker (*Caesalpinia bonduc*) or coinvine (*Dalbergia ecastaphyllum*), can often be traced back to be found rooted in a coastal berm or shell mound community hidden in the swamp.

Brazilian pepper, carrotwood (*Cupaniopsis anacardioides*), punk tree (*Melaleuca quinquenervia*) and Australian pine are the invasive exotic species that can be found in mangrove swamp.

General Management Measures: Mangrove swamp communities are naturally self-sufficient and will not require many management measures to ensure their continued existence in the park. Since they are typically at or below mean-high water, many invasive exotic plant species cannot take hold. However, the few species that can be found will require treatment or removal. Occasionally, a marine vessel will impact the trees and damage the vertical structure, but this community type is resilient, and will re-grow and propagate.

Salt Marsh

Desired Future Condition: Salt marsh will be predominantly an herbaceous community that occurs in the lower energy portions of the coastal zone that are still affected by tides and seawater. Dominant vegetation includes salt marsh cordgrass (*Spartina alterniflora*) and needle rush (*Juncus roemerianus*). Water depth, soil salinity, and tidal/flooding fluctuations are the major environmental factors that influence salt marsh vegetation. Coverage of invasive exotic plant species will be less than five percent.

Description and Assessment: The 43 acres of salt marsh at the park are infrequently flooded, dominated by black needle rush, and host most of their diversity along the landward margins. They are in good condition, as seen in the diversity of salt-tolerant plant species; these include: Carolina sea lavender (*Limonium carolinianum*), marsh fimbry (*Fimbristylis spadicea*), shoreline seapurslane, groundsel tree (*Baccharis halimifolia*), saltwater falsewillow (*Baccharis angustifolia*), marshelder (*Iva frutescens*), and Christmas berry (*Lycium carolinianum*). This area also provides critical foraging habitat to fiddler crabs (*Uca* spp.) and various avian species. Some of the salt marshes have mangrove tree islands and open water features.

The park also offers a variant of salt marsh community that meets the FNAI description of salt flat. Within the mangrove swamps of Negro Island, there is a small area (less than one acre) that is slightly higher in elevation and only flooded

by storms and extreme high tides. Other than the occasional rain storm, this area is isolated from freshwater and has become very saline and desiccated due to constant evaporation. Plant species that are tolerating the extreme salinity of this natural community at the park include saltgrass, seashore paspalum (*Paspalum vaginatum*), saltwort, and bushy seaside oxeye. There are also a few buttonwoods and black mangrove seedlings. The hyper-saline conditions of the available soils drastically limit the occurrence of invasive exotic species in this community. From interpretation of the 1938 aerial photographs of the Preserve, it appears that this salt flat is the end of the timeline for the remnant uplands of the riverine islands. As sea level continues to rise or weather patterns change, it is likely that this small salt flat community will become more susceptible to frequent flooding. The increased hydroperiod will likely transform this area into a black needle rush dominated salt marsh and then subsequently into mangrove swamp.

There are little data on natural fire frequency in salt marsh, but it is known to burn if the conditions are right. Since this community is relatively treeless, the fire return interval would best be determined by the nature of the adjacent communities. Nevertheless, when this community does burn, it is typically sporadic and creates a mosaic pattern.

The ecotones between this community and the next provide transitional areas that are vital to the web of life in this ecosystem; however they can also provide a haven for invasive exotic species that could not otherwise take root in the marsh.

General Management Measures: Invasive exotic species are present in this community and should be removed.

Estuarine Unconsolidated Substrate

Desired Future Condition: Estuarine unconsolidated substrate is used to classify expansive, relatively un-vegetated, subtidal, intertidal, and supratidal zones that have a mineral-based substrate composed of shell, coralgall, marl, mud, or quartz sands. Unconsolidated substrate communities are associated with and often grade into beach dune, salt marsh, mangrove swamp, seagrass bed, coral reef, Mollusk reef, worm reef, octocoral bed, sponge bed, and algal bed. While these areas may seem relatively barren, the densities of infaunal organisms in subtidal zones can reach the tens of thousands per meter square, making these areas important feeding grounds for many bottom feeding fish. At the park, this community type is used to classify all of the estuarine open water areas that are within the park boundary. Desired future conditions for such open waters will be related to maintaining (or improving, as needed) infaunal organism health and will need to be defined in conjunction with other involved agencies, particularly DEP's Florida Coastal Office (FCO) aquatic preserve program.

Description and Assessment: The majority of estuarine unconsolidated substrate that falls within the park's boundary are open water or mud flats within a mangrove swamp community. Over the years, the boundaries of the mangrove swamp communities have varied, thus changing the acreage that could be described as estuarine unconsolidated substrate. Currently, this community includes

approximately 16 acres of shallow brackish water found throughout the park. The unconsolidated substrate type for the park has not been fully defined, but most of these areas immediately border the mangroves. Other areas are small tidal channels and lagoons intermixed in the mangroves.

There are also small pockets of marine and estuarine seagrass bed communities scattered within the estuarine unconsolidated substrate that are not separated out because of their patchiness and small size. These generally occur in subtidal (rarely intertidal) zones, in clear coastal waters where wave energy is moderate. Seagrasses, along with their associated algal and invertebrate epiphytes, form the basis of a food chain that impacts almost every underwater creature and are considered indicator species because they are extremely sensitive to changes in water quality. The large areas of sea grass beds in Cockroach Bay fall outside the boundaries of the park and are not part of this management plan.

The estuarine community could be considered to be in good condition, as represented by the diverse fish populations and the overall clarity of the water. This is a fairly dynamic community, as illustrated by the changes to Bird Key (CB-06) in the last 80 years: it went from offering roughly five acres with a house, business and pond to now being completely underwater. At present, all that remains of the island is an un-vegetated shoal. Nevertheless, the polygon that denotes its location still exists and, at this time, this natural community description can be applied to Bird Key.

General Management Measures: These areas should continue to be protected from detrimental activities such as illegal dumping, soil compaction, dredging and excess erosion, inappropriate boating traffic, or other activities that may cause disturbances. Shallow areas should be properly marked.

Altered Landcover: Spoil Area

Desired Future Condition: This community type defines areas where dredge or spoil material is deposited and eventually is colonized, however sparsely, by plants. The soils in these areas predominantly consist of shelly coarse sands with little organic content. The lack of nutrients is what attributes to the sparse vegetative cover and white signature on aerial photography. To restore these areas to their preexisting condition, all of the spoil material would have to be removed. Because of their remote locations, this restoration concept is cost prohibitive and may result in more damage to the surrounding areas. Maintenance of this altered community will include some erosion controls and minimizing the presence of exotic invasive species.

Description and Assessment: This altered land cover type makes up approximately 20 acres and is found in three management zones: CB-04, 15, and 16. It is thought that these areas were created when the Little Manatee River and the channel near the boat ramp were dredged to create deeper water boating channels (CBAPMAT 1999).

The largest and most identifiable Spoil areas exist in CB-15, on Goat Island. Approximately 17 acres of this island were filled with dredge material and with imported, highly organic topsoils. At one time, there was a plan to develop this island into a housing subdivision, but this never materialized (FDEP 2004). The only structures that still remain are the dilapidated abutments and center section of the bridge that once connected this island to the mainland. In some areas, large conch shells are emerging from the spoil, indicating the possibility that the dredge material contained or was deposited on shell mounds or middens. Prior to 2006, groups of volunteers were coordinated by a local Boy Scout Troop, DEP, and Hillsborough County staff to plant flatwoods and other tree species on Goat Island. The planted tree species include: sand pine (*Pinus clausa*), north and south Florida slash pines (*Pinus elliottii*), longleaf pine (*Pinus palustris*), and loblolly pine (*Pinus taeda*).

Spoil areas are disturbed communities that provide an ideal location and environment for invasive exotic species to grow. At the park, some of the spoil areas are plagued with undesirable plant species such as Brazilian pepper, Australian pine, carrotwood, and cogongrass.

The spoil area on Goat Island is high and well drained enough to support a population of gopher tortoises (*Gopherus polyphemus*) where hatchlings, juvenile and adult tortoises occur. There is currently a matrix of open sand areas, grass dominated areas, and shaded areas with trees in the canopy to support this population.

The surface fuels (pine needles and grasses) and other fuels that would carry fire are not contiguous, and prescribed burning is not currently proposed on a regular rotation. In order to support invasive exotic removal efforts, existing habitat areas, and other resource management needs, the use of prescribed fire will be considered.

There is approximately 1,200 to 1,500 feet of eroding shoreline on the north side of Goat Island caused by the natural movement of the main channel of the Little Manatee River that is exacerbated by boat wakes. In the past, FCO staff planted cordgrass along several sections of the northern shoreline in an effort to reduce erosion. These plantings occur on the boundary between the Cockroach Bay Preserve State Park and the aquatic preserve. Coordination between park and aquatic preserve staff will be necessary to monitor the success of this project.

General Management Measures: Invasive exotic species are present in this community and should be removed. There are no management measures to maintain the spoil on these island because it is not naturally occurring. Erosion needs to be monitored and re-assessed regularly. Evaluate if additional erosion control measures need to be implemented. Where indicated by large shells emerging from the spoil sands, a Tier 1 archaeological investigation should be conducted to determine cultural significance, and a protection plan developed as needed.

Imperiled Species

Imperiled species are those that are: (1) tracked by FNAI as critically imperiled (G1, S1) or imperiled (G2, S2); or (2) listed by the U.S. Fish and Wildlife Service (USFWS), Florida Fish and Wildlife Conservation Commission (FWC) or the Florida Department of Agriculture and Consumer Services (FDACS) as endangered, threatened or of special concern. At this time, management for the listed species found at Cockroach Bay Preserve State Park is essentially limited to Tier 1 monitoring and exotic species removal.

There are two listed species of epiphytic plants found at this preserve, cardinal air plant (*Tillandsia fasciculata*) and giant air plant (*Tillandsia utriculata*). Both *Tillandsia* species are found growing on oaks and palms in the upland communities of the park. Although FNAI is not formally tracking these species currently, the giant air plant is especially vulnerable to attack from the introduced bromeliad weevil (*Metamasius callizona*) and its populations will need to be monitored if the current trend continues. There are currently monitoring protocols in place for this plant; also, seed collection and seed preservation to protect local genetic variability, in preparation for potential extirpation of local populations and for possible re-introductions, has already begun in some state parks and the protocols for this have been established.

Another state-threatened plant species reported for the preserve is the shell-mound prickly pear (*Opuntia stricta*). This is another plant under threat from invasive exotic invertebrates, such as the cactus moth (*Cactoblastis cactorum*).

American alligators (*Alligator mississippiensis*) are listed because of their similarity in appearance to the American crocodile (*Crocodylus acutus*), and they require no special management measures or monitoring other than incidental observations.

On Goat Island there is a reproducing population of gopher tortoises. The well-drained sandy spoil deposited on the island is high enough in elevation to allow tortoises to dig burrows. Around 17 acres of potentially suitable habitat occurs on the island, which will limit the total number of tortoises that can be supported in this population. Evidence of intraspecific competition was observed, with the fairly recent mortality of a large male tortoise that was found on its back. The most imminent threats to gopher tortoises the island are the continued erosion along the north side of the island, and invasive exotic plants. The erosion has left a steep drop-off that is approximately a one meter drop to the river. A tortoise that falls down the drop-off would have a difficult time climbing up it. The erosion of tortoise burrows could also occur. Invasive exotic trees and shrubs like Brazilian pepper, carrotwood, and Australian pine can cause thickets or monocultures that do not allow tortoise food plants to grow. Dense monocultures of cogon grass are also a problem for gopher tortoises. The limited habitat on the island is conducive for a comprehensive burrow survey that could be used to estimate and then monitor the tortoise population. New gopher tortoise survey protocols are being developed that includes scoping burrows. No monitoring is

proposed, other than incidental tortoise observations, until the new monitoring protocols are adopted.

The islands are extensively used by many bird species, eight of which are considered Species of Special Concern (see Table 2). Approximately 30 roseate spoonbills (*Platalea ajaja*) were recently observed roosting on an island in Little Cockroach Bay; this may be a precursor activity to nesting and will bear monitoring. Least terns (*Sternula antillarum*) were reported in 1997, but there are no current reports for presence or absence. It is conceivable that the terns were simply investigating the newly created spoil mounds at that time; currently, there is little suitable nesting habitat for them. In addition to the listed species, there are several others that FNAI is tracking to determine actual status; at Cockroach Bay Preserve State Park, these include Wilson's plover (*Charadrius wilsonia*), least bittern (*Ixobrychus exilis*), glossy ibis (*Plegadis falcinellus*) and yellow-crowned night-heron (*Nyctanassa violaceus*). Yellow-crowned night-herons have been observed nesting on the islands at the mouth of Cockroach Bay. Management for these species includes maintaining healthy natural communities, monitoring, and protecting these birds from harassment.

Though technically outside the park boundary, manatees (*Trichechus manatus*) forage in the seagrass beds and traverse the waters surrounding the islands; they are also known to be all along the Little Manatee River. The manatee is considered an endangered species by state and federal agencies and ranked G2/S2 by FNAI. Manatee are directly threatened by boat traffic, which causes injuries and deaths annually, and their food source is affected, as boat props can permanently damage seagrass beds. Water traffic is expected to follow the protective restrictions in place to protect the manatee; management includes working with law enforcement to encourage observance of these measures. Without enforcement of existing slow-speed zones, the chances of gaining compliance are negligible.

Table 2 contains a list of all known imperiled species within the park and identifies their status as defined by various entities. It also identifies the types of management actions that are currently being taken by DRP staff or others, and identifies the current level of monitoring effort. The codes used under the column headings for management actions and monitoring level are defined following the table. Explanations for federal and state status as well as FNAI global and state rank are provided in Addendum 6.

Table 2: Imperiled Species Inventory						
Common and <i>Scientific Name</i>	Imperiled Species Status				Management Actions	Monitoring Level
	FWC	USFWS	FDACS	FNAI		
PLANTS						
Cardinal air plant <i>Tillandsia fasciculata</i>			E	-	2	Tier 1
Giant air plant <i>Tillandsia utriculata</i>			E	-	2	Tier 1
Shell mound pricklypear <i>Opuntia stricta</i>			T	-	2	Tier 1
REPTILES						
American alligator <i>Alligator mississippiensis</i>	FT(S/ A)	SAT			13	Tier 1
Gopher Tortoise <i>Gopherus polyphemus</i>	ST			G3/S3	2	Tier 2
BIRDS						
Little blue heron <i>Egretta caerulea</i>	SSC			G5/S4	2	Tier 1
Reddish egret <i>Egretta rufescens</i>	SSC			G5/S4	2	Tier 1
Snowy egret <i>Egretta thula</i>	SSC			G5/S3	2	Tier 1
Tricolored heron <i>Egretta tricolor</i>	SSC			G5/S4	2	Tier 1
White ibis <i>Eudocimus albus</i>	SSC			G5/S4	2	Tier 1
Wood stork <i>Mycteria americana</i>	FT	LT		G4/S2	2	Tier 1
Brown pelican <i>Pelecanus occidentalis</i>	SSC			G4/S3	2	Tier 1
Roseate spoonbill <i>Platalea ajaja</i>	SSC			G5/S2	2	Tier 1
Black skimmer <i>Rynchops niger</i>	SSC			G5/S3	2	Tier 1
Least tern <i>Sterna antillarum</i>	ST			G4/S1	2, 10	Tier 1

Table 2: Imperiled Species Inventory						
Common and <i>Scientific Name</i>	Imperiled Species Status				Management Actions	Monitoring Level
	FWC	USFWS	FDACS	FNAI		
MAMMALS						
Manatee <i>Trichechus manatus</i>	FE	LE		G2/S2	10	Tier 1

Management Actions:

1. Prescribed Fire
2. Exotic Plant Removal
3. Population Translocation/Augmentation/Restocking
4. Hydrological Maintenance/Restoration
5. Nest Boxes/Artificial Cavities
6. Hardwood Removal
7. Mechanical Treatment
8. Predator Control
9. Erosion Control
10. Protection from visitor impacts (establish buffers)/law enforcement
11. Decoys (shorebirds)
12. Vegetation planting
13. Outreach and Education
14. Other

Monitoring Level:

- Tier 1. Non-Targeted Observation/Documentation: includes documentation of species presence through casual/passive observation during routine park activities (i.e. not conducting species-specific searches). Documentation may be in the form of Wildlife Observation Forms, or other district specific methods used to communicate observations.
- Tier 2. Targeted Presence/Absence: includes monitoring methods/activities that are specifically intended to document presence/absence of a particular species or suite of species.
- Tier 3. Population Estimate/Index: an approximation of the true population size or population index based on a widely accepted method of sampling.
- Tier 4. Population Census: A complete count of an entire population with demographic analysis, including mortality, reproduction, emigration, and immigration.
- Tier 5. Other: may include habitat assessments for a particular species or suite of species or any other specific methods used as indicators to gather information about a particular species.

Detailed management goals, objectives and actions for imperiled species in this park are discussed in the Resource Management Program section of this component and the Implementation Component of this plan.

Exotic and Nuisance Species

Exotic species are plants or animals not native to Florida. Invasive exotic species are able to out-compete, displace or destroy native species and their habitats, often because they have been released from the natural controls of their native range, such as diseases, predatory insects, etc. If left unchecked, invasive exotic plants

and animals alter the character, productivity and conservation values of the natural areas they invade.

