



**FLORIDA DEPARTMENT OF
ENVIRONMENTAL PROTECTION**

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April 21, 2014

Ms. Jennifer Carver
Planning Manager
Office of Park Planning, Division of Recreation and Parks
Department of Environmental Protection
3900 Commonwealth Boulevard, MS 525
Tallahassee, FL 32399-3000

Re: St. Lucie Inlet Preserve State Park – Lease # 2387

Dear Ms. Carver:

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 St. Lucie Inlet Preserve State Park management plan. The next management plan update is due April 21, 2024.

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 black ink, appearing to read "MS Gengenbach". The signature is fluid and cursive.

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

St. Lucie Inlet Preserve State Park

**APPROVED
Unit Management Plan**

**STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL
PROTECTION**

**Division of Recreation and Parks
April 21, 2014**



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INTRODUCTION

St. Lucie Inlet Preserve State Park is located in Martin County (see Vicinity Map). Access to the park is by private boat or walking three miles north from Hobe Sound National Wildlife Refuge, which is located on the northern end of Jupiter Island (see Reference Map). The Vicinity Map also reflects significant land and water resources existing near the park.

St. Lucie Inlet Preserve State Park was initially acquired on April 9, 1965 through a dedication agreement with the Florida Inland Navigation District (FIND). Currently, the park comprises 4,835 acres. The Board of Trustees of the Internal Improvement Trust Fund (Trustees) hold fee simple title to the park and on September 15, 1969, the Trustees leased (Lease Number 2387) the property to the DRP under a 99-year lease. The current lease will expire on September 14, 2068.

St. Lucie Inlet Preserve State Park is designated single-use to provide public outdoor recreation and other park-related uses. There are no legislative or executive directives that constrain the use of this property (see Addendum 1).

Purpose and Significance of the Park

The purpose of St. Lucie Inlet Preserve State Park is to provide waterside natural areas for resource-based outdoor recreation and conservation. The park protects the exceptional resources of Florida's original barrier island and reef natural communities for the perpetual enjoyment of Florida residents and visitors.

Park Significance

- The park delineates the northern range of the near shore Florida reef tract and protects valuable habitat for many Caribbean coral and tropical fish species.
- The park is located in the transition zone between colder temperate and warmer sub-tropical biological provinces and, with the adjacent Seabrook Preserve State Park, protects a unique cross-section of natural communities extending from the offshore reef to uplands of scrub.
- The park protects intact marine worm reef habitat, a globally imperiled natural community.
- The park protects critical nesting habitat for three species of sea turtles: loggerhead (*Caretta caretta*), green (*Chelonia mydas*), and leatherback (*Dermochelys coriacea*), and serves as a state index and survey beach for nesting sea turtles.
- The remote and pristine beaches provide residents and visitors high-quality outdoor recreation opportunities within a highly populated area of South Florida.

St. Lucie Inlet 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.

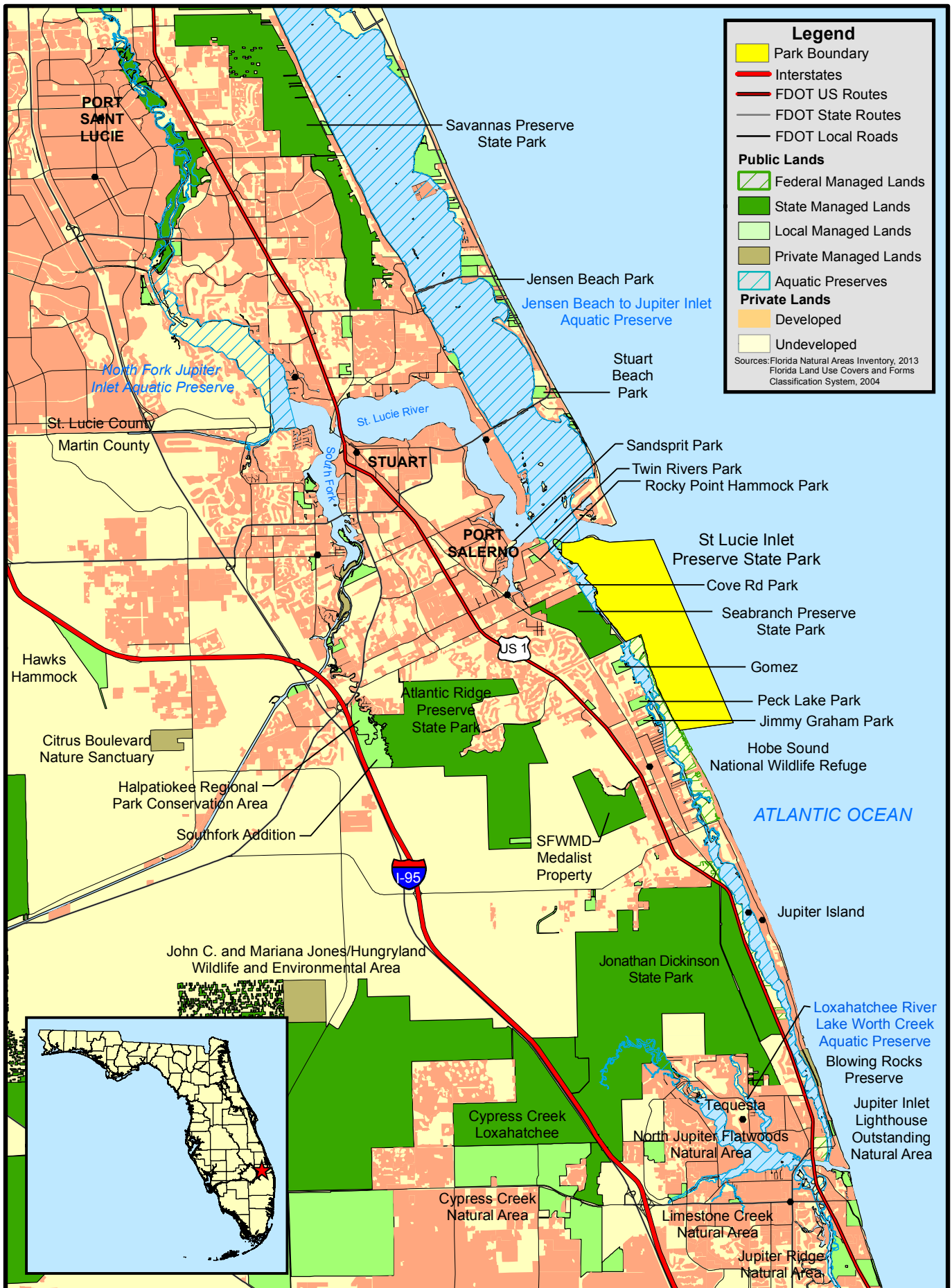
Purpose and Scope of the Plan

This plan serves as the basic statement of policy and direction for the management of St. Lucie Inlet 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. With approval, this management plan will replace the 2002 approved plan.

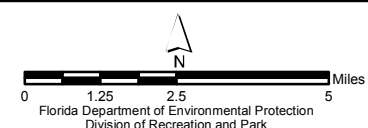
The plan consists of three interrelated components: the Resource Management Component, the Land Use Component and the Implementation Component. The Resource Management Component provides a detailed inventory and assessment of the natural and cultural resources of the park. Resource management needs and issues 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 resources 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 identify use areas and propose the types of facilities and programs as well as the volume of public use to be provided.