Exotic animal species include non-native wildlife species, free ranging domesticated pets or livestock, and feral animals. Because of the negative impacts to natural systems attributed to exotic animals, the DRP actively removes exotic animals from state parks, with priority being given to those species causing the greatest ecological damage.

In some cases, native wildlife may also pose management problems or nuisances within state parks. A nuisance animal is an individual native animal whose presence or activities create special management problems. Examples of animal species from which nuisance cases may arise include venomous snakes or raccoons and alligators that are in public areas. Nuisance animals are dealt with on a case-by-case basis in accordance with the DRP's Nuisance and Exotic Animal Removal Standard.

Detailed management goals, objectives and actions for management of invasive exotic plants and exotic and nuisance animals are discussed in the Resource Management Program section of this component.

Most of the park is at or below the mean high-water line, which has prevented undesirable species from invading the majority of acreage at the park. In 2013, the park was surveyed for invasive exotic plants (Current Conditions Report, IEPDB 2014). Approximately 138 acres (gross acres) in the park had some invasive exotic plants. This could range from a few individual Brazilian pepper trees mixed within a larger expanse of mangroves to more concentrated areas of cogon grass and Brazilian pepper located on drier sites. These different coverage classes were then used to calculate the 16 "infested" acres at the park (the area of the ground surface that is actually covered by exotics). Annual treatment goals are set by the "infested" acres. Camp Key (CB-04), Sand Key/Little Cockroach Island (CB-05), Snake Island (CB-14), Goat Island (CB-15) and McRoberts Key (CB-16) currently have the majority of infestations.

Good management practices for invasive exotics dictate that managers be aware of what is not native to their park. Staying current with the FLEPPC findings is certainly essential, as is effective response to such species when they appear. Managers must also be proactive, noting non-native species, attending to new exotics alerts and weed risk assessments put out by IFAS or FWC. They should also be aware of the "Early Detection" priority list distributed through their local Cooperative Invasive Species Management Areas (CISMA). At the time of this writing, Early Detection and Rapid Response (EDRR) species that are likely to show up at this park included Portia tree (*Thespesia populnea*) and valamuerto (*Senna pendula* var. *glabrata*). Treatment at the earliest hint of invasion is always the most efficient approach and is more likely to result in eradication of the problem.

There have been reports of feral hogs (*Sus scrofa*) that occasionally make it to the islands, however in August 2014, there was no evidence of hogs. Exotic animals will

be surveyed for, and those found in the park will be assessed and appropriate management actions will be implemented.

Table 3 contains a list of the (FLEPPC) Category I and II invasive, exotic plant species found within the park (FLEPPC 2013). The table also identifies relative distribution for each species and the management zones in which they are known to occur. An explanation of the codes is provided following the table. For an inventory of all exotic species found within the park, see Addendum 5.

Table 3: Inventory of FLEPPC Category I and II Exotic Plant Species			
Common and Scientific Name	FLEPPC Category	Distribution	Management Zone (s)
PLANTS			
Rosary pea <i>Abrus precatorius</i>	I	2	CB-05, CB-14, CB-15, CB-16, CB-04
Australian pine <i>Casuarina equisetifolia</i>	I	2	CB-05, CB-06
Carrotwood <i>Cupaniopsis anacardioides</i>	I	2	CB-04, CB-16, CB-05, CB-02, CB-14, CB-15
Cogon grass <i>Imperata cylindrica</i>	I	2	CB-14, CB-15
Lantana <i>Lantana camara</i>	I	2	CB-04, CB-05, CB-06
Melaleuca <i>Melaleuca quinquenervia</i>	I	1	CB-14
		2	CB-14
Natal grass <i>Melinis repens</i>	I	2	CB-15, CB-14
Tuberous sword fern <i>Nephrolepis cordifolia</i>	I	2	CB-05
Brazilian pepper <i>Schinus terebinthifolius</i>	I	2	CB-15, CB-16, CB-14, CB-06, CB-05, CB-04, CB-02, CB-17
		3	CB-02, CB-04, CB-05, CB-15, CB-16
		4	CB-04
		6	CB-04
Wedelia <i>Sphagneticola trilobata</i>	II	2	CB-04

Distribution Categories:

- 0 No current infestation: All known sites have been treated and no plants are currently evident.
- 1 Single plant or clump: One individual plant or one small clump of a single species.
- 2 Scattered plants or clumps: Multiple individual plants or small clumps of a single species scattered within the gross area infested.
- 3 Scattered dense patches: Dense patches of a single species scattered within the gross area infested.
- 4 Dominant cover: Multiple plants or clumps of a single species that occupy a majority of the gross area infested.
- 5 Dense monoculture: Generally, a dense stand of a single dominant species that not only occupies more than a majority of the gross area infested, but also covers/excludes other plants.
- 6 Linearly scattered: Plants or clumps of a single species generally scattered along a linear feature, such as a road, trail, property line, ditch, ridge, slough, etc. within the gross area infested.

Cultural Resources

This section addresses the cultural resources present in the park that may include archaeological sites, historic buildings and structures, cultural landscapes and collections. The Florida Department of State (FDOS) maintains the master inventory of such resources through the Florida Master Site File (FMSF). State law requires that all state agencies locate, inventory and evaluate cultural resources that appear to be eligible for listing in the National Register of Historic Places. Addendum 7 contains the FDOS, Division of Historical Resources (DHR) management procedures for archaeological and historical sites and properties on state-owned or controlled properties; the criteria used for evaluating eligibility for listing in the National Register of Historic Places, and the Secretary of Interior's definitions for the various preservation treatments (restoration, rehabilitation, stabilization and preservation). For the purposes of this plan, significant archaeological site, significant structure and significant landscape means those cultural resources listed or eligible for listing in the National Register of Historic Places. The terms archaeological site, historic structure or historic landscape refer to all resources that will become 50 years old during the term of this plan.

Condition Assessment

Evaluating the condition of cultural resources is accomplished using a three-part evaluation scale, expressed as good, fair and poor. These terms describe the present condition, rather than comparing what exists to the ideal condition. 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 assessment is usually a cause for concern. Poor describes an unstable condition where there is palpable, accelerating decline, and physical integrity is being compromised quickly. A resource in poor condition suffers obvious declines in physical integrity from year to year. A poor condition suggests immediate action is needed to reestablish physical stability.

Level of Significance

Applying the criteria for listing in the National Register of Historic Places involves the use of contexts as well as an evaluation of integrity of the site. A cultural

resource's significance derives from its historical, architectural, ethnographic or archaeological context. Evaluation of cultural resources will result in a designation of NRL (National Register or National Landmark Listed or located in an NR district), NR (National Register eligible), NE (not evaluated) or NS (not significant) as indicated in the table at the end of this section.

There are no criteria for determining the significance of collections or archival material. Usually, significance of a collection is based on what or whom it may represent. For instance, a collection of furniture from a single family and a particular era in connection with a significant historic site would be considered highly significant. In the same way, a high quality collection of artifacts from a significant archaeological site would be of important significance. A large herbarium collected from a specific park over many decades could be valuable to resource management efforts. Archival records are most significant as a research source. Any records depicting critical events in the park's history, including construction and resource management efforts, would all be significant.

The following is a summary of the FMSF Inventory. In addition, this inventory contains the evaluation of significance.

Prehistoric and Historic Archaeological Sites

Desired Future Condition: All significant archaeological sites within the park that represent Florida's cultural periods or significant historic events or persons are preserved in good condition in perpetuity, protected from physical threats and interpreted to the public.

Description: Historical uses of many of the islands in the park were centered on fishing and the commercial fishing industry. In the first part of this century, many of the islands were campsites/ homesteads for fishermen and their families, including the smaller Paradise and Shell Keys.

According to a personal interview conducted in 1997 with Mr. Eugene McRoberts, whose family has been involved in commercial fishing in the area since the early 1900s, shellfish were abundant in the area and oysters provided a lucrative market at one time. A commercially important oyster bar was located in Cockroach Bay, east of the mouth of Cockroach Creek. Large oyster bars also existed off Snake and Goat Island. The end of Shell Point Road was the location of an oyster factory. A federal work project was established to grow oysters in a small area to the south of Snake Key, but was unsuccessful due to the unsuitable conditions of the location. Clams were also harvested by the locals from the sand bars at the mouth of the river. (McRoberts 1997)

Bird Key has experienced the greatest change in the 1920s and '30s; Bird Key was approximately five acres in size. It was the site of five buildings and had a pond located in its center. The buildings included a commercial fertilizer plant, which processed horseshoe crabs and junk fish, a docking facility, and housing. The pond was used to hold diamondback terrapins for exportation. Three major hurricanes in 1921, 1926 and 1935 and the effects of changed water flow patterns due to

channel dredging around Shell Point drastically reduced the island to the point that it could barely support vegetation (McRoberts 1997). At present, all that remains of the island is an un-vegetated shoal.

Prior to 1935, Sand Key was frequently used as a picnic spot for visitors from St. Petersburg who ferried across Tampa Bay. The island had a dock, long tables and buildings for caretakers. The "Labor Day hurricane" of 1935 destroyed these facilities. (McRoberts interview)

Previous archaeological surveys and assessments conducted within the boundaries of Cockroach Bay Preserve State Park include one authored by Audrey Trauner, *et al.*, in 1985 and one authored by Brent Weisman in 1993 (Collins 2014). In 2013, Lori Collins worked with Alliance for Integrated Spatial Technologies (AIST) and the University of South Florida to perform predictive modeling of cultural resource potential at Cockroach Bay Preserve State Park.

According to the Florida Master Site File, two recorded sites (8HI38, 8HI12209) are located within the Cockroach Bay Preserve State Park. Another site, Big Cockroach Key (8HI02, Big Cockroach Mound), is located just outside the park boundaries, but is noted here as it has received archaeological attention that might be helpful with understanding any sites found within the park. Florida Master Site File site 8HI38 is a shell midden or mound of roughly two acres that contains the remains of shell fish utilized for food, ceramic artifacts, shell artifacts, and animal bones (food remains). Sites 8HI38 and 8HI02 are the remains of prehistoric villages that represent the northernmost communities of an extremely large prehistoric population. The population of these communities was more similar to those of South Florida than those of the Tampa Bay area. Archaeologist Gordon R. Willey did excavations of Big Cockroach Mound in the 1940s and found that, while dates are not available for the mound's strata, the mound appears to have been constructed in three distinct phases. The Cockroach Key Shell Midden archaeological site (8HI12209) was recently recorded in the FMSF in September 2013 and has yet to be surveyed for artifacts. Where the shell was clearly evident on the ground surface for this midden, it is approximately one quarter of an acre.

A few more areas resembling shell mounds were noted during the habitat surveys conducted for this Resource Management Plan, specifically in CB-02 and 05. Also, during the field investigations on the spoils areas in CB-06 and 16, it was noted that in the transitional interface between the spoil material and the surrounding mangrove swamp is a layer of shell material containing some large clam and conch shells (Raymond 2013). This finding leads to the hypothesis that some of the spoil may have been deposited on cultural sites. The only way to know for sure would be to core through the spoil and determine if there is a layer of coarse shell indicative of a cultural site. All of these sites should be further reviewed and their occurrence documented as appropriate.

Condition Assessment: Generally, the shell mounds at the park are in poor condition. Previous "mining" or looting of the mounds, in addition to natural weathering and weather events such as hurricanes and storm surges, have

degraded the mounds. Invasive exotic plants, especially Brazilian pepper, are also threats to the shell mounds at the park.

Level of Significance: Cockroach Bay Preserve State Park contains two recorded archaeological sites. The Little Cockroach Key (8HI38), was considered eligible for the National Register of Historic Places by the Florida Bureau of Archaeological Research in 1993 despite previous vandalism. Like the nearby Big Cockroach Mound (8HI2), which is located on an out-parcel within the park area and owned by Hillsborough County, and was listed on the National Register on December 4, 1973, Little Cockroach Key has little evidence of the Weedon Island and subsequent Safety Harbor occupation that is so prevalent in the Tampa Bay area and Central Gulf coast. Instead, these and other sites in the Cockroach Bay may represent among the northernmost extension of an earlier Glades cultural area from South Florida. The Little Cockroach Key shell mound site has not been surveyed thoroughly, but the limited archaeological investigations thus far suggest its size, complexity and remaining integrity could increase our understanding of the politics, religion, social structure, subsistence and connections of this culturally unique area. The Cockroach Key Shell Midden (8HI12209) has not been evaluated for significance.

General Management Measures: The primary treatments for significant archaeological sites are preservation and stabilization. Preservation includes protection from damage from resource management, natural causes, construction or human damage including looting. Undesirable vegetation is to be removed in a manner that does not increase the natural processes of erosion or otherwise impact the mound structure; where feasible, the larger invasive exotic species will be stump cut, leaving the roots to help maintain structural stability for the mound. Additional research and survey work is recommended for the recorded sites 8HI38 and 8HI12209 and a survey of the remaining islands at the park for new sites. The FMSF will be updated if additional cultural sites are discovered, or changes are noted in a site's condition.

Historic Structures

Desired Future Condition: All significant historic structures and landscapes that represent Florida's cultural periods or significant historic events or persons are preserved in good condition in perpetuity, protected from physical threats and interpreted to the public.

Description: There are two concrete footings on Paradise Key that might have once been used to support a lean-to or chickee for a fishing camp. They are not considered historically significant. There are no known historical structures at Cockroach Bay Preserve State Park.

Collections

Desired Future Condition: All historic, natural history and archaeological objects within the park that represent Florida's cultural periods, significant historic events or persons, or natural history specimens are preserved in good condition in perpetuity, protected from physical threats and interpreted to the public.

Description: There are no known DRP-maintained collections for Cockroach Bay Preserve State Park.

Detailed management goals, objectives and actions for the management of cultural resources in this park are discussed in the Cultural Resource Management Program section of this component. Table 4 contains the name, reference number, culture or period, and brief description of all the cultural sites within the park that are listed in the Florida Master Site File. The table also summarizes each site's level of significance, existing condition and recommended management treatment. An explanation of the codes is provided following the table.

Table 4. Cultural Sites Listed in the Florida Master Site File					
Site Name and FMSF#	Culture/Period	Description	Significanc	Condition	Treatment
8HI 38 Little Cockroach Key	Prehistoric ceramic, possibly Glades	Shellfish collecting and village	N R	P	P
8HI12209 Cockroach Key Shell Midden	Prehistoric ceramic, possibly Glades	Shellfish collecting	N E	P	P

Significance:

NRL National Register listed
 NR National Register eligible
 NE not evaluated
 NS not significant

Condition:

G Good
 F Fair
 P Poor
 NA Not accessible
 NE Not evaluated

Recommended Treatment:

RS Restoration
 RH Rehabilitation
 ST Stabilization
 P Preservation
 R Removal
 N/A Not applicable

Resource Management Program

Management Goals, Objectives and Action

Measurable objectives and actions have been identified for each of the DRP's management goals for Cockroach Bay Preserve State Park. Please refer to the Implementation Schedule and Cost Estimates in the Implementation Component of this plan for a consolidated spreadsheet of the recommended actions, measures of progress, target year for completion and estimated costs to fulfill the management goals and objectives of this park.

While the DRP utilizes the ten-year management plan to serve as the basic statement of policy and future direction for each park, a number of annual work plans provide more specific guidance for DRP staff to accomplish many of the resource management goals and objectives of the park. Where such detailed planning is appropriate to the character and scale of the park's natural resources, annual work plans are developed for prescribed fire management, exotic plant management and imperiled species management. Annual or longer-term work plans are developed for natural community restoration and hydrological restoration. The work plans provide the DRP with crucial flexibility in its efforts to generate and implement adaptive resource management practices in the state park system.

The work plans are reviewed and updated annually. Through this process, the DRP's resource management strategies are systematically evaluated to determine their effectiveness. The process and the information collected is used to refine techniques, methodologies and strategies, and ensures that each park's prescribed management actions are monitored and reported as required by Sections 253.034 and 259.037, Florida Statutes.

The goals, objectives and actions identified in this management plan will serve as the basis for developing annual work plans for the park. The ten-year management plan is based on conditions that exist at the time the plan is developed. The annual work plans provide the flexibility needed to adapt to future conditions as they change during the ten-year management planning cycle. As the park's annual work plans are implemented through the ten-year cycle, it may become necessary to adjust the management plan's priority schedules and cost estimates to reflect these changing conditions.

Natural Resource Management

Hydrological Management

Goal: Protect water quality and quantity in the park, restore hydrology to the extent feasible, and maintain the restored condition.

The natural hydrology of most state parks has been impaired prior to acquisition to one degree or another. There are no permanent surface waters that are not part of the aquatic preserve on the islands of Cockroach Bay Preserve State Park, so no description of conservation measures is applicable. The dynamic movement of sandbars and spits reflects the forces of natural phenomena and does not necessarily constitute adverse impacts implied by the concept of soil erosion.

Natural Communities Management

Goal: Restore and maintain the natural communities/habitats of the park.

The DRP practices natural systems management. In most cases, this entails returning fire to its natural role in fire-dependent natural communities. Other methods to implement this goal include large-scale restoration projects as well as

smaller scale natural communities' improvements. Following are the natural community management objectives and actions recommended for the state park.

Objective A: Complete a comprehensive floral and faunal survey and update the park's baseline plant and animal list

Action 1 Annually, or preferably quarterly, conduct plant and animal surveys to update the plant and animal list for the park.

A complete comprehensive floral and faunal survey has never been conducted for this park. Currently, the plant and animal list is based on a limited number of surveys with most records from casual observation during the field research for this plan. A complete plant and animal survey should be created and then updated annually.

Prescribed Fire Management

Prescribed fire is used to mimic natural lightning-set fires, which are one of the primary natural forces that shaped Florida's ecosystem. Prescribed burning increases the abundance and health of many wildlife species. A large number of Florida's imperiled species of plants and animals are dependent on periodic fire for their continued existence. Fire-dependent natural communities gradually accumulate flammable vegetation; therefore, prescribed fire reduces wildfire hazards by reducing these wild land fuels.

The existing remnants of fire-dependent natural communities within the park are naturally isolated from any adjacent uplands. Since they are located on islands, succession in these communities would be affected primarily by storm events and lightning-set fires. The natural fire return interval would be greater than similar communities located on the mainland. Lightning-set fires will be allowed to burn. The remnant fire-dependent natural communities within the park will be evaluated annually to determine if there are specific resource management objectives that could be achieved through the use of prescribed fire.

Natural Community Restoration

In some cases, the reintroduction and maintenance of natural processes is not enough to reach the desired future conditions for natural communities in the park, and active restoration programs are required. Restoration of altered natural communities to healthy, fully functioning natural landscapes often requires substantial efforts that may include mechanical treatment of vegetation or soils and reintroduction or augmentation of native plants and animals. For the purposes of this management plan, restoration is defined as the process of assisting the recovery and natural functioning of degraded natural communities to desired future condition, including the re-establishment of biodiversity, ecological processes, vegetation structure and physical characters.

Objective B: Monitor and evaluate the erosion/shoreline retreat along the shoreline of Goat Island to determine if additional erosion control measures should be implemented.

- Action 1 Develop and implement an erosion/shoreline retreat monitoring program.
- Action 2 Evaluate potential erosion control measures with the FCO staff.

The northeastern shoreline of Goat Island is at a bend in the main channel of the Little Manatee River where natural scouring occurs resulting in erosion. The natural erosion of a meandering river channel is exacerbated by boat wakes. There is approximately 1,200 to 1,500 feet of eroding shoreline. In the past, FCO Aquatic Preserve staff planted cordgrass in the shallows along the eroding section of shoreline to try and reduce the erosion. The cordgrass has persisted, but there is still significant erosion and a nearly vertical drop-off from the island to the river. An erosion monitoring program should be developed and implemented to determine the rate of erosion/shoreline retreat, and evaluate potential control measures with FCO staff. The shoreline is the boundary between the state park and aquatic preserve, so any proposal will be in partnership with the FCO.

On Goat Island there are remnants of a former bridge along the southeastern section of the island, with a section of bridge approach that juts into the river channel and alters flow. This filled area has a hardened shoreline of remnant seawall or concrete debris that deflects water in combination with an abandoned mid-channel concrete bridge support. A plan should be developed with the FCO Aquatic Preserve staff to remove the concrete debris and remaining concrete structure that is within the aquatic preserve. Grants or other funding opportunities should then be pursued to implement recommendations of the jointly developed plan.

Natural Community Improvement

Improvements are similar to restoration but on a smaller, less intense scale. This typically includes small-scale vegetative management activities or minor habitat manipulation. Following are the natural community/habitat improvement actions recommended at the park.

Currently there is not a need for natural community improvement at this park, and all natural community improvements can be accomplished with routine resource management practices. The most applicable habitat protection or improvement activities for the park's upland natural communities are the removal of invasive exotic plant species. Regular surveys and treatments are needed; these are discussed in Exotic Species Management below.

Imperiled Species Management

Goal: Maintain, improve or restore imperiled species populations and habitats in the park.

The DRP strives to maintain and restore viable populations of imperiled plant and animal species primarily by implementing effective management of natural systems. Single species management is appropriate in state parks when the maintenance, recovery or restoration of a species or population is complicated due to constraints associated with long-term restoration efforts, unnaturally high mortality or insufficient habitat. Single species management should be compatible with the maintenance and restoration of natural processes, and should not imperil other native species or seriously compromise park values.

In the preparation of this management plan, DRP staff consulted with staff of the FWC's Imperiled Species Management or that agency's Regional Biologist and other appropriate federal, state and local agencies for assistance in developing imperiled animal species management objectives and actions. Likewise, for imperiled plant species, DRP staff consulted with FDACS. Data collected by the USFWS, FWC, FDACS and FNAI as part of their ongoing research and monitoring programs will be reviewed by park staff periodically to inform management of decisions that may have an impact on imperiled species at the park.

Ongoing inventory and monitoring of imperiled species in the state park system is necessary to meet the DRP's mission. Long-term monitoring is also essential to ensure the effectiveness of resource management programs. Monitoring efforts must be prioritized so that the data collected provides information that can be used to improve or confirm the effectiveness of management actions on conservation priorities. Monitoring intensity must at least be at a level that provides the minimum data needed to make informed decisions to meet conservation goals. Not all imperiled species require intensive monitoring efforts on a regular interval. Priority must be given to those species that can provide valuable data to guide adaptive management practices. Those species selected for specific management action and those that will provide management guidance through regular monitoring are addressed in the objectives below.

Objective A: Update baseline imperiled species occurrence inventory lists for plants and animals.

- | | |
|----------|--|
| Action 1 | Annually check FNAI's species tracking list and all new imperiled status listings for species likely to be found at the park. |
| Action 2 | Annually update imperiled species occurrence inventory list for plants and animals by submitting each occurrence's event data to the DRP Bios Database and FNAI species tracking database. |
| Action 3 | Adjust monitoring requirements if/when imperiled status changes. |

Currently, the imperiled species identified at the park (Table 2, Imperiled Species Inventory), with the exception of gopher tortoises, do not require more detailed monitoring protocols than those provided by incidental observation (Tier 1). All noted occurrences are to be recorded and sent to the District office and/or to FNAI. With the recent increase of roseate spoonbill populations in Little Cockroach Bay, park staff should be alert for nesting behaviors and report those occurrences. During the cycle of this management plan, imperiled species will be monitored through incidental observations (Tier 1) unless more detailed monitoring is required.

Objective B: Monitor the gopher tortoise population on Goat Island using FWC survey protocols.

- Action 1 Review FWC protocols for burrow and tortoise surveys and determine if the equipment needed, mainly a gopher burrow camera, is available for use from the District office or other sources.
- Action 2 Conduct a comprehensive gopher tortoise survey of Goat Island following the adopted protocols.

There is approximately 17 acres of spoil area on Goat Island that is being used as habitat by gopher tortoises. In 2014, hatchling, juvenile and adult tortoises were observed on the island. A gopher tortoise population survey using FWC protocols is recommended to determine the number of tortoises. Results of the survey will help guide resource management activities on the island that benefit the tortoise population, including setting invasive exotic plant removal priorities; determining if erosion control or shoreline retreat measures are needed to protect important habitat; and evaluating the need for prescribed fire. This survey will also provide a baseline for future surveys and help determine the potential carrying capacity for the available habitat.

Exotic Species Management

Goal: Remove exotic and invasive plants and animals from the park and conduct needed maintenance control.

The DRP actively removes invasive exotic species from state parks, with priority being given to those causing the ecological damage. Removal techniques may include mechanical treatment, herbicides or biocontrol agents.

Objective A: Treat all invasive exotic plant species in the park within two years to achieve maintenance condition.

- Action 1 Develop and implement annual exotics work plans to treat all invasive exotic plant species in the park within two years and continue opportunistic treatment and maintenance follow-up treatments, as needed.

In 2014, there were approximately 138 gross acres or 16 net acres of invasive exotic plant species located within in the park. The DRP will treat all infested acres within the park over the next two years. Staff will continue to survey all acreage for exotic plants and conduct needed maintenance control. Staff will monitor the natural regeneration and recruitment of native plants and evaluate the need for supplemental native plantings if necessary. DRP staff will also work towards reestablishing partnerships that were successful in treating invasive exotics at the park in the past. The DRP will continue to pursue additional opportunities for treating exotic plants at the park by seeking grant funding and recruiting additional volunteers.

Cultural Resource Management

Cultural resources are individually unique, and collectively, very challenging for the public land manager whose goal is to preserve and protect them in perpetuity. The DRP will implement the following goals, objectives and actions, as funding becomes available, to preserve the cultural resources found in Cockroach Bay Preserve State Park.

Goal: Protect, preserve and maintain the cultural resources of the park.

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. All activities related to land clearing, ground disturbing activities, major repairs or additions to historic structures listed or eligible for listing in the National Register of Historic Places must be submitted to the FDOS, Division of Historical Resources (DHR) for review and comment prior to undertaking the proposed project. Recommendations may include, but are not limited to, concurrence with the project as submitted, monitoring of the project by a certified archaeological monitor, cultural resource assessment survey by a qualified professional archaeologist, modifications to the proposed project to avoid or mitigate potential adverse effect. In addition, any demolition or substantial alteration to any historic structure or resource must be submitted to the DHR for consultation and the DRP must demonstrate that there is no feasible alternative to removal and must provide a strategy for documentation or salvage of the resource. Florida law further requires that the DRP consider the reuse of historic buildings in the park in lieu of new construction and must undertake a cost comparison of new development versus rehabilitation of a building before electing to construct a new or replacement building. This comparison must be accomplished with the assistance of the DHR.

Objective A: Assess and evaluate 2 of 2 recorded cultural resources in the park.

Action 1	Conduct Level 1 archaeological survey for 2 priority areas identified by recent predictive model (Collins 2014), 8HI38 and 8HI12209.
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Action 2 Complete assessments/evaluations of archaeological site 8HI12209.

There are still archaeological data to be gleaned from the two sites, particularly with respect to the presence of any artifacts. Also, such assessments would include a discussion of the examination of each site with respect to any threats to the site's condition. Issues that might cause deterioration of the site include natural erosion, pedestrian damage, looting, animal damage, and plant or root damage or other factors. Some photos are available to assist with this evaluation (Collins 2014). At the park, invasive exotic plants are already a known threat.

Objective B: Compile reliable documentation for all recorded historic and archaeological resources.

Action 1 Verify all known sites are recorded or updated in the Florida Master Site File.

All of the available information for 8HI38 was compiled for the revision of this Management Plan. This information will be protected and stored at the Terra Ceia Preserve State Park field office. Information for the newly recorded 8HI12209 will be obtained and added to the park file. Also, during field reconnaissance for this plan revision, a few more shell mounds/piles were observed; these locations were recorded with a GPS, and are to be revisited with the intent of determining if they are archaeological/historic in origin, or are evidence of recent activities, i.e. dredging. New sites will be documented using a FMSF Short Forms.

Objective C: Bring 1 of 2 recorded cultural resources into good condition, if assessments determine this is possible.

Action 1 Design and implement a quarterly monitoring programs for one cultural site.

Action 2 Create and implement a cyclical maintenance program for exotic species and trash removal.

Site 8HI38, was the first recorded site at the park. There are some exotic species on this site. Undesirable vegetation should be carefully treated in a manner that does not increase the natural processes of erosion. To prevent treated vegetation from falling over and further destabilizing the substrate, where feasible, invasive exotic species will be stump cut, hand pulled, and treated with herbicides. After the invasive exotic vegetation is treated, the site will be accessed to determine if any further management measures are necessary to help stabilize this site.

In addition to the invasive exotic plant removal, there was evidence of a looters' hole encountered and documented during the field visit for the archaeological resource sensitivity modeling project (Collins 2014). As part of the quarterly monitoring program, baseline conditions should be documented with photography, and used to determine changes during the quarterly monitoring.

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 DRP'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 those communities specifically managed as early successional.

A timber management analysis was not conducted for this park since its total acreage is below the 1,000-acre threshold established by statute. Timber management will be re-evaluated during the next revision of this management plan.

Coastal/Beach Management

The DRP manages over 100 miles of sandy beach, which represents one-eighth of Florida's total sandy beach shoreline. Approximately one-quarter of Florida's state parks are beach-oriented parks and account for more than 60 percent of statewide park visitation. The management and maintenance of beaches and their associated systems and processes is complicated by the presence of inlets and various structures (jetties, groins, breakwaters) all along the coast. As a result, beach restoration and nourishment have become increasingly necessary and costly procedures for protecting valuable infrastructure. Beach and inlet management practices affect beaches for long distances on either side of a particular project. DRP staff needs to be aware of and participate in the planning, design and implementation of these projects to ensure that park resources and recreational use are adequately considered and protected.

There are no true beaches at Cockroach Bay Preserve State Park. The sandy areas are coastal berms without mangroves. The main management objective will be to remove exotic vegetation. These communities are naturally disturbed and this will allow for continued exotic plant recruitment. The goal will be to keep the infestation within maintenance. Park staff will coordinate with FCO and any other agencies regarding any coastal management program they are implementing in this area.

Arthropod Control Plan

All DRP lands are designated as "environmentally sensitive and biologically highly productive" in accordance with Ch. 388 and Ch. 388.4111 Florida Statutes. If a local mosquito control district proposes a treatment plan, the DRP works with the local mosquito control district to achieve consensus. By policy of DEP since 1987,

aerial adulticiding is not allowed, but larviciding and ground adulticiding (truck spraying in public use areas) is typically allowed. The DRP does not authorize new physical alterations of marshes through ditching or water control structures. Mosquito control plans temporarily may be set aside under declared threats to public or animal health, or during a Governor's Emergency Proclamation. No arthropod control plan has been developed for Cockroach Bay Preserve State Park.

Sea Level Rise

Potential sea level rise is now under study and will be addressed by Florida's residents and governments in the future. The DRP will stay current on existing research and predictive models, in coordination with other DEP programs and federal, state, and local agencies. The DRP will continue to observe and document the changes that occur to the park's shorelines, natural features, imperiled species populations, and cultural resources. This ongoing data collection and analysis will inform the Division's adaptive management response to future conditions, including the effects of sea level rise, as they develop.

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 located in the Implementation Component of this management plan.

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 are being managed for the purposes for which they were acquired and in accordance with their approved land management plans. The considered recommendations of the land management review team and updated this plan accordingly.

The last Land Management Review for this park was conducted in 2002. The recommendations from the review were considered and addressed in the 2004 and current management plan updates.

LAND USE COMPONENT

Introduction

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

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

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

External Conditions

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

Cockroach Bay Preserve State Park is located in southwest Hillsborough County, west of the town of Ruskin. It is centrally located in the Tampa-St. Petersburg-Bradenton area in southwest Florida and is considered part of the Tampa Bay estuary. The park is located approximately 23 miles southwest of Tampa and 33 miles east of St Petersburg across Tampa Bay. According to the Bureau of Economic and Business Research (BEBR) 2013 population estimate update of the 2010 Census, both Hillsborough and Manatee County's residential populations have increased more than 3%, with Pinellas County Population increasing by approximately 1 percent. The area's scenic coastal location and

strategic position on the Gulf of Mexico and Tampa Bay serves as a draw for increasing numbers of residents and visitors in this area of the State.

Currently the Bureau of Economic and Business Research projects a population increases in Hillsborough County from 1,229,226 in 2010 to 1,276,410 in 2013, in Manatee County from 322,833 in 2010 to 333,880 in 2013 and in Pinellas County from 916,542 in 2010 to 926,610 in 2013.

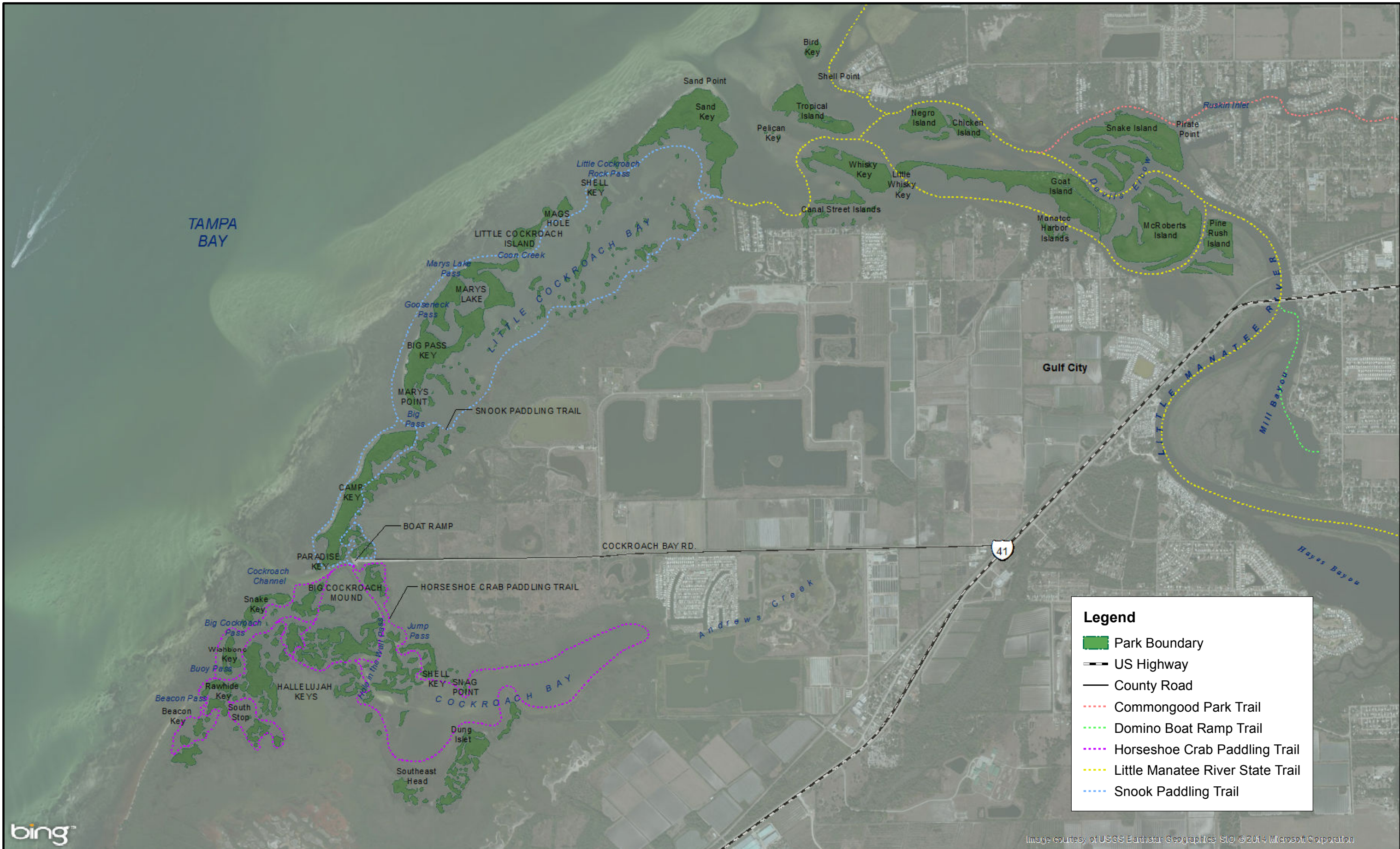
There are a number of resource-based recreation opportunities such as aquatic preserves, local parks and museums in proximity to Cockroach Bay Preserve State Park. These include Cockroach Bay Aquatic Preserve, Terra Ceia Aquatic Preserve, and Pinellas County Aquatic Preserve. There are a number of local parks in proximity to the park which include Golden Aster Scrub Nature Reserve, E.G. Simon Park, Cockroach Creek Greenway and Little Manatee River Park. Within a few miles of Cockroach Bay Preserve State Park are other state parks, including Terra Ceia Preserve State Park, Little Manatee River State Park, Madira Bickel Mound Archeological Site and Judah P. Benjamin Confederate Memorial at Gamble Plantation Historic State Park. These parks and preserves offer picnicking, swimming, fishing, paddling, camping, birding and hiking, as well as excellent educational opportunities related to area ecosystems, history, and archaeological sites.