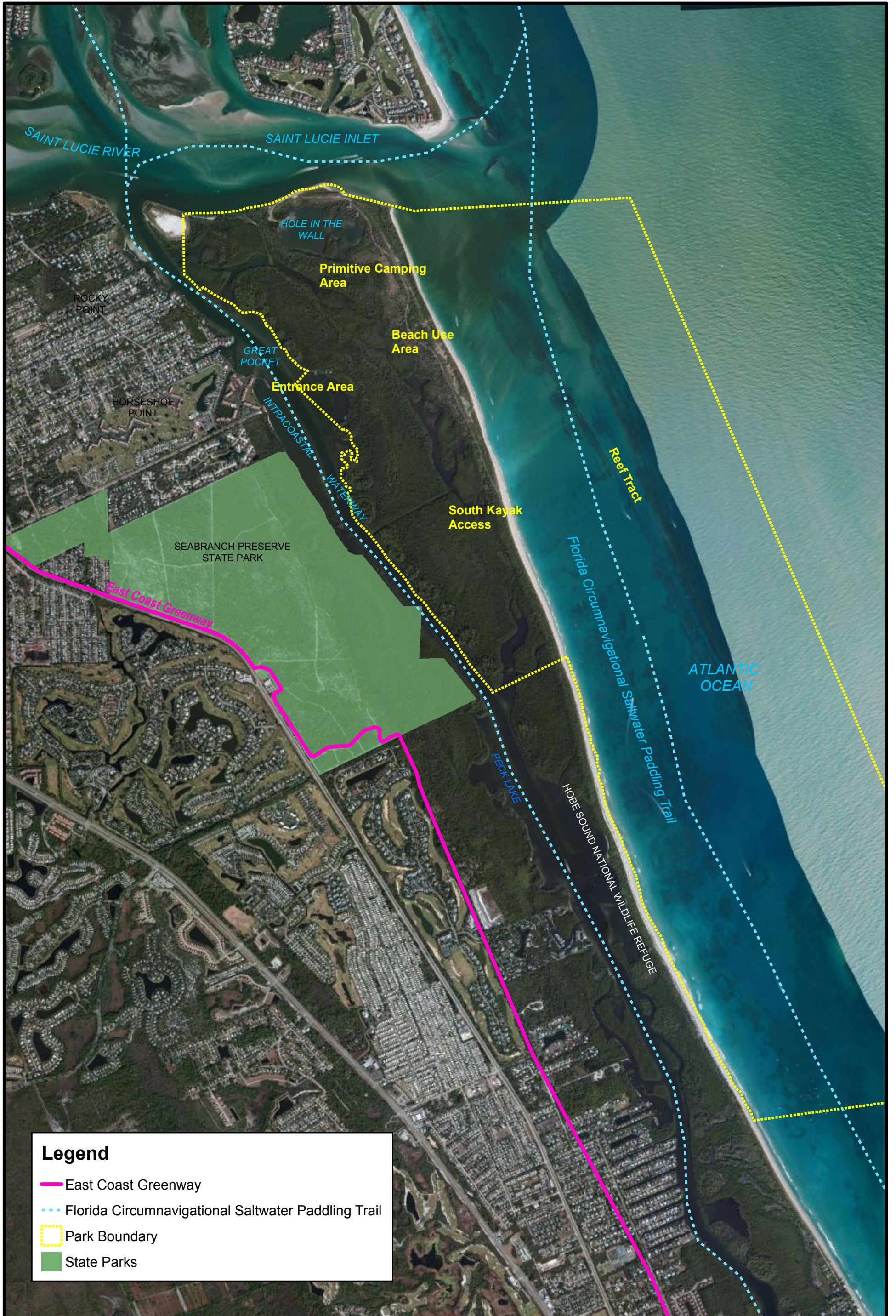
The Implementation Component consolidates the measurable objectives and actions for each of the park's management goals. An implementation schedule and cost estimates are included for each objective and action. Included in this table are (1) measures that will be used to evaluate the DRP's implementation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



ST. LUCIE INLET PRESERVE STATE PARK



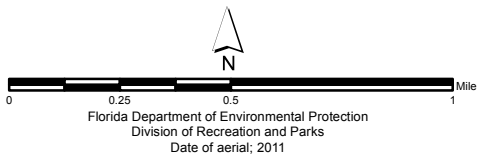
VICINITY MAP



Legend

- East Coast Greenway
- - - Florida Circumnavigational Saltwater Paddling Trail
- Park Boundary
- State Parks

ST. LUCIE INLET PRESERVE
STATE PARK



REFERENCE MAP

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.

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 natural and cultural resources, management needs, aesthetic values, visitation and visitor experiences. For this park, it was determined that no secondary purposes could be accommodated in a manner that would not interfere with the primary purpose of resource-based outdoor recreation and conservation. Uses such as water resource development projects, water supply projects, stormwater management projects, linear facilities and sustainable agriculture and forestry (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.

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 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 (DRP) is charged with the

responsibility of developing and operating Florida's recreation and parks system. These are administered in accordance with the following policy:

It shall be the policy of the Division of Recreation and Parks to promote the state park system for the use, enjoyment, and benefit of the people of Florida and visitors; to acquire typical portions of the original domain of the state which will be accessible to all of the people, and of such character as to emblemize the state's natural values; conserve these natural values for all time; administer the development, use and maintenance of these lands and render such public service in so doing, in such a manner as to enable the people of Florida and visitors to enjoy these values without depleting them; to contribute materially to the development of a strong mental, moral, and physical fiber in the people; to provide for perpetual preservation of historic sites and memorials of statewide significance and interpretation of their history to the people; to contribute to the tourist appeal of Florida.

The park boundary includes almost 4,000 acres of submerged resources that are managed by the DRP in accordance with the policy stated above. A number of specific management activities are conducted within this area of the park, including resource inventories, water quality monitoring, clean up of marine debris, and eradication of exotic species. Further detail regarding management of submerged resources is provided in the Resource Management Component.

Many operating procedures are standardized system-wide and are set by internal direction. These procedures are outlined in the OM that covers such areas as personnel management, uniforms and personal appearance, training, signs, communications, fiscal procedures, interpretation, concessions, public use regulations, resource management, law enforcement, protection, safety and maintenance.

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 Department of Agriculture and Consumer Services (FDACS), Florida Forest Service (FFS), assists DRP staff in the development of wildfire emergency plans and provides the authorization required for prescribed burning. 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 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) (formerly Office of Coastal and Aquatic Managed Areas (CAMA)) aids staff in aquatic preserves management programs. The DEP, Bureau of Beaches and Coastal Systems aids staff in planning and construction activities seaward of the Coastal Construction Control Line (CCCL). In addition, the Bureau of Beaches and Coastal Systems aid the staff in the development of erosion control projects.

Public Participation

The DRP provided an opportunity for public input by conducting a public workshop and an Advisory Group meeting to present the draft management plan to the public. These meetings were held on December 10 and 11, 2013, respectively. Meeting notices were published in the Florida Administrative Register, December 3, 2013, Vol. 39/233, 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

St. Lucie Inlet 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 not a 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 adjacent to the Jensen Beach to Jupiter Inlet Aquatic Preserve, an aquatic preserve as designated under the Florida Aquatic Preserve Act of 1975 (Section 258.35, Florida Statutes). Several areas of St. Lucie Inlet Preserve State Park are designated by the U.S. Fish and Wildlife Service as Critical Habitat for piping plover and West Indian manatee.

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. The management measures expressed in this plan are consistent with the DEP's overall mission in ecosystem 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 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. St. Lucie Inlet Preserve State Park Management Zones		
Management Zone	Acreage	Managed with Prescribed Fire
SL-01	487.85	No
SL-02	381.72	No
SL-03	334.85	No
SL-04	3,644.37	No

Resource Description and Assessment

Natural Resources

Topography

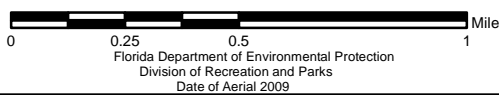
St. Lucie Inlet Preserve State Park lies within the Atlantic Coastal Ridge, a subzone of the Atlantic Coastal Lowlands that is a physiographic formation extending the entire length of the Florida peninsula from the Georgia/Florida line to the Homestead area (Puri and Vernon 1964). The upland acreage of the park is located on a barrier island of low topographic relief with elevations ranging from sea level along the shoreline to ten feet along the crest of the dune ridge just south of the inlet. The highest elevation in the park is a mound of dredge spoil approximately 35 feet high located on the northern shore inside the inlet.

Barrier islands are dynamic systems that are constantly changing. They are narrow, often linear deposits of sand that parallel the Florida coastline. Shaped by past geological changes, wind, waves and tidal action, barrier islands often occur in long chains, separated from the mainland by estuaries and saltwater wetlands. Here the park is separated from the mainland by the southern portion of the Indian River Lagoon. Due to the nature of barrier islands, the topography of the park will continue to be influenced and altered by natural processes such as hurricanes, wind and ocean waves and currents. The dynamic nature of the barrier island is the result of interactions between plant growth habits and the physical processes such as wind-driven sand movement and salt spray deposition and wave-driven erosion, over wash, and accretion. Dunes are established and maintained as dune vegetation increases in surface area, which in turn causes wind to slow and sand grains to be deposited onto the land surface (Bagnold 1941). Thus, barrier islands are formed by the action of wind and waves on the unconsolidated sand and shell.

The upper beach and foredune areas are in a constant state of flux as sand is blown in or out of the area and the actions of waves rearranges their makeup. The transitional zone begins beyond the foredune and continues until a recognizable community such as a maritime hammock is reached. Transition zone vegetation is exposed to the same physical processes as the foredune in a lesser degree; thus, the vegetation is patchy and the plants are constantly re-colonizing this area. The area beyond the transitional zone is more stable because the foredune and transitional zones provide a buffer from wind and wave action, except in the most severe storms.



ST. LUCIE INLET PRESERVE STATE PARK



Florida Department of Environmental Protection
Division of Recreation and Parks
Date of Aerial 2009

MANAGEMENT ZONES MAP

The general trend of the topography is one that has been affected by general sea level rise, dredging of the inlet and the Intracoastal Waterway (ICW), and the construction of breakwaters and jetties. The latter, especially the north jetty, has caused shoreline accretion north of the inlet and erosion south of the inlet. Eroded beaches extend south of the inlet for 16 miles. The average retreat of the shoreline between 1892 and 1964 was 6.0 feet/year with the greatest retreat immediately south of the inlet. Beach recession for the undeveloped northern part of Jupiter Island was 1,502 feet for this period (Pilkey et al. 1984). In addition, research has shown that the average rate of sea level rise in the last 50 years (0.04-0.08 inches/year; Evans and Hine 1983) is greater than the average over the past several thousand years (0.02 inches/year; Scholl et al. 1969).

Geology

Dominant geographic features along much of Florida's coastline are its many barrier islands. Shaped by past geological changes, wind, waves and tidal action, barrier islands often occur in long chains, separated from the mainland by estuaries and salt-water wetlands. These islands, shaped by sediment deposition primarily from longshore drift of sand, are ridges of sand that extend above sea level. Barrier islands in Florida are typically anchored by the underlying Pleistocene Anastasia Formation, and locally they develop high foredunes that prevent over washing and landward migration (Hines 1997). Thus, the upland portion of the preserve is in effect a perched barrier island with quartz sands draped over the Anastasia Formation. In addition, the Bahamas Bank off the southeast coast of Florida buffers wave action from the Atlantic Ocean.

The formation of this barrier island (Jupiter Island) took place as part of the series of events that shaped Florida. The lithology of the unit varies from coarse rock composed of whole coquina shells and quartz sand, to sandstone composed of carbonate and quartz sand particles. The Florida peninsula began with sediment deposition in northern Florida from rivers draining from the Appalachian Mountains. In southern Florida, sediments from marine deposits, shell fragment and microscopic animals accounted for the substrate. During the Pleistocene epoch, four great Ice Ages brought peninsular exposure with the glacial advances and flooding with its retreat. Each cycle was marked by different thickness and composition of sediments laid down during inundation and consolidation during regression. During several events in the Pleistocene, the consolidated coquinoid limestone of the Anastasia Formation were being formed and extend to approximately 140 feet along the eastern boundary of the Martin County.

With the beginning of the Wisconsin Ice Age, the final Ice Age of the Pleistocene epoch, the ice increased and the sea level steadily fell until about 20,000 years ago. Then, the sea reached a low point close to 300 feet below the present level. At that time, the climate was windy, cool and dry which created excellent conditions for forming large dunes along the coast. From about 6,000 to 15,000 years ago, this barrier island became more than just a large sandbar. The sea level rose relatively rapid at a rate of more than three feet per century. Near the end of this period,

modern vegetation and climate became better established, and the rise in the sea level slowed down.

In the future, rising sea levels and the continuous movement of beach sand will perpetually change the shoreline. In addition, severe northeast storms and hurricanes will also inflict dramatic landform changes to the barrier island. Geologically, the island is a continuously changing landform, responding to the effects of both anthropogenic events and natural forces.

Soils

There are six soil types (see Soils Map) found in the park as described in the soil survey of Martin County (McCollum and Cruz 1981). These soils include Palm Beach Sand-Beaches Complex, Canaveral Sand, Bessie Muck, Wulfert and Durbin Muck, Udorthents and Kesson Sand. A detailed description of these soil types is contained in Addendum 4.

The natural soils of the park are relatively recent due to the young age of the barrier island. They are primarily composed of sand, quartz, and shell fragments. Several areas in the park are covered with spoil material from dredging projects in the ICW and inlet. Spoil mounds consist of thick deposits of mixed sand and shell fragments of varying texture and colors, depending on the origin of the dredged material. The soil associations of the park and barrier island are classified to be nearly level to gently sloping, poorly to excessively drained, with a mixture of carbonate sand and shell fragments.

Bessie Muck is the predominant soil type found in the park consisting of 348.6 acres or 13.4 percent of the total soil composition for the park. This deep (40 inches or more), poorly drained, highly permeable soil is typically found in the mangrove swamps and marshes along the ICW and is of organic origin. They formed in marine organic material over clay sediments. Natural vegetation usually consists of red, black and white mangroves, sea purslane, and bushy seaside oxeye.

Palm Beach Sands-Beaches Complex was formerly mapped as two distinct soil series: Palm Beach sands and Beaches. Both are geographically associated with Canaveral soils. Beaches comprise a very narrow strip along the shoreline and are flooded by wave action. Palm Beach sands are found in the upper beaches and dunes of the park where drainage is excessive and the available water capacity is very low. Typical plants include pioneering species such as sea oats, sand spurs and railroad vines. The Palm Beach Sands-Beaches Complex is comprised of 180.3 acres or 6.9 percent of the total soil composition for the park.

Canaveral soils are similar to Palm Beach series, but are found at lower elevations and have a water table within a depth of 40 inches most of the time. Because the fresh water lens is so close to the surface, this soil type is able to support a more diverse plant community and is usually found in association with the maritime hammock. Typical native vegetation includes cabbage palm, magnolias and bay

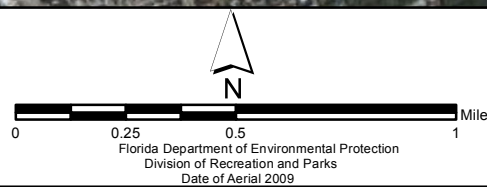


Legend

- 8 - Palm Beach-Beaches complex, 0 to 8 percent slopes
- 28 - Canaveral sand, 0 to 5 percent slopes
- 30 - Bessie muck
- 50 - Wulfert and Durbin mucks, tidal
- 53 - Udorthents, 0 to 35 percent slopes
- 67 - Kesson sand, tidal
- 99 - Water

Image courtesy of USGS State of Michigan

ST. LUCIE INLET PRESERVE STATE PARK



SOILS MAP

trees. Canaveral Sand comprises 169.9 acres or 6.5 percent of the total soil composition for the park.

Kesson sands were formerly mapped as tidal swamp. This soil is found in many of the tidal creeks of the park and is subject to tidal flooding. Subsequently the soil is often exposed during periods of low tide. The rapid permeable soils formed in thick deposits of sand and shell fragments. The characteristic level to low slope makes this a poorly drained soil where runoff is slow. Native vegetation supported by this soil type include red and black mangroves, oxeye daisy and saltwort. Kesson Sands comprise 148.9 acres or 5.7 percent of the total soil composition for the park

The Wulfert and Durbin Muck share similar characteristics of Bessie Muck and are found in similar habitat. This very poorly drained, rapidly permeable soil was formerly mapped as tidal marsh. The level to nearly level slope results in daily flooding by normal high tides. The muck was formed in a thick deposit hydrophytic plant remains and sandy marine sediments containing shell fragments. Wulfert and Durbin Muck comprises 48.2 acres or 1.9 percent of the total soil composition for the park. This is the smallest amount for all types of soils found in the park.