Existing Use of Adjacent Lands

The park is located west of the town of Ruskin in the area where the Little Manatee River flows into Tampa Bay. The park is completely surrounded by water. The area landward of the park and adjacent to the park is currently undeveloped or supports agricultural uses, with small areas of residential development and some industrial use closer to U.S. Highway 41. The park is only accessible by watercraft. There is a county boat ramp at the end of Cockroach Bay Road that allows access to the lower portion of the park with an additional county boat ramp on the Little Manatee River at Domino Park which facilitates access to the upper portion of the park. The Shell Point Marina is a commercial marina that has space for over 250 boats and is located at the mouth of the Little Manatee River where it joins Tampa Bay.

Planned Use of Adjacent Lands

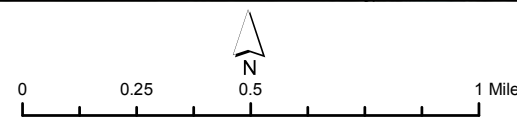
The area landward of the park and adjacent to the park is wetland/mangrove area and not generally suited for development. The property closer to U.S. Highway 41 contains more upland area; this area is generally zoned for and currently supports agricultural use. There is one existing older mobile home park in the area with some light industrial use closer to U.S. 41. At the current time there does not appear to be a great deal of development pressure in the area adjacent to the park.



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COCKROACH BAY PRESERVE STATE PARK



Florida Department of Environmental Protection
Division of Recreation and Parks
Date of aerial, 2011

BASE MAP

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.

Land Area

Cockroach Bay Preserve State Park is located within the Cockroach Bay Aquatic Preserve in Tampa Bay. The park landscape is dominated by numerous barrier islands, some mostly submerged at high tide and dominated by mangrove swamps. The park is 615 acres in size with approximately 600 acres considered uplands and 15 acres submerged. The park is dominated by jurisdictional wetlands (approximately 550 acres) which are not appropriate for development. The park is only accessible by boat. Kayakers can paddle between the small mangrove islands and enjoy a picnic on one of the upland islands that has a sandy beach. This particular combination of open and sheltered bay waters, mangrove swamps, habitat for imperiled birds and the Florida manatee make for a scenic and peaceful experience in this barriers island coastal park.

Water Area

Cockroach Bay Preserve State Park is surrounded by the Cockroach Bay Aquatic Preserve in Tampa Bay. It adjoins the Terra Ceia Aquatic Preserve to the south and is across the bay from Pinellas County Aquatic Preserve and Boca Ciega Bay Aquatic Preserve. Portions of the park are also located at the mouth of the Little Manatee River where it flows into Tampa Bay. The water around the park is an ideal place for fishing, kayaking canoeing, paddle boarding and bird watching. There are a number of paddling trails adjoining and around the park including the Snook Paddling Trail, Horseshoe Crab Paddling Trail and Little Manatee State Trail.

Natural Scenery

The bay waters, many barrier islands, and mangrove swamps of the park create a picturesque landscape of scenic quality. The scenic vistas of the park and occasional sand beaches are best viewed from a canoe or kayak on one of the marked trails available adjoining the park. The same isolation that requires a boat for access likely contributes to the protection of the barrier islands and the persistence of the natural resources.

Significant Habitat

The park provides habitat for three imperiled plant species, ten imperiled bird species, two reptiles and the Florida manatee. The Cockroach Bay Preserve State Park is within a Strategic Habitat Conservation Area (SHCA) designated by the FWC. The SHCA's are essential to enhance the long term security of many plants, animals and natural communities that constitute essential components of Florida's natural diversity.

Natural Features

The park is completely contained within the Cockroach Bay Aquatic Preserve and is surrounded by water. The park is made up of a series of barrier islands, riverine islands and mangrove swamp islands that provide habitat for listed species and serve as a buffer for the mainland during storm events. This area is an excellent example of the barrier islands that could be found along the Florida coast in the past, prior to development.

Cockroach Bay Preserve State Park serves as a buffer for the larger Cockroach Bay Aquatic Preserve. The park is a vestige of the coastal berm and mangrove forest habitats that were once much more wide spread around the Tampa Bay shoreline and in Florida. Within a short drive, residents of some of Florida's most densely-urbanized areas will be able to step back in time and experience natural Florida. The significant land and water resources around the park provide a setting for resource-based recreational opportunities and historic interpretation. The Division supports local efforts and works with county, state and federal entities to protect and monitor the resources of the larger region as well as within and adjoining the park.

Archaeological and Historical Features

The park currently has two prehistoric sites listed in the Florida Master Site File, these sites are located on Little Cockroach Key(8HI38) and Cockroach Key Shell Midden (8HI2209) and are shell/midden mounds that are the remains of a prehistoric village that represent the northernmost community of a prehistoric Indian population. An additional site, Big Cockroach Key (8HI2) is within the park area and has been recently purchased by Hillsborough County Jan K. Platt Environmental Lands Acquisition and Protection Program (ELAPP). Additional shell scatters were found by park staff during a habitat survey, indicating there

could be additional cultural sites in the park. As they are located, these sites should be further reviewed and documented.

Assessment of Use

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

Past Uses

The past uses of many of the islands in the park were centered on the commercial fishing industry. In the first part of this century, many of the islands were campsites or homesteads for fishermen and their families, including the smaller Paradise and Shell keys. Shellfish were abundant in the area and oystering was a lucrative business. Bird Key once included a commercial fertilizer plant, docking facilities and housing. Sand Key was a popular recreation spot for locals and visitors. The "Labor Day Hurricane" of 1935 destroyed existing facilities and most of the commercial uses in this area. Goat Island, which received dredge spoils, was previously connected to the mainland at one time in an attempt to put a residential development on the island. The bridge is no longer passable and the park islands have been uninhabited for a number of years.

Future Land Use and Zoning

The Division works with local governments to establish designations that provide both consistency between comprehensive plans and zoning codes and permit typical state park uses and facilities necessary for the provision of resource-based recreation opportunities.

The park is currently designated N-Natural Preservation on the future land use map in the Hillsborough County Comprehensive Land Use Plan. This category restricts allowable uses in the park to recognized public and private lands of significant environmental importance set aside primarily for conservation purposes. No residential uses are allowed except for a caretaker, all other uses are prohibited except for compatible recreational/ educational development. Educational uses should be limited to those which utilize the natural amenities found on the site i.e. the study of flora, fauna or wildlife.

The zoning on the parcels of land closest to the park is currently AR-Agriculture Rural. This zoning category allows agricultural uses, game reserves, golf clubs public parks and recreation facilities, passive recreation uses, private community recreation, and ambulance services. It also allows a large number of other uses by conditional use permit. These uses include residential, open storage, gun ranges, numerous agricultural uses as well as industrial uses, all requiring a conditional use permit. Parcels on the western edge of the park closer to U.S. Highway 41 are designated a mix of Agriculture Rural and

Residential zoning. The majority of zoning immediately adjacent to the park is Agriculture Rural, with a few small pockets of older residential uses interspersed in no particular order. A great deal of the area adjoining the park is in the 100 year flood zone and is subject flooding.

Current Recreational Use and Visitor Programs

Canoeing, kayaking, paddle boarding, fishing and bird watching are the primary recreational uses in the waters around the Cockroach Bay Preserve State Park. Passive recreational uses such as picnicking and hiking are also permitted on the upland portions of the park.

The park's main access is at a county boat ramp at the end of Cockroach Bay Road. An additional county boat ramp at Domino Park on the Little Manatee River offers good access to the upper portion of the park. It may also be accessed by commercial/ private marina boat ramps on the Little Manatee River. There is no fee for use of the park.

Protected Zones

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

At Cockroach Bay Preserve State Park the protected zone encompass the entire park. The shell mound natural community and wetland communities that consist of the mangrove swamp, salt marsh, and marine unconsolidated substrate are all protected areas. Because of the access issues and location of the park and no expectation of infrastructure, facility development should be limited to very low impact uses such as fishing, canoeing/kayaking and picnicking in appropriate locations.

Existing Facilities

Recreation Facilities

There are no existing recreation facility in Cockroach Bay Preserve State Park. There are two mapped and signed canoe/kayak paddling trails adjoining the park in the aquatic preserve. The park consists mainly of wetlands and is accessible only by water craft.

Support Facilities

There are no existing support facilities in Cockroach Bay Preserve State Park. Parking along the edge of the roadway is provided at the end of Cockroach Bay Road that dead-ends into a county maintained boat launch and at Domino Park.

Conceptual Land Use Plan

The following narrative represents the current conceptual land use proposal for this park. The conceptual land use plan is the long-term, optimal development plan for the park, based on current conditions and knowledge of the park's resources, landscape and social setting (see Conceptual Land Use Map).

The conceptual land use plan is modified or amended, as new information becomes available regarding the park's natural and cultural resources or trends in recreational uses, in order to adapt to changing conditions. Additionally, the acquisition of new parkland may provide opportunities for alternative or expanded land uses. The DRP develops a detailed development plan for the park and a site plan for specific facilities based on this conceptual land use plan, as funding becomes available.

During the development of the conceptual land use plan, the DRP assessed the potential impact of proposed uses or development on the park resources and applied that analysis to determine the future physical plan of the park as well as the scale and character of proposed development. Potential resource impacts are also identified and assessed as part of the site planning process once funding is available for facility development. At that stage, design elements (such as existing topography and vegetation, sewage disposal and stormwater management) and design constraints (such as imperiled species or cultural site locations) are investigated in greater detail. Municipal sewer connections, advanced wastewater treatment or best available technology systems are applied for on-site sewage disposal. Creation of impervious surfaces is minimized to the greatest extent feasible in order to limit the need for stormwater management systems, and all facilities are designed and constructed using best management practices to limit and avoid resource impacts. Federal, state and local permit and regulatory requirements are addressed during facility development. 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, park staff monitors conditions to ensure that impacts remain within acceptable levels.

Potential Uses

Public Access and Recreational Opportunities

Goal: Provide public access and recreational opportunities in the park.

The existing recreational activities and programs of this state park are appropriate to the natural and cultural resources contained in the park and

should be continued. New and improved activities and programs are also recommended and discussed below.

Objective A: Maintain the park's current recreational carrying capacity of 176 users per day.

Canoeing, kayaking, and fishing are the primary recreational uses at the park. While hiking and picnicking are possible on some areas of the park islands, mosquitoes, deer-flies and other insects as well as cactus and green-briar make conditions far less than optimal. Given the anticipated lack of frequent use, establishing and maintaining trails and picnic areas is not justifiable.

Objective B: Develop 1 new interpretive, educational and recreational program.

The plan recommends the placement of interpretive information at both county boat ramps located at the end of Cockroach Bay Road and in Domino Park. The interpretive signs will educate visitors about the fact that this area is a state park within an aquatic preserve. Information will be presented that notes the size and location of the park, history, and sensitivity of the park and how to best protect the park while enjoying the peace and solitude it has to offer.

Proposed Facilities

Capital Facilities and Infrastructure

Goal: Develop and maintain the capital facilities and infrastructure necessary to implement the recommendations of the management plan.

The existing facilities of this state park are appropriate to the natural and cultural resources contained in the park and should be maintained. New construction, as discussed further below, is recommended to improve the quality and safety of the recreational opportunities that visitors enjoy while in the park, to improve the protection of park resources, and to streamline the efficiency of park operations. The following is a summary of improved renovated and new facilities needed to implement the conceptual land use plan for Cockroach Bay Preserve State Park.

Objective: Maintain all public and support facilities in the park.

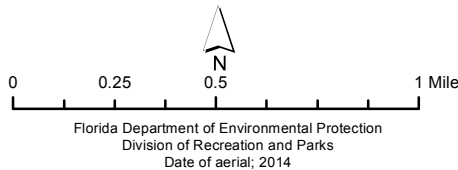
All capital facilities, trails and roads within the park will be kept in proper condition through the daily or regular work of park staff and/or contracted help. There are no public facilities in the park. The paddling trails currently in the park are maintained by the FCO with the assistance of volunteers. Park staff will coordinate with FCO and County staff to maintain the signed paddling trails.



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COCKROACH BAY PRESERVE STATE PARK



CONCEPTUAL LAND USE PLAN

Facilities Development

Preliminary cost estimates for these recommended facilities and improvements are provided in the Ten-Year Implementation Schedule and Cost Estimates (Table 6) located in the Implementation Component of this plan. These cost estimates are based on the most cost-effective construction standards available at this time. The preliminary estimates are provided to assist the Division in budgeting future park improvements, and may be revised as more information is collected through the planning and design processes. New facilities and improvements to existing facilities recommended by the plan include 2 Information Kiosks.

Recreational 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 5).

The recreational carrying capacity for this park is a preliminary estimate of the number of users the unit could accommodate after the current conceptual development program has been implemented.

Table 5. Recreational Carrying Capacity

Activity/Facility	Existing Capacity*		Proposed Additional Capacity		Estimated Recreational Capacity	
	One Time	Daily	One Time	Daily	One Time	Daily
Canoeing/Kayaking	88	176			88	176
TOTAL	88	176	0	0	88	176

* Existing capacity estimated using approved DRP guidelines.

Optimum Boundary

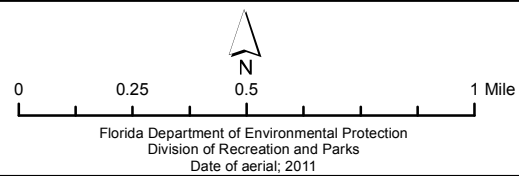
The optimum boundary map reflects lands considered desirable for direct management by the DRP as part of the state park. These parcels may include public or privately owned land that would improve the continuity of existing parklands, provide the most efficient boundary configuration, improve access to the park, provide additional natural and cultural resource protection or allow for future expansion of recreational activities. Parklands that are potentially surplus to the management needs of the DRP are also identified. As additional needs are identified through park use, development, and research, and as land use changes on adjacent property, modification of the park's optimum boundary may be necessary.

The acquisition of these parcels would provide a safe land-based access point for the park. The acquisition of this property would also enhance connectivity between Cockroach Bay Preserve State Park and other conservation lands north of this property owned by Hillsborough County and the Tampa Bay Conservancy.

An additional island is located north of Goat Island and west of Snake Island. This property appears to be owned by the State of Florida. The DRP will consult with the Division of State Lands regarding ownership of the property and the potential inclusion of this island within the park's current lease.



COCKROACH BAY PRESERVE STATE PARK



Florida Department of Environmental Protection
Division of Recreation and Parks
Date of aerial, 2011

OPTIMUM BOUNDARY MAP

IMPLEMENTATION COMPONENT

The resource management and land use components of this management plan provide a thorough inventory of the park's natural, cultural and recreational resources. They outline the park's management needs and problems, and recommend both short and long-term objectives and actions to meet those needs. The implementation component addresses the administrative goal for the park and reports on the Division of Recreation and Parks (DRP) progress toward achieving resource management, operational and capital improvement goals and objectives since approval of the previous management plan for this park. This component also compiles the management goals, objectives and actions expressed in the separate parts of this management plan for easy review. Estimated costs for the ten-year period of this plan are provided for each action and objective, and the costs are summarized under standard categories of land management activities.

MANAGEMENT PROGRESS

Since the approval of the last management plan for Cockroach Bay Preserve State Park in 2004, significant work has been accomplished and progress made towards meeting the DRP's management objectives for the park. These accomplishments fall within three of the five general categories that encompass the mission of the park and the DRP.