The Udorthents represent material dredged from the ICW and consists of thick deposits of sand and shell materials. This nearly level to sloping soil is excessively drained and supports mostly exotic vegetation in the upland portion and red and black mangroves along the shore. The Udorthent series is comprised of 103.2 acres or 4.0 percent of the total soil composition for the park.

Conservation of soil resources is achieved by following best management practices to prevent soil erosion. Although a certain level of soil erosion is naturally associated with barrier islands, anthropogenic influences can seriously exacerbate the situation. On the ocean side, the jetties at the inlet disrupt the southerly flow of the longshore current and prevent sediments from being deposited on the beach south of the inlet. Because of the disruption of this sand supply to the beaches south of St. Lucie Inlet, periodic beach nourishment and mechanical sand bypassing is required to replenish the beach. The DRP utilizes various methods to minimize visitor impacts to the natural resources. For example, the boardwalk from the boat dock on the ICW to the ocean was constructed to minimize impacts to mangrove wetlands and maritime hammocks. In areas of excessive soil erosion where off-trail usage has occurred, rails or barriers are constructed to prevent visitors from leaving designated trails. In addition, native vegetation has been replanted to stabilize soils in eroded areas and encourage dune formation.

Minerals

There are no known mineral deposits of commercial value located within the St. Lucie Inlet Preserve State Park.

Hydrology

The hydrological resources of St. Lucie Inlet Preserve State Park include the near shore waters of the Atlantic Ocean (four square miles), portions of the St. Lucie Estuary where the ICW is located, mangrove wetlands and two aquifers. All park waters are classified as Outstanding Florida Waters in accordance with Chapter 27, Section 403.061, Florida Statutes, and Rule 62-302.700, Florida Administrative Code. This designation is intended to protect and maintain existing acceptable water quality standards of the park's hydrological systems and prevent the further degradation of water quality of that system. However, since the park's largest hydrological features -- the Atlantic Ocean and the ICW extend far beyond the boundaries of the park -- management of these systems is complex.

St. Lucie Inlet Preserve State Park is located in the southern portion of the Indian River Lagoon (IRL) system. The IRL is part of the longest barrier island complex in the United States, occupying more than 30% of Florida's east coast. The high biological diversity of the IRL is due in part to a complex association of terrestrial, wetland and estuarine ecosystems, but more importantly it is due to its unique geographical location, which straddles the transition zone between colder temperate, and warmer sub-tropical biological provinces. Here, as perhaps nowhere else in the continental United States, tropical and temperate species coexist and thrive.

This portion of the Indian River Lagoon is also referred to as the St. Lucie Estuary, a relatively large brackish water body that is a primary tributary to the Southern Indian River Lagoon. Most of the watershed drains into the North and South Forks of the St. Lucie River that converge and flow to the middle estuary extending east for approximately five miles to the Indian River Lagoon and finally to the Atlantic Ocean via the St. Lucie Inlet.

The St. Lucie Estuary and its watershed have been highly altered to accommodate human development. Prior to the construction of the St. Lucie Inlet, the St. Lucie River was exposed to ocean waters only when large storms caused ephemeral passes in the protective barrier islands. In 1892, however, the St. Lucie Inlet was dug creating the current brackish water system. In the early 1900s, after Congress passed the Swamp and Overflowed Lands Grant Act, drainage districts were formed and by the late 1920s much of what was once wetlands in South Florida, was drained by numerous canals designed to reclaim land. The Everglades Drainage District was formed in 1906 and immediately began to implement its program to drain the Everglades. A network of canals was dug to drain the wetlands, promote development and provide irrigation to farmlands.

As part of a South Florida flood control project, the South Fork of the estuary was connected to Lake Okeechobee to control water levels in 1924. Periodic high-volume flood control discharges from the lake have the potential to shift the entire estuary to fresh water, from days to months at a time, causing considerable negative impacts to the system. Between 1935 and 1960, an extensive drainage system was constructed in the watershed that included dredging and channelizing

the North Fork Narrows and creating canals C-23 and C-24 to drain Lake Okeechobee and the surrounding uplands. Major effects of this drainage system include reductions in groundwater levels and evaporation as well as rapid watershed drainage manifested by changes in the quantity, quality, timing and distribution of inflows to the estuary. Discharges from the lake, altered watershed hydrology and water quality have degraded estuarine resources such as submerged aquatic vegetation, oyster communities and fisheries.

South Florida's wetlands have also experienced secondary impacts from human development pressures. The alteration of Southeast Florida's hydrology by the elaborate canal systems designed to protect residents from flooding has impacted wetlands by decreasing the hydrology necessary for maintaining wetland plant species. Pollutants from storm runoff combined with the use of fertilizers and pesticides have increased the nutrients introduced into surface waters and degraded the water quality that supports wetland plant species. Another impact has been the introduction of non-native plant species also known as exotics. Two well-known exotics, the Melaleuca (*Melaleuca quinquenervia*) and Brazilian pepper (*Schinus terebinthifolius*) trees have overgrown wetland areas. Their rapid growth chokes out native species and decreases the habitat value of the wetlands.

An increase in population and urban growth along the coast has expanded westward. With this increase, additional demands are being placed on the water resources and their proper management and use. Most of the municipal and industrial supplies of water come from the Floridan Aquifer, not surface water.

In Martin County, the threat of saltwater intrusion into the aquifer and well fields has been a historical problem exacerbated by urbanization, development, a decrease in the recharge areas, canals, drainage and consumptive water use. The saltwater is wedge-shaped, being thickest at the coast and thinning to an edge further inland. Because the salt water is slightly heavier than fresh water, it will move inland until balanced by fresh-water pressure. During dry periods, the saltwater tends to encroach further inland, but during wet times, fresh water tends to push seaward and displace and override the encroaching saltwater.

There are two major aquifers in Martin County: 1) the shallow (non-artesian) surficial aquifer that is approximately 150 to 200 feet below the land surface, and 2) the Floridan (artesian) aquifer that is approximately 600 to 1500 feet below the land surface. The two aquifers are separated by a confining bed of sand and clay of low permeability known as the Hawthorne Formation (Lichtler 1960). Because of the depth of the Floridan aquifer, the surficial aquifer is the primary source of freshwater for most of the municipalities in Martin County. It is composed of the Pamlico Sand, of Pleistocene age, Fort Thompson Formation, Anastasia Formation, Caloosahatchee Marl, of Plio-Pleistocene age, and possibly the Tamiami Formation, of Pliocene age (USGS 1978). Usually the largest yields of water are from the Anastasia Formation and the Caloosahatchee Marl, which are composed of thin, permeable beds of shells, limestone and sand.

One of the most productive aquifers in the world, the Floridan aquifer system underlies a total area of about 100,000 square miles in southern Alabama, southeastern Georgia, southern South Carolina and all of Florida (Berndt et al. 1998). It is composed of a thick sequence of carbonate rocks (limestone and dolomite) that range in age from late Paleocene to early Miocene. The aquifer system generally consists of the following geological units, in order from oldest to youngest: Oldsmar Formation (lower Eocene age), Avon Park Formation (middle Eocene), Ocala Limestone (upper Eocene), Suwannee Limestone (Oligocene), Hawthorne Group (Miocene) and St. Marks Formation in northern Florida (Berndt et al. 1998). Recharge to the Floridan aquifer is centered in Polk and Pasco Counties in Central Florida. The Floridan aquifer is the main water source for large municipalities throughout most of the state and is intensely used for industrial and agricultural purposes. The preserve does not utilize the Floridan aquifer; however, neighboring developments on Hutchinson Island obtain their water from this source, which is then treated by reverse osmosis.

Within the park, the surficial aquifer is present near the land surface and functions as a freshwater lens. Since freshwater is less dense than salt water, it is suspended on top of the salt water forming a lens that plants are able to utilize. The survival of barrier island vegetation other than halophytic species is entirely dependent on precipitation and the recharging of the freshwater lens. Most of the recharge to the surficial aquifer is supplied by rainfall. Rainfall is abundant in the southeastern portion of the state during the wet season (May to September). In Martin County, the average annual rainfall is approximately 57 inches (McCullum and Cruz 1981). During this period, precipitation occurs almost daily due to convective heat and differences between the land and sea. However, the preserve receives slightly less rainfall because of the prevailing southeast winds that carry the rain clouds further inland during the rainy season. Much of the rainfall in the preserve infiltrates into the shallow unconfined aquifer, yet a large amount runs off or remains at the surface. The runoff flows into Indian River, mangrove wetlands, and the tidal creeks within the preserve.

Saltwater intrusion into the surficial aquifers in southern Florida has been a problem for many years and will continue to be a major concern as water demands increase. The withdrawal of large quantities of fresh ground water in the vicinity of the coast has reduced or locally reversed the natural seaward hydraulic gradient. In some areas, saltwater has advanced landward into the aquifer replacing freshwater. This process is expedited when canals are dug which connect the ocean to inland areas.

The water quality in the St. Lucie Estuary has been degraded by point and non-point pollution sources including wastewater and stormwater runoff from a highly developed urban and industrial area. Land runoff from agricultural interests in western Martin County also drains into the estuary. The presence of the inlet has also contributed to the degradation of water quality. In addition to the increase in vessel traffic, the inlet drains a large area of the St. Lucie Estuary and serves as the only inlet on Florida's east coast through which periodic discharges of Lake Okeechobee drain. Periodic discharges are released from the lake to maintain a predetermined water level for municipalities' drinking water, agricultural interests

and as a means of flood control. These discharges traverse a series of natural and artificial waterways prior to exiting the estuary to open ocean via the St. Lucie Inlet. However, this excessive freshwater negatively affects the estuary by degrading water quality, reducing salinity, degrading shellfish habitat and depositing soils and pollutants (primarily nitrogen and phosphorus) into the estuary. In turn, these pollutants foster algal growth that kills the beneficial sea grasses within the St. Lucie Estuary. After the Lake Okeechobee discharge has made its way out of the St. Lucie Inlet, it is carried south by the longshore current over the near shore marine managed areas of the park. The volume of fresh water can be so great that it can be seen from great distances as a plume of discolored, polluted water extending over a mile offshore. These marine areas contain several species of stony corals, worm rock reef, and macroalgae communities. The symbiotic zooxanthellae that reside within the corals and the macroalgae communities require sunlight to photosynthesize. An increase in turbidity reduces the productivity of this system and during prolonged exposure has the potential to adversely impact coral colonies. Adverse impacts from these periodic discharges on the various benthic communities are presently being researched by different agencies.

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 desired future condition. Specific management objectives and actions for natural community management, exotic species management, imperiled species management and restoration 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 linking natural communities across the landscape.

The park contains eight distinct natural communities as well as ruderal and developed areas (see Natural Communities Map). A list of known plants and animals occurring in the park is contained in Addendum 5.

Marine Consolidated Substrate













Desired future condition: The marine consolidated, or limerock, substrates occur as outcrops of bedded sedimentary deposits consisting primarily of calcium carbonate. Under the right conditions, these rocks provide suitable sites for colonizing by a diverse community of plants and animals including the massive starlet coral (*Siderastria siderea*), the great star coral (*Montastrea cavernosa*), the knobby brain coral (*Diploria clivosa*), the corky sea finger (*Briarum asbestinum*), the grooved-blade sea whip (*Pterogorgia guadalupensis*), branching fire coral (*Millepora alcicornis*), the vase sponge (*Ircinia campana*), the green feather alga (*Caulerpa sertularioides*) and large leaf watercress alga (*Halimeda discoidea*). The limerock outcrops and the presence of the floral and faunal based benthic communities support a diverse fish assemblage. Desired conditions include minimizing disturbance attributed to the activities of recreational and commercial fishing interests and the accumulation of pollutants.

Description and assessment: The marine consolidated substrate is located in management zone SL-04 (See Table 1 and the Management Zones Map). This zone encompasses the marine managed area of St. Lucie Inlet Preserve State Park. The consolidated marine substrate is comprised predominantly of limestone outcrops that parallel the shore and range in depth from eight feet to 35 feet with ledges of 15 feet. These outcrops are exposed portions of the Anastasia Formation that extends along the east coast of Florida from St Johns County to Palm Beach County. The hard bottom is colonized by numerous species of hard and soft corals, sponges, hydroids, zooanthids, and macroalgae. The limestone outcrops and the presence of the floral and faunal based benthic communities support a diverse fish assemblage. Representative species from many fish families can be observed on the reef including the spotted eagle ray (*Aetobatus narinari*), green moray (*Gymnothorax funebris*), black grouper (*Mycteroperca bonaci*), queen angelfish (*Holacanthus ciliarus*) and Spanish mackerel (*Scomberomorus maculatus*). Many of the scleractinian corals as well as other fish and invertebrate species are at the northern limit of their distribution range.

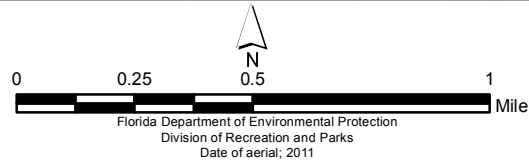
This natural community contributes greatly to the overall biodiversity of the park and is in good condition. A buoy system was installed in 2006 that delineated the park's eastern (waterward) boundary facilitating compliance and enforcement of park regulations. Mooring buoys were also installed to reduce impacts to the hard bottom communities from anchored vessels.



Legend

	BD - Beach Dune 43.41 ac.
	CS - Coastal Strand 167.81 ac.
	MAH - Maritime Hammock 42.27 ac.
	MS - Mangrove Swamp 606.1 ac.
	EUS - Estuarine Unsolidated Substrate 173.95 ac.
	MCNS - Marine Consolidated Substrate 618.72 ac.
	MUS - Marine Unconsolidated Substrate 3002.67 ac.
	MWR - Marine Worm Reef 43.05 ac.
	DV - Developed 5.19 ac.
	CD - Canal/ditch 2.31 ac.
	SA - Spoil Area 136.9 ac.
	UC - Utility Corridor 1.49 ac.

ST. LUCIE INLET PRESERVE STATE PARK



NATURAL COMMUNITIES MAP

The proximity of the St. Lucie Inlet to this area of the park makes this the most visited and utilized natural community within the park. With the inlet adjacent to the park's northern boundary, there is an increase in commercial and recreational fishing interests including diving and snorkeling. Marine debris including monofilament line, hooks, lures, nets, lead lines, anchors, bottles and cans are found throughout the reef. Monofilament is often entwined in branching corals such as the ivory bush coral (*Oculina diffusa*). Large cast nets (20+ feet in diameter) are used to collect baitfish and Spanish mackerel. The nets constantly snag on the reef and are abandoned. These nets cover a large area of the reef often entangling crustaceans (crabs and lobsters) and fish. The fish drown since they cannot swim and the crustaceans will perish if they cannot feed. The inlet serves as a conduit carrying all manner of trash such as patio furniture, PVC pipe and construction waste that is deposited on the reef. During the rainy season and episodic events such as hurricanes, the volume and variety of marine debris increases.

The St. Lucie Inlet also serves as the only inlet on Florida's east coast for draining periodic discharges from Lake Okeechobee. After the Lake Okeechobee discharge has made its way out of the St. Lucie Inlet, it is carried south by the Longshore Current over the marine managed areas of the park. Preliminary research indicates that these Lake Okeechobee discharges create an algal plume apparently fueled by pollutants that blankets the near shore habitats increasing turbidity, reducing the salinity, decreasing the dissolved oxygen content, and increasing mortality rates of fish. The symbiotic zooxanthellae that reside within the corals and the macroalgae communities require sunlight to photosynthesize. An increase in turbidity reduces the productivity of this system and during prolonged exposure has the potential to kill the corals.