Acquisition

On January 24, 1997, the Trustees acquired title to a 615-acre property located in Hillsborough County, Florida. This acquisition constituted the initial area of Cockroach Bay Preserve State Park. The Trustees purchased this property from Hillsborough County under the Conservation and Recreation Lands (CARL) program with the Preservation 2000 (P2000) funds.

Park Administration and Operations

- The Terra Ceia Preserve State Park staff are assigned to also manage Cockroach Bay Preserve State Park.

Resource Management

Natural Resources

- Terra Ceia park staff began plant mapping on the islands in Cockroach Bay in Fiscal Year 2012/2013 and continue with this task as time permits.

Cultural Resources

- Staff makes note of any new cultural resources they find in the course of other duties on the island and notifies Bureau of Natural and Cultural Resources (BNCR) of the location.

Park Facilities

- Hillsborough County has installed an informational sign, picnic table and trash receptacles at the boat ramp they maintain at the entrance to the bay.
- Florida Coastal Office staff has developed two paddling trails with signage in the waters surrounding the islands.

MANAGEMENT PLAN IMPLEMENTATION

This management plan is written for a timeframe of ten years, as required by Section 253.034 Florida Statutes. The Ten-Year Implementation Schedule and Cost Estimates (Table 6) summarize the management goals, objectives and actions that are recommended for implementation over this period, and beyond. Measures are identified for assessing progress toward completing each objective and action. A time frame for completing each objective and action is provided. Preliminary cost estimates for each action are provided and the estimated total costs to complete each objective are computed. Finally, all costs are consolidated under the following five standard land management categories: Resource Management, Administration and Support, Capital Improvements, Recreation Visitor Services and Law Enforcement.

Many of the actions identified in the plan can be implemented using existing staff and funding. However, a number of continuing activities and new activities with measurable quantity targets and projected completion dates are identified that cannot be completed during the life of this plan unless additional resources for these purposes are provided. The plan's recommended actions, time frames and cost estimates will guide the DRP's planning and budgeting activities over the period of this plan. It must be noted that these recommendations are based on the information that exists at the time the plan was prepared. A high degree of adaptability and flexibility must be built into this process to ensure that the DRP can adjust to changes in the availability of funds, improved understanding of the park's natural and cultural resources, and changes in statewide land management issues, priorities and policies.

Statewide priorities for all aspects of land management are evaluated each year as part of the process for developing the DRP's annual legislative budget requests. When preparing these annual requests, the DRP considers the needs and priorities of the entire state park system and the projected availability of funding from all sources during the upcoming fiscal year. In addition to annual legislative appropriations, the DRP pursues supplemental sources of funds and staff resources wherever possible, including grants, volunteers and partnerships with other entities. The DRP's ability to accomplish the specific actions identified in the plan will be determined largely by the availability of funds and staff for these purposes, which may vary from year to year. Consequently, the target schedules and estimated costs identified in Table 6 may need to be adjusted during the ten-year management planning cycle.

Table 6
Cockroach Bay Preserve State Park Ten-Year Implementation Schedule and Cost Estimates
Sheet 1 of 3

NOTE: THE DIVISION'S ABILITY TO COMPLETE THE OBJECTIVES OUTLINED BY THE MANAGEMENT PLAN IS CONTINGENT ON THE AVAILABILITY OF FUNDING AND OTHER RESOURCES FOR THESE PURPOSES.				
Goal I: Provide administrative support for all park functions.				
		Measure	Planning Period	Estimated Manpower and Expense Cost* (10-years)
Objective A	Continue day-to-day administrative support at current levels.	Administrative support ongoing	C	\$22,471
Objective B	Expand administrative support as new lands are acquired, new facilities are developed, or as other needs arise.	Administrative support expanded	C	\$0
Goal II: Protect water quality and quantity in the park, restore hydrology to the extent feasible, and maintain the restored condition.				
		Measure	Planning Period	Estimated Manpower and Expense Cost* (10-years)
There are no hydrological restoration needs at this unit.				
Goal III: Restore and maintain the natural communities/habitats of the park.				
		Measure	Planning Period	Estimated Manpower and Expense Cost* (10-years)
Objective A	Complete a comprehensive floral and faunal survey and update the park's baseline plant and animal list	List updated annually	ST	\$8,416
Action 1	Annually, or preferably quarterly, conduct plant and animal surveys to update the plant and animal list for the park	Survey conducted	C	\$8,416
Objective B	Monitor and evaluate the erosion/shoreline retreat along the shoreline of Goat Island to determine if additional erosion control measures should be implemented	Evaluation completed	ST	\$18,000
Action 1	Develop and implement an erosion/shoreline retreat monitoring program	Monitoring program developed	UFN	\$7,500
Action 2	Evaluate potential erosion control measures with the FCO staff	Erosion evaluated	UFN	\$10,500

* 2014 Dollars
ST = actions within 2 years
LT = actions within 10 years
C = long term or short term actions that are continuous or cyclical
UFN = currently unfunded need

Table 6
Cockroach Bay Preserve State Park Ten-Year Implementation Schedule and Cost Estimates
Sheet 2 of 3

NOTE: THE DIVISION'S ABILITY TO COMPLETE THE OBJECTIVES OUTLINED BY THE MANAGEMENT PLAN IS CONTINGENT ON THE AVAILABILITY OF FUNDING AND OTHER RESOURCES FOR THESE PURPOSES.				
Goal IV: Maintain, improve or restore imperiled species populations and habitats in the park.				
		Measure	Planning Period	Estimated Manpower and Expense Cost* (10-years)
Objective A	Update baseline imperiled species occurrence inventory lists for plants and animals.	List updated, status' updated	C	\$30,400
Action 1	Annually check FNAI's species tracking list and all new imperiled status listings for species likely to be found in the park	Tracking list reviewed	C	\$1,700
Action 2	Annually update imperiled species occurrence inventory list for plants and animals by submitting each occurrence event data to the DRP Bios database and FNAI species tracking database	Databases updated	C	\$8,500
Action 3	Adjust monitoring requirements if/when imperiled status changes occur	Monitoring adjusted	C	\$20,200
Objective B	Monitor the gopher tortoise population on Goat Island using FWC survey protocols	Population monitored	UFN	\$5,000
Action 1	Review FWC protocols for burrow and tortoise surveys and determine if the equipment needed, mainly a gopher burrow camera, is available for use from the District office or other sources.	Protocols reviewed	UFN	\$1,500
Action 2	Conduct a comprehensive gopher tortoise survey of Goat Island following the adopted protocols	Survey complete	UFN	\$3,500
Goal V: Remove exotic and invasive plants and animals from the park and conduct needed maintenance-control.				
		Measure	Planning Period	Estimated Manpower and Expense Cost* (10-years)
Objective A	Treat all invasive exotic plant species in the park within two years to achieve maintenance condition.	# Acres treated	ST	\$60,000
Action 1	Develop and implement annual exotics work plans to treat all exotics in the park within two years and continue maintenance and follow-up treatments, as needed.	Plan developed/implemented	C	\$60,000
Goal VI: Protect, preserve and maintain the cultural resources of the park.				
		Measure	Planning Period	Estimated Manpower and Expense Cost* (10-years)
Objective A	Assess and evaluate 2 of 2 recorded cultural resources in the park.	Documentation complete	LT	\$13,940
Action 1	Conduct Level 1 archaeological survey for 2 priority areas identified by recent predictive model (Collins 2013) (8HI38 and 8HI12209)	Assessments complete	LT	\$12,460
Action 2	Prioritize preservation and stabilization projects.	Project schedule complete	LT	\$1,480
Objective B	Compile reliable documentation for all recorded historic and archaeological sites.	Documentation complete	LT	\$800
Action 1	Verify all known sites are recorded or updated in the Florida Master Site File.	# Sites recorded or updated	ST	\$800
Objective C	Bring 1 of 2 recorded cultural resources into good condition, if assessments determine this is possible.	# Sites in good condition	LT	16,940
Action 1	Design and implement a quarterly monitoring program for 1 cultural resource	Quarterly program defined	LT	10,400
Action 2	Create and implement a cyclical maintenance program for exotic species and trash removal	# Acres treated, trash removed	LT	6,540

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Table 6
Cockroach Bay Preserve State Park Ten-Year Implementation Schedule and Cost Estimates
Sheet 3 of 3

NOTE: THE DIVISION'S ABILITY TO COMPLETE THE OBJECTIVES OUTLINED BY THE MANAGEMENT PLAN IS CONTINGENT ON THE AVAILABILITY OF FUNDING AND OTHER RESOURCES FOR THESE PURPOSES.				
Goal VII: Provide public access and recreational opportunities in the park.		Measure	Planning Period	Estimated Manpower and Expense Cost* (10-years)
Objective A	Maintain the park's current recreational carrying capacity of 176 users per day.	176 users per day	C	\$22,741
Objective B	Expand the park's recreational carrying capacity by 0 users per day.	0	C	\$0
Objective C	Develop 2 new interpretive, educational and recreational programs.	# Interpretive/education programs developed	ST	\$1,000
Goal VIII: Develop and maintain the capital facilities and infrastructure necessary to meet the goals and objectives of this management plan.		Measure	Planning Period	Estimated Manpower and Expense Cost* (10-years)
Objective A	Maintain all public and support facilities in the park.	Facilities maintained	C	\$22,471
Objective B	Continue to implement the park's transition plan to ensure facilities are accessible in accordance with the American with Disabilities Act of 1990.	Plan implemented	C	\$0
Summary of Estimated Costs				
Management Categories			Total Estimated Manpower and Expense Cost* (10-years)	
Resource Management			\$153,496	
Administration and Support			\$22,471	
Capital Improvements			\$0	
Recreation Visitor Services			\$45,482	
Law Enforcement Activities ¹				
			¹ Law enforcement activities in Florida State Parks are conducted by the FWC Division of Law Enforcement and by local law enforcement agencies.	

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ST = actions within 2 years
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C = long term or short term actions that are continuous or cyclical
UFN = currently unfunded need

Addendum 1—Acquisition History

Cockroach Bay Preserve State Park Acquisition History

Purpose of Acquisition:

The Board of Trustees of the Internal Improvement Trust Fund of the State of Florida (Trustees) acquired Cockroach Bay preserve State Park primarily to preserve and protect the highly productive marine habitat, habitats for endangered or threatened species, and significant archaeological sites.

Sequence of Acquisition:

On January 24, 1997, the Trustees acquired title to a 615-acre property located in Hillsborough County, Florida. This acquisition constituted the initial area of Cockroach Bay Preserve State Park. The Trustees purchased this property from Hillsborough County under the Conservation and Recreation Lands (CARL) program with the Preservation 2000 (P2000) funds.

According to the lease agreement, the Department of Recreation and Parks (DRP) will manage Cockroach Bay Preserve State Park primarily to preserve and protect the highly productive marine habitat, habitats for endangered or threatened species, and significant archaeological sites.

Title Interest:

The Trustees hold fee simple title interest in Cockroach Bay Preserve State Park.

Lease Agreement:

The Trustees leased Cockroach Bay State Buffer Preserve to CAMA (now Florida Coastal Office) on May 14, 1997 under a fifty (50) year lease, Lease No. 4140. Florida Coastal Office managed this property as a state buffer preserve until the time it transferred its leasehold interest in the property to the Division of Parks and Recreation (DRP) on December 5, 2003. The DRP continues to manage the property under the same lease number with the same lease terms and conditions. Lease No. 4140 expires on March 13, 2047.

Special Conditions on Use:

Cockroach Bay Preserve State Park is designated single-use to provide resource-based public outdoor recreation and other park related uses. Uses such as water resources 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 this plan) are not consistent with this plan or the management purposes of the park.

Outstanding Reservations:

There are no known outstanding issues regarding deed restrictions and reversion that apply to Cockroach Bay Preserve State Park.

Cockroach Bay Preserve State Park Acquisition History

Addendum 2—Advisory Group Members and Report

**Cockroach Bay Preserve State Park
Advisory Group Members and Report**

Local Government

Representatives

The Honorable Sandra L. Murman
Hillsborough County Board of County
Commissioners
Hillsborough County Government
601 E. Kennedy Boulevard
Tampa, FL 33602

Agency Representatives

Kevin Kiser, Park Manager
Judah P. Benjamin Confederate
Memorial at Gamble Plantation Historic
State Park, 3708 Patten Avenue,
Ellenton, FL 32459

Stephen Raymond
Manatee County Department of
Natural Resources
Parks and Natural Resources Division
5801 17th Street West
Palmetto, FL 34221

Randy Runnels, Ph.D.
Aquatic Preserve Manager
Tampa Bay Aquatic Preserves
130 77th Street East
Terra Ceia, FL 34250

Chad Allison
District Wildlife Biologist, Southwest
Region
Florida Fish and Wildlife Conservation
Commission
3900 Drane Field Road
Lakeland, FL 33811

Mike Wisenbaker
Archaeology Supervisor, Public Lands
Bureau of Archaeological Research
Division of Historical Resources
1001 De Soto Park Drive
Tallahassee, FL 32301

Brandt Henningsen, Ph.D.
Chief Advisor Environmental Scientist
Surface Water Improvement and
Management (SWIM) Program
Southwest Florida Water Management
District
7601 Highway 301 North
Tampa, Florida 33637-6759

Mr. Roy Davis, Chair
Hillsborough Soil and Water
Conservation District
201 S. Collins Street, Suite 202
Plant City, FL 33563

Maya Burke, Senior Planner
Agency for Bay Management
4000 Gateway Center Blvd. Suite 100
Pinellas Park, FL 33782

**Tourism/Economic Development
Representatives**

Marilyn Hett, AICP
Tourism Development Manager
Economic Development
Hillsborough County BOCC
County Center, 20th floor
601 E Kennedy Blvd.
Tampa, FL 33602

**Environmental and Conservation
Representatives**

Mariella Smith, Executive Committee
Tampa Bay Group Sierra Club
108 Janie Street
Ruskin, FL 33570

Bob Conti
Eagle Audubon Society
712 Manchester Woods Drive
Sun City Center, FL 33573-7032

**Cockroach Bay Preserve State Park
Advisory Group Members and Report**

Andy Lykens
Environmental Scientist
Tampa Bay Watch, Inc.
3000 Pinellas Bayway South
Tierra Verde, FL 33715

Ann Paul
Environmental Lands Acquisition and
Protection Program (ELAPP) General
Committee
401 South Ware Boulevard, Suite 702
Tampa, FL 33619

Recreational User Representatives

Wayne Douchkoff
Florida Paddling Trails Association
PMB 137, 3547 53rd Avenue West
Bradenton, FL 34210

Adjacent Land Owners

Captain John Hand
1204 Frisbie Road
Ruskin, FL 33570-2832

Cockroach Bay Preserve State Park Advisory Group Members and Report

Two Advisory Group meetings were held to review the proposed land management plan for Cockroach Bay Preserve State Park. The first meeting was a joint advisory group for three parks: Cockroach Bay Preserve State Park, Madira Bickel Mound State Archaeological Site, and Judah P. Benjamin Confederate Memorial at Gamble Plantation Historic State Park. The joint advisory group meeting was held at the Visitors Center at the Judah P. Benjamin Confederate Memorial at Gamble Plantation Historic State Park on November 20, 2014. In response to public interest, a second advisory group was formed for Cockroach Bay Preserve State Park and met at the Ruskin SouthShore Regional Library on January 7, 2015.

At the November 20, 2014 meeting, Stephen Raymond and Marcus Campion represented Manatee County Commission Chairman Larry Bustle, and Josh Agee represented Chad Allison. Hillsborough County Commissioner Sandra L. Murman , Roy Davis, John O'Conner, Monica Luff, Devon Higginbotham, Sonia R. Setty were not in attendance. Mike Weisenbaker from the Division of Historic Resources (DHR) did not attend but provided written comments. All other appointed Advisory Group members were present. Attending staff were Valinda Subic, Chris Becker, Kevin Kiser, Tracy Telatyki, Piper Ferriter and Enid Ehrbar. Staff began the meeting by explaining the purpose of the Advisory Group and reviewing the meeting agenda. Staff provided a brief overview of the planning process and summarized the comments received during the previous evening's public workshop. Staff then asked each member of the Advisory Group to express his or her comments on the draft plans.

At the January 7, 2015 Advisory Group meeting, Stephen A. Hoffman Senior represented Capt. John Hand, Ross Dickerson represented Hillsborough County Commissioner Sandra L. Murman, and Don Grozis represented Bob Conti. Stephen Raymond did not attend. All other members attended. Attending staff were Sine Murray, Valinda Subic, Chris Becker, Kevin Kiser, Tracy Telatyki and Enid Ehrbar. Staff presented the conceptual land use plan for the park and solicited public comment. Staff then asked each member of the Advisory Group to express his or her comments on the plan.

Summary of Advisory Group Comments for November 20, 2014 Meeting

Wayne Douchkoff (Florida Paddling Trails Association) stated his interest was largely with the Cockroach Bay Plan. His paddle group was most concerned with access and safety, having a safe place to access the park. There was some general discussion among advisory group members regarding safety of vehicles parking at the County access on Cockroach Bay Road. Staff noted that Florida Fish and Wildlife Conservation Commission (FWC) handles law enforcement for the park and park management would discuss more patrols in the Cockroach Bay area with them, in addition to holding discussions with local law enforcement agencies. Mr. Douchkoff was interested in knowing how the park worked with the other agencies that have

Cockroach Bay Preserve State Park Advisory Group Members and Report

jurisdiction, such as the County and the Southwest Florida Water Management District and if these agencies contributed funding. Staff explained that funding for all three parks comes from the Gamble budget, but special projects like exotic invasive plant removal can also come from grants, there is resource management money that goes to prioritized areas, and herbicide is available through FWC most of the time. There is also additional exotic removal money that is shared with the other park districts.