The invasive exotic red lionfish (*Pterois volitans*) was first observed in park waters in 2009. Since that time, sightings have become more common suggesting that the lionfish has become established on the reef.

The use of illegal fishing methods such as spearfishing has become an increasing problem in the park. A buoy system was installed in park waters to delineate the boundaries and assist law enforcement with compliance of park rules.

General management measures: St. Lucie Inlet Preserve State Park is unique in that it defines the northern range of the near shore Florida reef tract. Many of the scleractinian corals as well as some fish and invertebrate species are at the northern limit of their distribution range. These distinctions have increased interest in the submerged resources of the park, and, consequently, the park has benefitted from numerous research and monitoring projects. Many of these projects are described in detail in the Implementation Component section. Several are briefly discussed here.

The coral colonies are monitored annually under two projects: the Southeast Coral Reef Evaluation and Monitoring Program (SECREMP) and the Florida Reef Resiliency Program (FRRP). Both programs monitor the health of corals statewide along the

Florida reef tract from the Dry Tortugas to St. Lucie Inlet Preserve State Park. The park will continue to collaborate with other state agencies to monitor these coral colonies.

Resource inventories are conducted periodically through benthic surveys, including the aforementioned coral monitoring projects, and the Great Annual Fish Count (GAFC). DRP staff organize the annual GAFC at the park to gather data on fish species and abundance. This data is used to implement management strategies to maintain populations of the different fish assemblages found on the reef. This data is also useful for monitoring the abundance and location of lionfish.

The lionfish is an invasive exotic that has established populations throughout the Caribbean, the Bahamas, and the Florida Keys north to North Carolina. Observations and research have shown that the lionfish are breeding at depths that are unsafe for SCUBA and that they can breed several times a year. Although lionfish eradication is a primary focus of the invasive exotic control program at the park since the fish was first observed in park waters in 2009, they will never be completely removed from park waters. Control of this invasive exotic is discussed in the Resource Management Program section of this component.

Marine debris removal programs were initiated by DEP's Florida Coastal Office (FCO)(formerly Office of Coastal and Aquatic Managed Areas (CAMA)). The program concentrated efforts on the reef within the park boundaries. The park assumed responsibility for the program after FCO's funding ended. Currently, the local commercial fishing industry sponsors and organizes an extended program where volunteers remove trash from all of the waterways within the county on an annual basis. This program not only removes trash from the reef but also from the ICW and mangrove creeks of the park. Even with this effort, marine debris will always be a management issue because of the surrounding developed areas and the increasing number of commercial and recreational fishing interests that use the reef. However, these cleanup programs and the efforts of the DRP will maintain the amount of marine debris at a manageable level.

Water quality monitoring programs usually concentrate on enclosed bodies of water such as lakes, estuaries and rivers. Seldom do these programs monitor water quality in an open system such as the near shore reef because of the dispersal potential of the open ocean. This is certainly the case at St. Lucie Inlet Preserve State Park. Water quality monitoring programs have been sporadic due to limited resources. The DRP designed and implemented a program where water samples were collected once a month and sent to an independent lab for analysis. The major focus of this program was to capture the water quality before, during and after the discharge of Lake Okeechobee and compare these events over time. However, after one discharge, the program was terminated because of limited resources. Researchers with NOVA Southeastern University (NCRI) have allocated funds for a short term water quality monitoring program. In addition, researchers with the Florida Fish and Wildlife Conservation Commission (FWC) are studying the light attenuation associated with lake discharges by measuring the amount of light penetrating the water and striking the top of the reef. The symbiotic zooxanthellae

that reside within the corals and the macroalgae communities require sunlight to photosynthesize. An increase in turbidity reduces the productivity of this system.

The South Florida Water Management District (SFWMD) has been monitoring the water quality in the estuary since 1989. Although this program is beneficial, the data do not address the impacts of the Lake Okeechobee discharge on the reef system.

Although the buoy system has helped to delineate the park boundaries, not all visitors are familiar with park rules. This is especially true of tourists or recent residents. An educational kiosk is planned for Sandsprit County Park, the main boat ramp where the majority of visitors to the reef launch their vessels. In addition, an increase in the number of patrols by law enforcement personnel would help to alleviate many of the problems.

Worm Reef

Desired future conditions: Worm reefs are characterized by large colonial conglomerates of rigid Sabellariid worm tubes of the species *Phragmatopoma lapidosa*. These shallow water "reefs" are generally found in the lower reaches of the intertidal zone or upper reaches of the subtidal zone. Sabellariid reefs provide shelter for a diverse assortment of small benthic vertebrate and invertebrate organisms, particularly since the surrounding habitat is generally bare substrate. Therefore, the mere presence of worm reefs will greatly increase the biological diversity of a given area. Species that utilize worm reefs include the Florida spiny lobster (*Panularis argus*), the nimble spray crab (*Percnon gibbesi*), the Atlantic deer cowry (*Macrocypraea cervus*), the arrow crab (*Stenorhyncus seticornis*), and the spotted moray (*Gymnothorax moringa*). A worm reef can be surrounded by and grade into virtually any of the remaining marine and estuarine natural communities but is more likely to grade into an expanse of unconsolidated substrate.

Of all the marine and estuarine natural communities, worm reefs are probably the least well known even though they are listed as imperiled natural communities. Information regarding effective management of worm reefs is lacking. However, excessive turbidity and siltation are probably significant factors in the decline of worm reefs. Desired future conditions will be optimized by minimizing disturbances from beach nourishment projects and maintenance dredging of inlet.

Description and assessment: The worm reef is located in management zone SL-04 (See Table 1 and the Management Zones Map), which encompasses the marine managed area of St. Lucie Inlet Preserve State Park. This community is associated with the Anastasia Formation outcrops (reef) and the granite rocks buttressing the south jetty (north boundary of the park) of the St. Lucie Inlet. Distribution of the worm reef community is confined to the northern sections of the park and is somewhat patchy. The polychaete in their larval stage must settle onto a hard substrate. It then constructs a tube by cementing suspended sand grains and shell fragments from the water column with a protein-based secretion. The reefs expand as worm larvae settle on existing tube masses. Therefore, the worms need a high-

energy environment with a steady flow of suspended particles for tube building and feeding. Because of these requirements, worm reefs tend to colonize the outside edge of the limestone outcrops at depths up to ten feet.

The worm reef is in good condition despite its close proximity to the St. Lucie Inlet, which delineates the northern boundary of the park. The majority of the worm reef in the park can be found colonizing the same limestone outcrops that comprise the marine consolidated substrate. The Sabellariid worm actually competes with other encrusting organisms for space on the hard substrate. Since these reefs occupy the same hard bottom, they are equally stable, highly productive communities that harbor a diverse assemblage of live bottom plants and animals. In addition, the worm reefs are also subjected to the same threats as the marine consolidated substrate that include pollution, impacts from boaters and divers, fishing pressure, and marine debris. Because of the close proximity to land and the inlet, additional threats to the worm reef community include burial during beach nourishment and dredging projects and physical destruction by persons trampling on the delicate structures while fishing on the jetties.

General management measures: Many of the same management measures for the marine unconsolidated substrate also apply to the worm reef community. There is a need for a sustained water quality-monitoring program to detect long-term spatial and temporal trends on the reef. The park will continue to promote and support clean up efforts to remove marine debris. The park will also continue efforts to eradicate lionfish and continue to collaborate with other agencies to monitor the health of the reef system.

The worms are able to tolerate high levels of turbidity and but it is unclear if they can survive direct burial for limited periods of time. The location of the offshore worm reefs should be mapped so they can be monitored on a regular basis and during periodic maintenance dredging of the St. Lucie Inlet. In addition, confirming the location of the worm reef community with relation to the inlet, will allow the DRP to give informed recommendations on projects with potential impacts as well as implement management strategies to protect this resource.

The smaller colonies of worm reefs on the jetties are mostly susceptible to physical damage from park visitors trampling on them while fishing. They have colonized boulders that are found on the lower extremes of the jetty and are partially exposed during low tides. These boulders are high enough that the risk of burial is minimal. In addition, few people use the jetties to fish since they have been damaged by past hurricanes and the structure is unstable. Therefore, the location of the colonies and the limited number of people using the jetties for fishing will protect this portion of the worm reef community.

Marine Unconsolidated Substrate

Desired future condition: The marine unconsolidated substrate will consist of expansive unvegetated, open areas of mineral-based substrate composed of shell, coralgal and sand. Although this community comprises the most important

recreational areas in Florida (sand beaches), it is resilient and easily re-colonized by the same organisms or a series of organisms which eventually results in the community returning to its original state once recreational disturbances have ceased. Desired conditions include preventing soil compaction, dredging activities, vehicular traffic and disturbances such as the accumulation of pollutants.

Description and assessment: The marine unconsolidated substrate is located in management zone SL-04 (see Table 1 and the Management Zones Map). The marine unconsolidated substrate is the largest natural community in the park and it is in good condition. From east to west, it extends from the shoreline to the offshore boundary of the park. From north to south, this community extends 4.5 miles encompassing the entire length of the marine managed area. The marine unconsolidated substrate can be found in association with the marine consolidated substrate, worm reef and the beach communities. This is a highly variable community covering several different habitats from the supratidal zone along the high-energy beach to offshore surrounding the reef. Sediment is also variable from coarse sand and shell to fine mud. Depth ranges from sea level to 35 feet within the park. Species composition usually includes those organisms especially adapted for a highly variable community with burrowing abilities or attachment capabilities. In the supratidal zone, such species include common mole crab (*Emerita talpoida*) and variable coquina clam (*Donax variabilis*). Infaunal organisms found here help to support migrating and resident shorebirds. Utilizing the offshore unconsolidated substrate include the five-keyhole sand dollar (*Mellita quinquesperforata*), the medusa worm (*Loimia medusa*), the yellowhead jawfish (*Opistognathus aurifrons*) and the southern stingray (*Dasyatis americana*).

Since this natural community is closely associated with the marine consolidated substrate and harbor many of identical plants and animals, it is also subjected to the same threats as the marine consolidated substrate that include pollution, impacts from boaters and divers, fishing pressure, and marine debris.

General management measures: The marine unconsolidated substrate is in the desired future condition. Natural erosion from storms and wave action are to be expected, but the natural process of sand transport and deposition tends to replace the sand on the beach and minimizes any impacts to this community. The same monitoring and research programs being implemented for the marine consolidated substrate also apply to the general management of this natural community.

Beach Dune

Desired future condition: The beach dune community is a coastal mound or ridge of unconsolidated sediments found along shorelines with high energy waves. Vegetation will consist of herbaceous dune forming grass species such as sea oats (*Uniola paniculata*) and sand cordgrass (*Spartina alterniflora*). Other typical species may include sea rocket (*Cakile* spp.), railroad vine (*Ipomea pes-caprae*), seashore paspalum (*Paspalum vaginatum*), beach morning glory (*Ipomea imperati*), and beach sunflower (*Helianthus debilis*). Occasionally shrubs such as seagrape (*Coccoloba uvifera*) may be scattered within the herbaceous vegetation.

Description and assessment: The beach dune community is in fair (northern) to good (southern) condition. The beach is severely eroded immediately south of the St. Lucie Inlet. The best example of this community is in the southern portion of the park where the influences of the inlet are reduced. Warm temperate vegetation mingles with tropical species to form a rich beach flora. The southern portion of the beach dune community is colonized by a healthy population of sea oats (*Uniola paniculata*), beach spurge (*Chamaesyce sp.*) and beachstar (*Cyperus pedunculatus*). The beach dune community is continuously decolonized by plants, since storm waves or high tides disturb it periodically. Beyond the limit of yearly wave action, wind-blown sand can accumulate around plants as they grow upward to form the foredune. Since a supply of loose sand is always present, sand burial is a constant factor on the foredune, its rate dependent on the force and direction of the winds and the mobility of the sand grains (Meyers and Ewel 1990).

Past hurricanes and strong winter storms have caused significant erosion along the park's entire beach and structurally damaged the jetty. The northern section of the beach dune community from the main beach access to the jetty shows minimal recovery from these storms. This is probably due to the disruption of the natural process of sediment transport. The southern portion of the beach dune community has recovered completely. Vegetation has established itself and foredunes are forming around these pioneer plants. Foredunes are usually built by grasses whose upward growth keeps pace with sand burial and whose lateral growth helps build a continuous dune ridge (Meyers and Ewel 1990).

The beach community serves as an important nesting habitat for federal and state listed sea turtles. Florida beaches are one of the three major nesting areas in the world for loggerhead turtles (*Caretta caretta*). Other rare sea turtles that use the park for nesting are the leatherback turtles (*Dermochelys coriacea*) and green turtles (*Chelonia mydas*).

Scattered populations of the exotic beach naupaka (*Scaevola sericea*) persist south of the main beach access.

A remnant beach community persists on the northern boundary inside the inlet. This beach community has been heavily impacted by the placement of dredge material from past maintenance dredging of the St. Lucie Inlet. A large volume of dredge spoil was deposited on the beach. It has been eroding back into the inlet ever since. This spoil mound is over 30 feet tall and several hundred yards wide.

General management measures: The main impact to the beach dune community that includes the park's sandy beaches is erosion caused by natural storm events and disruption of the natural process of sediment transport. This is evident along the northern beach just south of the jetty. Aerial photography of the park offers additional confirmation that Jupiter Island is retreating. Periodic large-scale beach nourishment projects are regularly used in other areas to counteract the affects of erosion. However, with potential impacts to the submerged resources of the park, careful planning and deliberation must be applied before using this alternative

approach. Please refer to the Coastal/Beach Management section for more discussion concerning erosion and beach nourishment issues.

The park will continue to implement management activities to minimize erosion such as the planting of native dune building vegetation, removal of exotic vegetation and establishing designated access trails as needed.

The park will continue to participate in statewide monitoring programs for nesting sea turtles and assist in the recovery efforts for these imperiled species. These programs and efforts are discussed in the Resource Management Program section.

The park will continue to pursue Martin County and the U.S. Army Corps of Engineers (USACE) to remove the spoil mound on the north beach inside the inlet. In addition, native vegetation should be planted to prevent further erosion and promote dune growth.

Coastal Strand

Desired future condition: The coastal strand community is characterized by stabilized, wind-deposited coastal dunes that are thickly vegetated with evergreen salt-tolerant shrubs. It is an ecotonal community that generally lies between the beach dune and maritime hammock, scrub or tidal swamp. Coastal strand dunes contain deep, well drained sands that are generally quite stable but become susceptible to severe damage if the vegetation is significantly disturbed. South of Cape Canaveral, tropical species become more prevalent including seagrape (*Coccoloba uvifera*), swamp privet (*Forestiera segregata*), myrsine (*Rapanea punctata*), buttonsage (*Lantana involcrata*), white indigoberry (*Randia aculeata*), snowberry (*Chiococca alba*), and numerous others. Smooth domed canopies develop as the taller vegetation is “pruned” by the windblown salt spray that kills the outer buds. This process is not as prevalent on the lee-side of islands due to prevailing easterly winds. Significant debate exists on the relative occurrence of natural fires compared to inland pyric communities. The DRP’s Fire Management Standard estimates that the appropriate fire return interval to be between four and 15 years. However, variability outside this range may occur based on site-specific conditions and management goals.

Description and assessment: The coastal strand is sometimes referred to as a transitional or ecotonal zone because it begins in the shelter of the beach dune community and continues inland until an inland plant community—such as a mangrove swamp, tropical hammock or scrub—is encountered. Presumably, the same coastal stresses that operate in the beach dune community operate at a lower frequency or intensity in the coastal zone and prevent its being colonized by inland plant communities (Meyers and Ewel 1990). Many plant species inhabit both the beach dune and coastal strand communities. However, the coastal strand has a more diverse assemblage of vegetation with a notable increase in the abundance of vascular plant species such as sea grape, cabbage palm (*Sabal palmetto*) and coinvine (*Dalbergia ecastaphyllum*).