Randy Runnels (Florida Coastal Office (FCO)/Tampa Bay Aquatic Preserves) stated that he did not see anything in the plan for Cockroach Bay that had the park discussing jurisdiction 400 feet out in the water. Staff noted that the FCO had jurisdiction over submerged lands and that Port Tampa Bay owned the submerged land, so the park did not see the need to “double manage” the submerged lands. Dr. Runnels noted that when the FCO managed the park it was periodically burned by the County; which liked to use the area for training. He discussed the exotic plant situation and noted there used to be a large volunteer group called the “Pepper Patrol” that helped remove exotic plants, most notably Brazilian Pepper. He cautions staff not to over promise what can be done in the park. He suggested exotic removal be prioritized and questioned if Goat Island should be a priority. He suggested targeting areas that are high threats, target “battle zones”. He suggested the park staff work with all partners in the aquatic preserve, make sure what the park plans propose related to exotic plant removal works in the context with what other parks and managers are doing. Dr. Runnels also noted that volunteer help for exotic plant removal is good, but you need trained volunteers and trained staff/people to supervise volunteers in order to be sure the process is done correctly and exotic plants are properly identified.

Stephen Raymond (Manatee County Department of Natural Resources, Parks and Natural Resources Division) noted his concern regarding the type of mangroves listed in the intermediate to least tidally influenced zones. Mr. Raymond questioned the language in the plan that said certain dynamic movement of sand bars and spits do not necessarily constitute adverse impacts implied by the concept of soil erosion and made suggestions regarding options which included replanting mangroves or dumping soil where Bird Key had been. Mr. Raymond questioned the reference to 600 acres of uplands and 15 acres of submerged lands and suggested this is contradictory. Mr. Raymond stated that the plan says passive recreation is permitted on the island, but the islands have incorrect or inconsistent signage that says no trespassing and signage related to CAMA (Florida Coastal Office now FCO) and park boundaries. Mr. Raymond questioned the lack of an optimum boundary map and specifically wondered why Big Mound Key was not on an optimum Boundary Map. Staff explained that this property was purchased several months ago by Hillsborough County. Mr. Raymond questioned how staff is going to meet the objectives in the plan related to assessing the erosion on Goat Island and gopher tortoise management with no dedicated funding sources. He questioned how the DRP will implement these objects if they are listed as unfunded needs. Park staff noted that this is a ten year plan and that operation items are funded out of

Cockroach Bay Preserve State Park Advisory Group Members and Report

the annual budget for all three parks. The park also intends to work with volunteers, other agencies and apply for available grants if needed.

Captain John Hand (Adjacent Property Owner, Cockroach Bay Preserve State Park) is concerned with fish habitat and water flow. He is concerned about having access limited to these areas. He is a fishing guide, fourth generation from the area and he does not want to see access limited. He suggested signage be limited to access points at the park. Captain Hand was part of the discussion regarding safety at the Cockroach Road boat launch and stated it has had some issues because no one lives near the launch, although years ago the County did have someone living there for security. He stated that he had not heard of any safety issues at the Domino Park boat launch, but parking was limited. There was general discussion about raising certain park fees and staff stated that had not been successful. He also noted that there are lots of members of his fishing clubs that would be glad to volunteer to help with exotic plant removal as long as they had plenty of notice. There was some general discussion about using volunteers and the training needed.

Marilyn Hett (Hillsborough Tourism Development Council) stated that the park staff might want to work with Visit Florida regarding park directions and better publicity for the park. She also noted that a more regional approach to getting visitors to parks should be considered. Tourist don't usually just come to an area to see one place, but what the whole area has to offer. A regional approach regarding what is offered in parks would be something to consider. She also asked if there was a hurricane plan in the park plan, a plan to keep all the artifacts and collections safe in a hurricane. Staff noted that there is a chapter in the larger operations manual that all parks follow regarding protection of collections and artifacts.

Josh Agee (Florida Fish and Wildlife Conservation Commission (FWC)) stated that he looked at the plans and they looked okay, they were practical, they discussed management in the parks. He had questions about the gopher tortoises being trans-located at Cockroach Bay. Mr. Agee asked how often the park was burned. Park staff explained the parks focus was on managing exotics. They did not see an immediate need for fire in this area. There was concern that fire might kill all the pines. Staff stated that their intent was to allow burns started by lightning strikes to burn, but they did not think there was a need for a formal burn plan at this time.

Summary of Written Comments

Mike Wisenbaker (Division of Historical Resources (DHR)) reviewed the cultural section of the plans and addenda for the park. Mr. Wisenbaker states that DHR encourages park staff to pursue National Register listing for Little Cockroach Key site (HI38). He is pleased to see the statement in the plan that human disturbance on the mounds will be repaired and he encourages all vandalism of these sites to be reported to DHR. He encourages the park to pursue a comprehensive assessment of Cockroach Key Shell Midden (HI2209). Mr. Wisenbaker suggested Florida Master Site File forms be submitted for any historic fish camp sites over 50 years old. He suggested the language regarding pre-testing of sites be removed, since DHR no longer recommends this in their revised

Cockroach Bay Preserve State Park Advisory Group Members and Report

archeological resource management training (ARM). DHR is pleased to see the park service is doing additional interpretation at the park, and recommends any signage or kiosk pertaining to the archaeological sites be located well away from the actual sites.

Stephen Raymond (Manatee County Department of Natural Resources, Parks and Natural Resources Division) provided a written version of his comments that were stated at the Advisory Group meeting.

Summary of Advisory Group Comments for January 7, 2015 Meeting

Wayne Douchkoff (Florida Paddling Trails Association) stated his main concern was with maintaining access to the park and surrounding waters for paddlers. He discussed the need for safe access and referenced issues with safety at the Cockroach Road County access point.

Chad Allison (Florida Fish and Wildlife Conservation Commission (FWC)) thought the management plan was headed in the right direction, focusing on exotic invasive plant removal. He had no issue with the plan allowing natural fires to take their course. He agreed with the monitoring goals for imperiled species and the need for continual surveys; as well as the need to add listed species to the field list. He thought the plan allowed flexibility.

Stephen Hoffman, Sr. (South Shore Anglers Association) stated that he was concerned about maintenance of the areas where exotics would be removed. They could return quickly if the area is not maintained. He noted that there needed to be a continued presence, more people involved in taking care of areas where exotic invasive plants are removed. Staff noted that each year staff does a survey to determine the annual maintenance goal.

Mariella Smith (Tampa Bay Group Sierra Club) thanked staff for their response to the citizens' concerns regarding the removal of exotic invasive plants and the policies in the plan. She wished other government groups were as responsive. She discussed the need to have the vicinity map show the connectivity of the property shown on the optimum boundary map to the parcels north of it that are already owned by various conservation groups.

Ann Paul (Hillsborough County Jan K. Platt Environmental Lands Acquisition and Protection Program (ELAPP)) stated that she did not think there needed to be a formal burn plan for the park. Ms. Paul stated she thought several more birds should be included in the listed species, such as the gray kingbird, mangrove cuckoo and prairie warbler. She also inquired about diamondback terrapins in the park. She noted that FWC is revising their listing process, and a number of birds are being removed from the list and their status will be changing. She noted there were redundant discussions about Bird Key in the plan. She thought a response to sea level rise and erosion should be included in the plan. She was delighted to hear

Cockroach Bay Preserve State Park Advisory Group Members and Report

about the revised language in the plan related to exotic invasive species and thought it was also important to do replanting and restoration in the areas where exotics are removed. Native plants should replace the invasive plants to provide a seed source, so native plants can be maintained. She opposed the idea of overnight camping in the park and hoped the state could coordinate with the county on the purchase of the optimum boundary parcel. She thought it most important for the park to have coordination with regional managers in the bay, such as the Aquatic Preserve, ELAPP, Hillsborough County and volunteer groups like Audubon and Tampa Bay Watch.

Myra Burke (Agency for Bay Management) noted that her agency already worked to coordinate groups within the Tampa Bay area. She stated it is the task of her agency to help coordinate all the groups, and thinks her agency is the vehicle to provide this coordination. She discussed the work being done through the regional planning council related to sea level rise and noted that sea level rise impacts habitat. She inquired about the type of information that will be placed on the proposed kiosks and what the potential was for additional recreation uses in the optimum boundary parcel being proposed. DRP staff anticipates a day use area with a kayak/canoe launch, picnic area, perhaps fishing area, and parking could be accommodated at this site. The type of signage to be developed would depend on how the area would be interpreted. DRP staff stated an interpretive plan should be developed focusing on raising the awareness of the area as a state park and the sensitivity of the park.

Ross Dickerson (Parks, Recreation and Conservation Department, Hillsborough County) thought that there should be a prescribed fire plan for the park. Without fire there is likely to be limited diversity, and you won't know what might evolve if fire is not introduced. He thought restoration was needed in upland areas. He does think the plan should allow for "adaptive" management. He was concerned about identifying the islands with cultural resources and the listing of cultural resources in the plan. Mr. Dickerson noted that ELAPP tried twice to buy the property shown on the optimum boundary map, but the property owners have not been willing to talk to the County. He suggested that there was an old trailer park property off Sweeney Road that might serve as a good area for a kayak/canoe launch. He suggested changing the Tampa Port Authority to Port Tampa Bay and the reference to the ELAPP program to the Jan K. Platt Environmental Lands Acquisition and Protection Program.

Don Grozis (Eagle Audubon Society) stated he only recently has realized what goes on behind the scene in the parks. He has been involved in helping with tours of the area and thought people in the area do not realize what is available. He thought the more people who are aware of the area and understand it, it will have better protection.

Andy Lykens (Tampa Bay Watch, Inc.) stated he thought the plan was thorough. He was glad to hear the South Bay Community Development District (CDD) parcel was being added to the optimum boundary in the plan. He discussed the Tampa

Cockroach Bay Preserve State Park Advisory Group Members and Report

Bay Watch concern with sea level rise and their experience with diamondback terrapins. He agreed with the need for prescribed burning in the park plan and thought that restoration with native plants was needed, as well as exotic invasive plant removal.

Randy Runnels (Florida Coastal Office (FCO)/Tampa Bay Aquatic Preserve) discussed the Agency for Bay Management and the desire for the park to take a more active role. He discussed, Cockroach Bay Aquatic Preserve Management Team (CAPMAT) and how it should be revived. He also discussed the Cockroach Bay Users Group (CBUG) and thought they had merged with CAPMAT. He encourage the idea of replanting native species. He stated he thought there was plenty of seed source in the coastal berm areas and encourage everyone to not just plant to plant, but fill in local varieties where needed. He suggested an archaeologist should be available to show volunteers and contractors how to correctly remove exotic invasive plants in areas that may have high archaeological significance and no dragging of cut vegetation in these areas. He stated terrapin monitoring faded with budget cuts. He discussed the history of vandalism regarding signage and kiosks and suggested this be coordinated with the County. He discussed the sea level monitoring station that was on Snake Island and thought it had been defunded. He stated that aquatic preserve staff is working to restore signage on the paddling trails and that the land and water plans should be integrated.

Marilyn Hett (Hillsborough Tourism Development Council) saw this plan as an opportunity to link Manatee County and Hillsborough County tourism, Terra Ceia and Cockroach Bay. There are lots of tourists that want to do regional tourism. Regional ecotourism should be promoted in the area. Her group has been promoting bed and breakfast inns and ecotourism because it contributes to the bed tax and financing the promotion of area businesses and ecotourism. Ms. Hett discussed the use of Q.R. codes (quick response codes) in the parks so foreign tourists could access information and directions in their native language.

Brandt Henningsen (Surface Water Improvement and Management (SWIM) Program, Southwest Florida Water Management District) stated that everyone had already made most of his comments on the plan. He thought more native plants, as appropriate, should be planted, the plan should stress continued maintenance using a 12-24 month timeline, and he agrees with the use of prescribed fire where appropriate. He discussed the need to reestablish the signs on the paddling trails and perhaps partner with different groups to do this.

Summary of Written Comments

Ross Dickerson (Parks, Recreation and Conservation Department, Hillsborough County) provided a written version of his comments that were stated at the Advisory Group meeting.

Cockroach Bay Preserve State Park Advisory Group Members and Report

Ann Paul (Hillsborough County Jan K. Platt Environmental Lands Acquisition and Protection Program (ELAPP)) provided a written version of her comments that were stated at the Advisory Group meeting.

Summary of Public Comments

Gus Meunch (resident of adjoining neighborhood Uzita Shores, local fisherman/crabber) stated that the park is in his backyard and he has lived and fished in the area many years. He discussed the erosion issue at Goat Island and thinks the erosion is caused by the natural water movement and how it moves around the spoil islands that were created. He has seen trees that were planted in the '80s fall in the river because of the scouring effect of the river. He discussed a trail that he says he mapped out through the park islands and referred to it as the Uzita Trail. He states it is a walk, swim and boating trail that follows Native American paths in the park. He suggested it would be a good adventure trail and he would like to see it included in the plan.

Staff Recommendations

The staff recommends approval of the proposed management plans for Cockroach Bay Preserve State Park as presented, with the following changes:

- Amend the vicinity map to show contiguous properties currently in public ownership that adjoin the property shown on the optimum boundary map.
- Change references to Tampa Port Authority to Port Tampa Bay
- Change references to the ELAPP program to the Jan K. Platt Environmental Lands Acquisition and Protection Program.
- Additional birds and the diamondback terrapin will be added to the imperiled species inventory.
- Remove the sentence in the Altered Landcover section about previous planting of loblolly pines being an incorrect species to plant in the park.
- Language will be added to the Resources Management section, Objective "A", that states areas treated for exotic plant removal will be monitored for native plant regeneration and recruitment of native plants and evaluated for supplemental native plantings if necessary.

Additional revisions were made throughout the document to address editorial corrections, consistency of spellings and notations, and other minor corrections.

Notes on Composition of the Advisory Group

Florida Statutes Chapter 259.032 Paragraph 10(b) establishes a requirement that all state land management plans for properties greater than 160 acres will be reviewed by an advisory group:

"Individual management plans required by s. 253.034(5), for parcels over 160 acres, shall be developed with input from an advisory group. Members of this advisory group shall include, at a minimum, representatives of the lead land

Cockroach Bay Preserve State Park Advisory Group Members and Report

managing agency, co-managing entities, local private property owners, the appropriate soil and water conservation district, a local conservation organization, and a local elected official.”

Advisory groups that are composed in compliance with these requirements complete the review of State park management plans. Additional members may be appointed to the groups, such as a representative of the park’s Citizen Support Organization (if one exists), representatives of the recreational activities that exist in or are planned for the park, or representatives of any agency with an ownership interest in the property. Special issues or conditions that require a broader representation for adequate review of the management plan may require the appointment of additional members. The DRP’s intent in making these appointments is to create a group that represents a balanced cross-section of the park’s stakeholders. Decisions on appointments are made on a case-by-case basis by DRP staff.

Addendum 3—References Cited

Cockroach Bay Preserve State Park References Cited

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Cockroach Bay Preserve State Park References Cited

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Addendum 4—Soil Descriptions

Cockroach Bay Preserve State Park Soils Descriptions

24—Kesson muck, frequently flooded. Soil typically found in Tidal marshes on marine terraces built from sandy marine deposits with shells. Generally, there is black muck for the first 5 inches, and then moderately alkaline, fine sand to 80 inches or more. Very poorly drained, with water table to 6 inches from surface. Frequent flooding, with moderately saline to strongly saline residue. Ecologically, tends to support salt marsh community. Where this tidal marsh soil is still in the process of formation. The material consists mainly of compact gray sand, but in places where water stands much of the time it is a silty muck or silty peat and is inclined to be oozy. Some of the areas are subject to inundation by salt water during ordinary tides and others only at times of spring tides, or when winds drive the sea water inland. Often covered with a more or less dense growth of mangrove bushes, there are also spots or flats devoid of vegetation.

Kesson muck has also been described within the Wulfert-Kesson Association [#53. USDA 1983]. This association has nearly level slopes (less than 1%), and is very poorly drained. It occurs in regular and repeating patterns in mangrove swamps along the Gulf Coast and on coastal islands. Generally, Kesson soils are in the outer parts of the complex near the water's edge, and Wulfert soils are in the inner parts. Both are flooded daily by high tides and permeability is rapid throughout. The available water capacity is medium to high in the muck layers, but vary slightly in the sand layers. Wulfert surface layer is typically dark reddish brown and dark brown muck that extends to a depth of about 36 inches; below that, there is gray fine sand to 60 inches depth or more. Kesson surface layer is typically black fine sand 6 inches thick; below that, there is pale brown, light gray and white fine sand to 80 inches or more; shell fragments are few to common in these layers. The natural vegetation consists mostly of mangrove, saltgrass, batis and oxeye daisy; some areas are bare.

29—Myakka fine sand. Often found in flatwoods on marine terraces, this soil is built from sandy marine deposits and is strongly acid, fine sand. It can have a slope, to 2%. It is poorly drained soil, with the depth to the water table about 6 to 18 inches, though it can recede to a depth of 40 inches during prolonged dry periods. It is not frequently flooded, and it has very low to no salinity. Typically, the soil layers are: a surface layer of very dark gray fine sand, about 5 inches thick; a subsurface layer, to about 20 inches, of gray fine sand; a subsoil to about 25 inches of fine black sand, with reddish brown fine sand to about 55 inches; and then, to about 80 inches, fine sand that grades in color from pale brown to dark gray-brown. Permeability is rapid in the surface and subsurface layers, moderate or moderately rapid in the subsoil, and rapid in the substratum; available water capacity is low. Ecologically, tends to support south Florida flatwoods or flats of mesic or hydric lowlands.

30—Myakka fine sand, frequently flooded. Generally found in tidal marshes on marine terraces, this soil has all the characteristics of Myakka fine sand, except that it rarely has prolonged dry periods.

Cockroach Bay Preserve State Park Soils Descriptions

45—St. Augustine-Urban land complex. St. Augustine is found in flats on marine terraces, rises on marine terraces, sandy mine spoil or earthy fill; generally neutral fine sand and somewhat poorly drained. St. Augustine is usually nonsaline, but this may not be true in the Urban Land complex. Urban soil has "no parent material," and usually with some mix of Arents soil (material that has been excavated, reworked and reshaped by earthmoving equipment), This is where soil was dredged from the river or the bay, and enough was deposited to establish a new surface.

Addendum 5—Plant and Animal List

Cockroach Bay Preserve State Park Plants

Common Name	<i>Scientific Name</i>	Primary Habitat Codes (for imperiled species)
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LICHENS

Powder-puff lichen	<i>Cladonia evansii</i>	
Jester lichen	<i>Cladonia leporina</i>	

PTERIDOPHYTES

Giant leather fern	<i>Acrostichum danaeifolium</i>	
Swamp fern	<i>Blechnum serrulatum</i>	
Tuberous sword fern*	<i>Nephrolepis cordifolia</i>	
Golden polypody	<i>Phlebodium aureum</i>	
Bracken fern	<i>Pteridium aquilinum</i> [var. unconfirmed]	

GYMNOSPERMS

Red cedar	<i>Juniperus virginiana</i>	
Sand pine	<i>Pinus clausa</i>	
Slash pine	<i>Pinus elliotii</i>	
Longleaf pine	<i>Pinus palustris</i>	

ANGIOSPERMS

Rosary pea*	<i>Abrus precatorius</i>	
Common ragweed	<i>Ambrosia artemisiifolia</i>	
Broomsedge	<i>Andropogon virginicus</i>	
Marlberry	<i>Ardisia escallionoides</i>	
Giant three-awn	<i>Aristida patula</i>	
Wiregrass	<i>Aristida stricta</i>	
Showy milkwort	<i>Asemeia violacea</i>	
Black mangrove	<i>Avicennia germinans</i>	
Saltwater falsewillow	<i>Baccharis angustifolia</i>	
Groundsel tree; sea myrtle	<i>Baccharis halimifolia</i>	
Herb-of-grace	<i>Bacopa monnieri</i>	
Yellow buttons	<i>Balduina angustifolia</i>	
Saltwort	<i>Batis maritima</i>	
Spanish needles	<i>Bidens alba</i>	
Samphire	<i>Blutaparon vermiculare</i>	
Bushy seaside oxeye	<i>Borrichia frutescens</i>	
Sandyfield hairsedge	<i>Bulbostylis stenophylla</i>	
Saffron plum	<i>Bumelia celastrina</i>	
Gumbo limbo	<i>Bursera simaruba</i>	
Gray nicker	<i>Caesalpinia bonduc</i>	
Beautyberry	<i>Callicarpa americana</i>	
Baybean; seaside jackbean	<i>Canavalia rosea</i>	

* Non-native Species

Cockroach Bay Preserve State Park Plants

Common Name	Scientific Name	Primary Habitat Codes (for imperiled species)
Jamican capertree	<i>Capparis jamaicensis</i>	
Wild papaya	<i>Carica papaya</i>	
Australian-pine*	<i>Casuarina equisetifolia</i>	
Sandspurs	<i>Cenchrus spp.</i>	
Spurred butterfly-pea.....	<i>Centrosema virginianum</i>	
Partridge pea	<i>Chamaecrista fasciculata</i>	
Sensitive pea	<i>Chamaecrista nictitans</i>	
Dixie sandmat	<i>Chamaesyce bombensis</i>	
Lamb's quarters*	<i>Chenopodium album</i>	
Mexican tea*.....	<i>Dysaphania ambrosioides</i>	
Snowberry.....	<i>Chiococca alba</i>	
Maryland goldenaster.....	<i>Chrysopsis mariana</i>	
Tread softly	<i>Cnidioscolus stimulosus</i>	
Seagrape.....	<i>Cocoloba uvifera</i>	
Common dayflower*	<i>Commelina diffusa</i>	
Whitemouth day-flower	<i>Commelina erecta</i>	
Buttonwood	<i>Conocarpus erectus</i>	
Horseweed.....	<i>Conyza canadensis</i>	
Pinebarren frostweed	<i>Crocanthemum corymbosum</i>	
Smooth rattlebox*	<i>Crotalaria pallida var. obovata</i>	
Showy rattlebox*	<i>Crotalaria spectabilis</i>	
Vente conmigo	<i>Croton glandulosus</i> [var. unconfirmed]	
Beach tea	<i>Croton punctatus</i>	
Baldwin's flatsedge	<i>Cyperus croceus</i>	
Swamp flatsedge	<i>Cyperus ligularis</i>	
Fragrant flatsedge	<i>Cyperus odoratus</i>	
Flatleaf flatsedge	<i>Cyperus planifolius</i>	
Manyspike sedge	<i>Cyperus polystachyos</i>	
Fourangle flatsedge	<i>Cyperus tetragonus</i>	
Durban crowfoot grass*	<i>Dactyloctenium aegyptium</i>	
Coinvine.....	<i>Dalbergia ecastophyllum</i>	
Openflower witchgrass	<i>Dichantherium laxiflorum</i>	
Hemlock witchgrass	<i>Dichantherium portoricense</i>	
Crabgrasses	<i>Digitaria spp.</i>	
Poor Joe	<i>Diodia teres</i>	
Saltgrass	<i>Distichlis spicata</i>	
Varnishleaf; Florida hopbush ...	<i>Dodonaea viscosa</i>	
False daisy.....	<i>Eclipta prostrata</i>	
Florida butterfly orchid	<i>Encyclia tampensis</i>	
Red lovegrass	<i>Eragrostis secundiflora subsp. oxylepis</i>	
Purple lovegrass	<i>Eragrostis spectabilis</i>	
Oakleaf fleabane.....	<i>Erigeron quercifolius</i>	
White stopper	<i>Eugenia axillaria</i>	
Spanish stopper	<i>Eugenia foetida</i>	
Saltmarsh fingergrass	<i>Eustachys glauca</i>	

* Non-native Species

Cockroach Bay Preserve State Park Plants

Common Name	Scientific Name	Primary Habitat Codes (for imperiled species)
Pinewoods fingergrass	<i>Eustachys petraea</i>	
Slender flattop goldenrod	<i>Euthamia caroliniana</i>	
Strangler fig.....	<i>Ficus aurea</i>	
Wild banyan tree	<i>Ficus citrifolia</i>	
Carolina fimbry.....	<i>Fimbristylis caroliniana</i>	
Marsh fimbry.....	<i>Fimbristylis spadicea</i>	
Florida yellowtops	<i>Flaveria floridana</i>	
Narrowleaf yellowtops	<i>Flaveria linearis</i>	
Florida swampprivet.....	<i>Forestiera segregata</i>	
Elliott's milkpea	<i>Galactia elliotii</i>	
Coastal bedstraw	<i>Galium hispidulum</i>	
Southern beeblossom.....	<i>Gaura angustifolia</i>	
Dune sunflower	<i>Helianthus debilis</i> [subsp. unconfirmed]	
Scorpionstail	<i>Heliotropium angiospermum</i>	
Seaside heliotrope	<i>Heliotropium curassavicum</i>	
Camphorweed	<i>Heterotheca subaxillaris</i>	
St. John's wort	<i>Hypericum hypericoides</i>	
Cogongrass*	<i>Imperata cylindrica</i>	
Moonvine.....	<i>Ipomoea alba</i>	
Bigleaf sumpweed; marshelder	<i>Iva frutescens</i>	
Needle rush; black rush.....	<i>Juncus roemerianus</i>	
White mangrove	<i>Laguncularia racemosa</i>	
Lantana*	<i>Lantana camara</i>	
Carolina sea lavender.....	<i>Limonium carolinianum</i>	
Sky-blue lupine	<i>Lupinus diffusus</i>	
Christmasberry.....	<i>Lycium carolinianum</i>	
Fetterbush.....	<i>Lyonia lucida</i>	
Melaleuca; punktree*	<i>Melaleuca quinquenervia</i>	
Natalgrass*	<i>Melinis repens</i>	
Creeping cucumber	<i>Melothria pendula</i>	
Climbing hempvine	<i>Mikania scandens</i>	
Shoregrass	<i>Monanthochloe littoralis</i>	
Wax myrtle; southern bayberry	<i>Myrica cerifera</i>	
Myrsine	<i>Myrsine cubana</i>	
Prickly-pear	<i>Opuntia humifusa</i>	
Shell mound prickly-pear	<i>Opuntia stricta</i>	SHM, SA
Guineagrass*	<i>Panicum maximum</i>	
Torpedograss*	<i>Panicum repens</i>	
Switchgrass	<i>Panicum virgatum</i>	
Virginia creeper	<i>Parthenocissus quinquefolia</i>	
Knotgrass	<i>Paspalum distichum</i>	
Thin paspalum.....	<i>Paspalum setaceum</i>	
Seashore Paspalum.....	<i>Paspalum vaginatum</i>	
Corky-stemmed passion-vine ..	<i>Passiflora suberosa</i>	
Red bay.....	<i>Persea borbonia</i>	

* Non-native Species

Cockroach Bay Preserve State Park Plants

Common Name	Scientific Name	Primary Habitat Codes (for imperiled species)
Senegal date palm*	<i>Phoenix reclinata</i>	
Turkey tangle frog-fruit	<i>Phyla nodiflora</i>	
Walter's groundcherry	<i>Physalis walteri</i>	
American pokeweed	<i>Phytolacca americana</i>	
Fiddler's spurge	<i>Poinsettia heterophylla</i>	
Rustweed	<i>Polypremum procumbens</i>	
Pink purslane	<i>Portulaca pilosa</i>	
Sweet everlasting; rabbit tobacco	<i>Pseudognaphalium obtusifolium</i>	
Wild coffee	<i>Psychotria nervosa</i>	
Blackroot	<i>Pterocaulon pycnostachyum</i>	
Sand live oak	<i>Quercus geminata</i>	
Laurel oak	<i>Quercus laurifolia</i>	
Myrtle oak	<i>Quercus myrtifolia</i>	
Live oak	<i>Quercus virginiana</i>	
White indigoberry	<i>Randia aculeata</i>	
Florida reimargrass	<i>Reimarochloa oligostachya</i>	
Red mangrove	<i>Rhizophora mangle</i>	
Winged sumac	<i>Rhus copallinum</i>	
Sandyfield beaksedge	<i>Rhyncospora megalocarpa</i>	
Cabbage palm	<i>Sabal palmetto</i>	
Carolina willow	<i>Salix caroliniana</i>	
Brazilian pepper*	<i>Schinus terebinthifolia</i>	
Tall nutgrass; whip nutrush	<i>Scleria triglomerata</i>	
Sweetbroom	<i>Scoparia dulcis</i>	
Septicweed *	<i>Senna occidentalis</i>	
Saw palmetto	<i>Serenoa repens</i>	
Shoreline seapurslane	<i>Sesuvium portulacastrum</i>	
Saffron plum	<i>Sideroxylon celastrinum</i>	
Earleaf greenbriar	<i>Smilax auriculata</i>	
Saw greenbriar	<i>Smilax bona-nox</i>	
Seaside goldenrod	<i>Solidago sempervirens</i>	
Wand goldenrod	<i>Solidago stricta</i>	
Sow thistle*	<i>Sonchus spp.</i>	
Necklace pod	<i>Sophora tomentosa</i> [var. unconfirmed]	
Saltmarsh cordgrass	<i>Spartina alterniflora</i>	
Sand cordgrass	<i>Spartina bakeri</i>	
Saltmeadow cordgrass	<i>Spartina patens</i>	
Smutgrass*	<i>Sporobolus indicus</i>	
St. Augustine grass*	<i>Stenotaphrum secundatum</i>	
Sea blite	<i>Sueada linearis</i>	
Cardinal airplant	<i>Tillandsia fasciculata</i>	SCF, HH
Ball moss	<i>Tillandsia recurvata</i>	
Spanish moss	<i>Tillandsia usneoides</i>	
Giant wildpine; giant airplant	<i>Tillandsia utriculata</i>	SCF, HH
Poison ivy	<i>Toxicodendron radicans</i>	

* Non-native Species

Cockroach Bay Preserve State Park Plants

Common Name	Scientific Name	Primary Habitat Codes (for imperiled species)
Sea oats (planted)	<i>Uniola paniculata</i>	
Blueberries	<i>Vaccinium</i> spp.	
White crownbeard; frostweed..	<i>Verbesina virginica</i>	
Hairy pod cowpea	<i>Vigna luteola</i>	
Muscadine	<i>Vitis rotundifolia</i>	
Wedelia; creeping oxeye*	<i>Sphagneticola trilobata</i>	
Hog plum.....	<i>Ximenia americana</i>	
Spanish bayonet.....	<i>Yucca aloifolia</i>	
Wild lime	<i>Zanthoxylum fagara</i>	

* Non-native Species

Cockroach Bay Preserve State Park Animals

Common Name	Scientific Name	Primary Habitat Codes (for imperiled species)
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INVERTEBRATES

Fiddler crab..... *Uca* spp.
 Mangrove tree crab..... *Aratis pisonii*

VERTEBRATES

FISH and FISH-RELATED

Lined sole *Achirus Lineatus*
 Diamond killifish *Adinia xenica*
 Spotted eagle ray *Aetobatus narinari*
 Scrawled filefish *Aluterus scriptus*
 Bay anchovy *Anchoa mitchilli*
 Three-eyed flounder..... *Ancylopsetta dilecta*
 Ocellated flounder..... *Ancylopsetta quadrocellata*
 Sheepshead *Archosargus probatocephalus*
 Hardhead catfish *Arius felis*
 Gafftopsail catfish *Bagra marinus*
 Silver perch *Bairdiella chysura*
 Gulf menhaden..... *Brevoortia* spp.
 Orangespotted filefish *Cantherhines pullus*
 Blacktip shark *Carcharinus limbatus*
 Undecimalis snook *Centropomus*
 Sea bass *Centropristis striata*
 Atlantic spadefish *Chaetodiperus faber*
 Florida blenny *Chasmodes saburrae*
 Striped burrfish *Chilomycterus schoepgi*
 Atlantic bumper *Chloroscombrus chrysurus*
 Sand seatrout *Cynoscion arenarius*
 Speckled seatrout *Cynoscion nebulosus*
 Sheepshead minnow *Cyprinodon variegatus*
 Southern stingray *Dasyatis americana*
 Atlantic stingray *Dasyatis sabina*
 Bluntnose stingray *Dasyatis sayi*
 Irish pompano..... *Diapterus olisthostomus*
 Spottail pinfish *Diplodus holbrookii*
 Ladyfish *Elops saurus*
 Spotfin mojarra *Eucinostomus argenteus*
 Silver jenny *Eucinostomus gula*
 Goldspotted killifish..... *Floridichthys carpio*
 Marsh killifish *Fundulus confluentus*
 Gulf killifish..... *Fundulus grandis*
 Longnose killifish *Fundulus similis*

* Non-native Species

Cockroach Bay Preserve State Park Animals

Common Name	Scientific Name	Primary Habitat Codes (for imperiled species)
Mosquitofish.....	<i>Gambusia affinis</i>	
Skilletfish	<i>Gobiesox strumosus</i>	
Naked goby	<i>Gobiosoma bosci</i>	
Code goby	<i>Gobiosoma robustum</i>	
Skilletfish	<i>Gobisox strumosus</i>	
Smooth butterfly ray.....	<i>Gymnura micrura</i>	
Scaled sardine.....	<i>Harengula pensacolatae</i>	
Least killifish.....	<i>Heterandria formosa</i>	
Lined seahorse	<i>Hippocampus erectus</i>	
Dwarf seahorse	<i>Hippocampus zosterae</i>	
Feather blenny	<i>Hypsoblennius hentzi</i>	
Bermuda chud.....	<i>Kyphosus sectatrix</i>	
Scrawled cowfish	<i>Lactophrys quadricornis</i>	
Pinfish.....	<i>Lagodon Rhomboides</i>	
Spot.....	<i>Leiostomus xanthurus</i>	
Rainwater killifish	<i>Lucania parva</i>	
Mangrove snapper	<i>Lutjanus griseus</i>	
Inland silverside	<i>Menidia beryllina</i>	
Tidewater silveride.....	<i>Menidia peninsulae</i>	
Kingfish/whiting	<i>Menticirrhus spp.</i>	
Clown goby	<i>Microgobius gulosus</i>	
Planehead filefish.....	<i>Monocanthus hispidus</i>	
Striped mullet	<i>Mugil cephalus</i>	
White mullet	<i>Mugil curema</i>	
Blue mullet	<i>Mugil trichodon</i>	
Gag	<i>Mycteroperca microlepis</i>	
Speckled worm eel.....	<i>Myrophis punctatus</i>	
Emerald parrotfish	<i>Nicholsina usta</i>	
Leatherjacket	<i>Oligoplites saurus</i>	
Atlantic thread herring	<i>Opisthonema oglinum</i>	
Gulf toadfish	<i>Opsanus beta</i>	
Pigfish.....	<i>Orthopristis chrysoptera</i>	
Gulf flounder.....	<i>Paralichthys albigutta</i>	
Sailfin molly.....	<i>Poecilia latipinna</i>	
Black drum	<i>Pogonias cromis</i>	
Leopard sea robin	<i>Prionotus scitulus</i>	
Bighead sea robin	<i>Prionotus tribulus</i>	
Clearnose skate.....	<i>Raja eglanteria</i>	
Guitarfish	<i>Rhinobatos lentiginosus</i>	
Cownose ray.....	<i>Rhinoptera bonasus</i>	
Spanish sardine	<i>Sardinella anchovia</i>	
Red drum	<i>Sciaenops ocellata</i>	
Lookdown	<i>Selene vomer</i>	
Southern puffer	<i>Sphoeroide nephelus</i>	
Great barracuda	<i>Sphyaena barracuda</i>	

* Non-native Species

Cockroach Bay Preserve State Park Animals

Common Name	Scientific Name	Primary Habitat Codes (for imperiled species)
Atlantic needlefish	<i>Strongylura marina</i>	
Blackcheek tonguefish	<i>Symphurus plagiusa</i>	
Chain pipefish	<i>Syngnathus lousianne</i>	
Gulf pipefish.....	<i>Syngnathus scovelli</i>	
Inshore lizardfish.....	<i>Synodus foetens</i>	
Hogchoker	<i>Trinectes maculatus</i>	
Southern hake	<i>Urophycis floridanus</i>	

AMPHIBIANS

Southern toad

	<i>Anaxyrus terrestris</i>
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REPTILES

American alligator	<i>Alligator mississippiensis</i>	MS, SAM
Green anole	<i>Anolis carolinensis</i>	
Gopher tortoise	<i>Gopherus polyphemus</i>	SA
Saltmarsh snake	<i>Nerodia clarkii</i>	
Brown anole*	<i>Norops sagrei</i>	

BIRDS

Cooper's hawk.....	<i>Accipiter cooperii</i>
Spotted sandpiper.....	<i>Actitis macularius</i>
Red-winged blackbird	<i>Agelaius phoeniceus</i>
Pintail.....	<i>Anas acuta</i>
American wigeon	<i>Anas americana</i>
Northern shoveler	<i>Anas clypeata</i>
Green-winged teal	<i>Anas crecca</i>
Blue-winged teal.....	<i>Anas discors</i>
Mottled duck	<i>Anas fulvigula</i>
Gadwall	<i>Anas strepera</i>
Anhinga	<i>Anhinga anhinga</i>
Great egret	<i>Ardea alba</i>
Great blue heron.....	<i>Ardea herodias</i>
Lesser scaup	<i>Aythya affinis</i>
Redhead	<i>Aythya americana</i>
Ring-necked duck	<i>Aythya collaris</i>
Canvasback.....	<i>Aythya valisineria</i>
American bittern	<i>Botaurus lentiginosus</i>
Canada goose.....	<i>Branta canadensis</i>
Red-tailed hawk.....	<i>Buteo jamaicensis</i>
Red-shouldered hawk.....	<i>Buteo lineatus</i>
Green heron.....	<i>Butorides virescens</i>

* Non-native Species

Cockroach Bay Preserve State Park Animals

Common Name	Scientific Name	Primary Habitat Codes (for imperiled species)
Turkey vulture.....	<i>Cathartes aura</i>	
Wilson’s plover.....	<i>Charadrius wilsonia</i>	BD
Long-tailed duck.....	<i>Clangula hyemalis</i>	
Black vulture.....	<i>Coragyps atratus</i>	
Bobolink.....	<i>Dolichonyx oryzivorous</i>	
Little blue heron.....	<i>Egretta caerulea</i>	MTC
Reddish egret.....	<i>Egretta rufescens</i>	MS, SAM
Snowy egret.....	<i>Egretta thula</i>	MTC
Tricolored egret.....	<i>Egretta tricolor</i>	MTC
White ibis.....	<i>Eudocimus albus</i>	MTC
American coot.....	<i>Fulica americana</i>	
Common loon.....	<i>Gavia immer</i>	
Bald eagle.....	<i>Haliaeetus leucocephalus</i>	
Black-necked stilt.....	<i>Himantopus mexicanus</i>	
Least bittern.....	<i>Ixobrychus exilis</i>	
Laughing gull.....	<i>Leucophaeus atricilla</i>	
Hooded merganser.....	<i>Lophodytes cucullatus</i>	
Red-breasted merganser.....	<i>Mergus serrator</i>	
Wood stork.....	<i>Mycteria americanax</i>	
Yellow-crowned night heron.....	<i>Nyctanassa violacea</i>	
Black-crowned night heron.....	<i>Nycticorax nycticorax</i>	
Ruddy duck.....	<i>Oxyura jamaicensis</i>	
Osprey.....	<i>Pandion haliaetus</i>	
White pelican.....	<i>Pelecanus erythrorhynchos</i>	
Brown pelican.....	<i>Pelecanus occidentalis</i>	MS, OF
Double-crested cormorant.....	<i>Phalacrocorax auritus</i>	
Downy woodpecker.....	<i>Picoides pubescens</i>	
Eastern towhee.....	<i>Pipilo erythrophthalmus</i>	
Roseate spoonbill.....	<i>Platalea ajaja</i>	MS, SAM
Glossy ibis.....	<i>Plegadis falcinellus</i>	
Horned grebe.....	<i>Podiceps auritus</i>	
Pied-billed grebe.....	<i>Podilymbus podiceps</i>	
Black skimmer.....	<i>Rynchops niger</i>	OF
Least tern.....	<i>Sternula antillarum</i>	OF
Forster’s tern.....	<i>Sterna forsteri</i>	
Royal tern.....	<i>Thalasseus maximus</i>	
Greater yellowlegs.....	<i>Tringa melanoleuca</i>	
Willet.....	<i>Tringa semipalmata</i>	

* Non-native Species

Cockroach Bay Preserve State Park Animals

Common Name	Scientific Name	Primary Habitat Codes (for imperiled species)
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MAMMALS

Raccoon.....	<i>Procyon lotor</i>	
Manatee	<i>Trichechus manatus</i>	MTC-aquatic

Primary Habitat Codes

TERRESTRIAL

Beach Dune.....	BD
Coastal Berm.....	CB
Coastal Grassland	CG
Coastal Strand.....	CS
Dry Prairie	DP
Keys Cactus Barren	KCB
Limestone Outcrop	LO
Maritime Hammock	MAH
Mesic Flatwoods.....	MF
Mesic Hammock.....	MEH
Pine Rockland.....	PR
Rockland Hammock.....	RH
Sandhill	SH
Scrub	SC
Scrubby Flatwoods	SCF
Shell Mound	SHM
Sinkhole	SK
Slope Forest	SPF
Upland Glade.....	UG
Upland Hardwood Forest.....	UHF
Upland Mixed Woodland.....	UMW
Upland Pine.....	UP
Wet Flatwoods	WF
Xeric Hammock	XH

PALUSTRINE

Alluvial Forest.....	AF
Basin Marsh	BM
Basin Swamp.....	BS
Baygall	BG
Bottomland Forest.....	BF
Coastal Interdunal Swale	CIS
Depression Marsh	DM
Dome Swamp.....	DS
Floodplain Marsh.....	FM
Floodplain Swamp.....	FS
Glades Marsh.....	GM
Hydric Hammock.....	HH
Keys Tidal Rock Barren	KTRB
Mangrove Swamp	MS
Marl Prairie.....	MP
Salt Marsh.....	SAM
Seepage Slope.....	SSL
Shrub Bog.....	SHB
Slough.....	SLO
Slough Marsh	SLM
Strand Swamp.....	STS

Primary Habitat Codes

Wet Prairie WP

LACUSTRINE

Clastic Upland Lake CULK

Coastal Dune Lake CDLK

Coastal Rockland Lake CRLK

Flatwoods/Prairie FPLK

Marsh Lake MLK

River Floodplain Lake RFLK

Sandhill Upland Lake SULK

Sinkhole Lake SKLK

Swamp Lake SWLK

RIVERINE

Alluvial Stream AST

Blackwater Stream BST

Seepage Stream SST

Spring-run Stream SRST

SUBTERRANEAN

Aquatic Cave ACV

Terrestrial Cave TCV

ESTUARINE

Algal Bed EAB

Composite Substrate ECPS

Consolidated Substrate ECNS

Coral Reef ECR

Mollusk Reef EMR

Octocoral Bed EOB

Seagrass Bed ESGB

Sponge Bed ESPB

Unconsolidated Substrate EUS

Worm Reef EWR

Primary Habitat Codes

MARINE

Algal Bed	MAB
Composite Substrate	MCPS
Consolidated Substrate	MCNS
Coral Reef	MCR
Mollusk Reef	MMR
Octocoral Bed	MOB
Seagrass Bed	MSGB
Sponge Bed	MSPB
Unconsolidated Substrate	MUS
Worm Reef	MWR

ALTERED LANDCOVER TYPES

Abandoned field	ABF
Abandoned pasture	ABP
Agriculture	AG
Canal/ditch	CD
Clearcut pine plantation	CPP
Clearing	CL
Developed	DV
Impoundment/artificial pond	IAP
Invasive exotic monoculture	IEM
Pasture - improved	PI
Pasture - semi-improved	PSI
Pine plantation	PP
Road	RD
Spoil area	SA
Successional hardwood forest	SHF
Utility corridor	UC

MISCELLANEOUS

Many Types of Communities	MTC
Overflying	OF

Primary Habitat Codes

Addendum 6—Imperiled Species Ranking Definitions

Imperiled Species Ranking Definitions

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 Fish and Wildlife Conservation Commission (animals), and the Florida Department of Agriculture and Consumer Services (plants), respectively.

FNAL 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 fabricated 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 or 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)

Imperiled Species Ranking Definitions

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

LEGAL STATUS

FEDERAL

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

- LE Listed as Endangered Species in the List of Endangered and Threatened Wildlife and Plants under the provisions of the Endangered Species Act. Defined as any species that is in danger of extinction throughout all or a significant portion of its range.
- PE Proposed for addition to the List of Endangered and Threatened Wildlife and Plants as Endangered Species.
- LT Listed as Threatened Species. Defined as any species that is likely to become an endangered species within the near future throughout all or a significant portion of its range.

Imperiled Species Ranking Definitions

- 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.
- EXPE, XE..... Experimental essential population. A species listed as experimental and essential.
- EXPN, XN.... Experimental non-essential population. A species listed as experimental and non-essential. Experimental, nonessential populations of endangered species are treated as threatened species on public land, for consultation purposes.

STATE

ANIMALS .. (Listed by the Florida Fish and Wildlife Conservation Commission - FWC)

- FE Federally-designated Endangered
- FT Federally-designated Threatened
- FXN..... Federally-designated Threatened Nonessential Experimental Population
- FT(S/A) Federally-designated Threatened species due to similarity of appearance
- ST..... Listed as Threatened Species by the FWC. 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 therefore is destined or very likely to become an endangered species within the near future.
- SSC..... Listed as Species of Special Concern by the FWC. 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 that, in the near future, may result in its becoming a threatened species.

Imperiled Species Ranking Definitions

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.

Addendum 7—Cultural Information

Management Procedures for Archaeological and Historical Sites and Properties on State-Owned or Controlled Properties (revised March 2013)

These procedures apply to state agencies, local governments, and non-profits that manage state-owned properties.

A. General Discussion

Historic resources are both archaeological sites and historic structures. Per Chapter 267, Florida Statutes, *'Historic property' or 'historic resource' means any prehistoric district, site, building, object, or other real or personal property of historical, architectural, or archaeological value, and folklife resources. These properties or resources may include, but are not limited to, monuments, memorials, Indian habitations, ceremonial sites, abandoned settlements, sunken or abandoned ships, engineering works, treasure trove, artifacts, or other objects with intrinsic historical or archaeological value, or any part thereof, relating to the history, government, and culture of the state.'*

B. Agency Responsibilities

Per State Policy relative to historic properties, state agencies of the executive branch must allow the Division of Historical Resources (Division) the opportunity to comment on any undertakings, whether these undertakings directly involve the state agency, i.e., land management responsibilities, or the state agency has indirect jurisdiction, i.e. permitting authority, grants, etc. No state funds should be expended on the undertaking until the Division has the opportunity to review and comment on the project, permit, grant, etc.

State agencies shall preserve the historic resources which are owned or controlled by the agency.

Regarding proposed demolition or substantial alterations of historic properties, consultation with the Division must occur, and alternatives to demolition must be considered.

State agencies must consult with Division to establish a program to location, inventory and evaluate all historic properties under ownership or controlled by the agency.

C. Statutory Authority

Statutory Authority and more in depth information can be found at:
<http://www.flheritage.com/preservation/compliance/guidelines.cfm>

D. Management Implementation

Even though the Division sits on the Acquisition and Restoration Council and approves land management plans, these plans are conceptual. Specific information regarding individual projects must be submitted to the Division for review and recommendations.

Management Procedures for Archaeological and Historical Sites and Properties on State-Owned or Controlled Properties (revised March 2013)

Managers of state lands must coordinate any land clearing or ground disturbing activities with the Division to allow for review and comment on the proposed project. Recommendations may include, but are not limited to: approval of the project as submitted, cultural resource assessment survey by a qualified professional archaeologist, modifications to the proposed project to avoid or mitigate potential adverse effects.

Projects such as additions, exterior alteration, or related new construction regarding historic structures must also be submitted to the Division of Historical Resources for review and comment by the Division's architects. Projects involving structures fifty years of age or older, must be submitted to this agency for a significance determination. In rare cases, structures under fifty years of age may be deemed historically significant. These must be evaluated on a case by case basis.

Adverse impacts to significant sites, either archaeological sites or historic buildings, must be avoided. Furthermore, managers of state property should make preparations for locating and evaluating historic resources, both archaeological sites and historic structures.

E. Minimum Review Documentation Requirements

In order to have a proposed project reviewed by the Division, certain information must be submitted for comments and recommendations. The minimum review documentation requirements can be found at:

http://www.flheritage.com/preservation/compliance/docs/minimum_review_documentation_requirements.pdf .

* * *

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

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

Phone: (850) 245-6425

Toll Free: (800) 847-7278

Fax: (850) 245-6435

Eligibility Criteria for National Register of Historic Places

The criteria to be used for evaluating eligibility for listing in the National Register of Historic Places are as follows:

- 1) Districts, sites, buildings, structures, and objects may be considered to have significance in American history, architecture, archaeology, engineering, and/or culture if they possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:
 - a) are associated with events that have made a significant contribution to the broad patterns of our history; and/or
 - b) are associated with the lives of persons significant in our past; and/or
 - c) embody the distinctive characteristics of type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; and/or
 - d) have yielded, or may be likely to yield, information important in prehistory or history.

- 2) Ordinarily cemeteries, birthplaces, or graves of historical figures; properties owned by religious institutions or used for religious purposes; structures that have been moved from their original locations; reconstructed historic buildings; properties primarily commemorative in nature; and properties that have achieved significance within the past 50 years shall not be considered eligible for the *National Register*. However, such properties will qualify if they are integral parts of districts that do meet the criteria or if they fall within the following categories:
 - a) a religious property deriving its primary significance from architectural or artistic distinction or historical importance; or
 - b) a building or structure removed from its original location but which is significant primarily for architectural value, or which is the surviving structure most importantly associated with a historic person or event; or
 - c) a birthplace or grave of an historical figure of outstanding importance if there is no appropriate site or building directly associated with his productive life; or
 - d) a cemetery which derives its primary significance from graves of persons of transcendent importance, from age, distinctive design features, or association with historic events; or

Eligibility Criteria for National Register of Historic Places

- e) a reconstructed building, when it is accurately executed in a suitable environment and presented in a dignified manner as part of a restoration master plan, and no other building or structure with the same association has survived; or a property primarily commemorative in intent, if design, age, tradition, or symbolic value has invested it with its own exceptional significance; or
- f) a property achieving significance within the past 50 years, if it is of exceptional importance.

Preservation Treatments as Defined by Secretary of Interior's Standards and Guidelines

Restoration is defined as the act or process of accurately depicting the form, features, and character of a property as it appeared at a particular period of time by means of the removal of features from other periods in its history and reconstruction of missing features from the restoration period. The limited and sensitive upgrading of mechanical, electrical and plumbing systems and other code-required work to make properties functional is appropriate within a restoration project.

Rehabilitation is defined as the act or process of making possible a compatible use for a property through repair, alterations and additions while preserving those portions or features that convey its historical, cultural or architectural values.

Stabilization is defined as the act or process of applying measures designed to reestablish a weather resistant enclosure and the structural stability of an unsafe or deteriorated property while maintaining the essential form as it exists at present.

Preservation is defined as the act or process of applying measures necessary to sustain the existing form, integrity and materials of an historic property. Work, including preliminary measures to protect and stabilize the property, generally focuses upon the ongoing maintenance and repair of historic materials and features rather than extensive replacement and new construction. New exterior additions are not within the scope of this treatment; however, the limited and sensitive upgrading of mechanical, electrical and plumbing systems and other code-required work to make properties functional is appropriate within a preservation project.

Preservation Treatments as Defined by Secretary of Interior's Standards and Guidelines