The park's coastal strand is in poor condition. An easement through the park for a dredge disposal pipeline has been granted by the Trustees to Martin County for a period of 25 years. The pipeline is used to transport dredge material to the beaches of the Hobe Sound National Wildlife Refuge south of the park. The 50-foot wide pipeline corridor extends from the park's northern boundary at St. Lucie Inlet and travels south through the coastal strand for approximately 1.5 miles before exiting through the dunes to the beach dune community. After the pipeline corridor was cleared to bare ground, exotic groundcover began to colonize areas along its entire length. Madagascar periwinkle (*Catharanthus roseus*) and crowfoot grass (*Dactyloctenium aegyptium*) have established dense populations by out-competing native grasses. Martin County is currently identifying future options for maintenance of St. Lucie Inlet, including continued use of this pipeline easement (Martin County 2013). DRP staff will continue to work with the County to clarify responsibilities for maintenance of the easement corridor.

Exotic woody plants such as Australian pine (*Casuarina equisetifolia*), Brazilian pepper (*Schinus terebinthifolius*) and beach naupaka (*Scaevola sericea*) are found throughout the coastal strand.

A small interdunal lake is located on the northern portion of the coastal strand landward of the existing jetty. The present lake is little more than a shallow irregularly shaped depression that became landlocked when the jetty was established. Therefore, it is not a true coastal dune lake. The water level and salinity is maintained by tidal flushing. Wading birds and shorebirds use the small lake for foraging and feeding on minnows and small crustaceans.

There are scattered but healthy populations of the imperiled beachstar (*Cyperus pedunculatus*), a groundcover that is found growing behind the primary dune system inland to the pipeline corridor. This plant requires open areas for growth and expansion but is being overgrown by coinvine. Coinvine is a rapidly growing native that is becoming the dominant woody shrub in the coastal strand. Branches extend laterally for great distances along the ground and use roots to anchor themselves in the loose, sandy soil. Although this growth pattern helps with sand stabilization, coinvine often forms dense thickets that shade-out other woody shrubs and groundcover. At the park, coinvine has grown into the crowns of low trees and is threatening the population of the state-listed beachstar. This woody plant is becoming a nuisance native that is found growing rapidly through the last open areas of the coastal strand and poses a threat to beachstar.

General management measures: A monitoring program has been implemented to study the beachstar population and the threat of coinvine. This program will be continued and it is further discussed in the Resource Management Program section.

Although the coastal strand is not a fire-dependent community, prescribed burns may be used for community maintenance and the removal and control of exotic and native nuisance vegetation. Coinvine is a rapidly growing native that is becoming the dominant woody shrub in the coastal strand. An experimental burn was recently conducted in management zone SL-02 (see Management Zone Map). It is too early

to determine if this will be an effective management tool for use at the park. Herbicide application and mechanical means may be other management tools considered for controlling the spread of coinvine.

Maritime Hammock

Desired future condition: The maritime hammock community is a coastal evergreen hardwood forest occurring in narrow bands along stabilized coastal dunes. Canopy species will typically consist of live oak (*Quercus virginiana*), red bay (*Persea borbonia*), and cabbage palm (*Sabal palmetto*). The canopy is typically dense and often salt-spray pruned. Understory species may consist of yaupon holly (*Ilex vomitoria*), saw palmetto (*Serenoa repens*) and/or wax myrtle (*Myrica cerifera*). Very sparse or absent herbaceous groundcover will exist. Variation in species composition exists along the coast as you head southward, tropical species become more prevalent.

Description and assessment: This community is divided into ten disjunct sections separated by mangrove wetlands. Each section has been invaded by exotic vegetation such as Australian pine, Brazilian pepper and carrotwood (*Cupaniopsis anacardioides*) to some degree. However, this community is typically in good shape with most of the invasive exotics becoming established at the hammock/mangrove or hammock/spoil site ecotone. The general vegetative composition of this community is primarily tropical with a small percentage of temperate species. Dominant tropical species include pigeon plum (*Coccoloba diversifolia*), strangler fig (*Ficus aurea*), mastic (*Sideroxylon foetidissimum*), gumbo limbo (*Bursera simaruba*), paradise tree (*Simarouba glauca*), and several species of wild coffee (*Psychotria* spp.) and stopper (*Eugenia* spp.). Temperate species present within the hammock include live oak (*Quercus virginiana*), redbay (*Persea borbonia*) and Virginia creeper (*Parthenocissus quinquefolia*).

General management measures: As mentioned above the maritime hammock is in good condition. The remaining small areas of herbaceous exotic vegetation should be removed where possible. Access to some areas is limited. The long-term maintenance of previous exotic removal projects will require periodic treatment to remove any new seedlings or saplings present.

Mangrove Swamp

Desired future condition: The mangrove swamp is typically a dense forest occurring along relatively flat, low wave energy, marine and estuarine shorelines. The dominant overstory includes red mangrove (*Rhizophora mangle*), black mangrove (*Avicennia germinans*), white mangrove (*Laguncularia racemosa*) and buttonwood (*Conocarpus erectus*). These four species can occur either in mixed stands or often in differentiated, monospecific zones based on varying degrees of tidal influence, levels of salinity, and types of substrate. Red mangroves typically dominate the deepest water, followed by black mangroves in the intermediate zone, and white mangroves and buttonwood in the highest, least tidally influenced zone. Mangroves typically occur in dense stands (with little to no understory) but may be

sparse, particularly in the upper tidal reaches where salt marsh species predominate. When present, shrub species can include seaside oxeye (*Borrchia arborescens*, *B. frutescens*), and vines including gray nicker (*Caesalpinia bonduc*), coinvine (*Dalbergia ecastaphyllum*), and rubbervine (*Rhabdadenia biflora*), and herbaceous species such as saltwort (*Batis maritima*), shoregrass (*Monanthocloe littoralis*), perennial glasswort (*Sarcocornia perennis*) and giant leather fern (*Acrostichum danaeifolium*). Soils are generally anaerobic and are saturated with brackish water at all times, becoming inundated at high tides. Mangrove swamps occur on a wide variety of soils, ranging from sands and mud to solid limestone rock. Soils in South Florida are primarily calcareous marl muds or calcareous sands and along Central Florida coastlines, siliceous sands. In older mangrove swamps containing red mangroves, a layer of peat can build up over the soil from decaying plant material (primarily red and black mangrove roots).

Description and assessment: The mangrove swamp community represents the largest of the floral-based communities at St. Lucie Inlet Preserve State Park. It is one of the largest remnants of non-impounded mangroves in this area of Florida. Large tracts of basin mangrove forest are found throughout the community. This is an assemblage of the four species of mangroves (red, black, white, and buttonwood) along with a full complement of halophytic herbs and shrubs. This community is found along the relatively low energy intertidal and supratidal shorelines of the ICW and the tidal creeks and bays that are scattered throughout the park.

Unlike most vascular plants, mangroves have managed to adapt to a harsh environment characterized by sustainable, anaerobic sediments, fluctuating water levels and waters with high concentrations of salt. They have accomplished this through evolutionary adaptations of their root systems, morphological and physiological mechanisms for maintaining salt balance, and reproductive dispersal strategies (Meyers and Ewel 1990). The oxygen-poor soil limits root growth to within a few feet of the surface. Mangroves do not have a deep taproot to anchor them during storm events, but they produce extensive, interlaced, horizontal roots that keep them anchored and help to minimize erosion. Some species, such as the red mangrove, have developed prop roots that extend into the soil bracing the tree during storm events.

Mangroves play an important role in the marine and estuarine ecosystems of the Park. They are the primary producers establishing the microbial food web that sustains a wide variety of species. Over 220 fish species have been recorded utilizing the mangrove swamp community at some point during their lifecycle. Important commercial and recreational marine species find food and shelter in the mangrove swamp. The shallow waters, entanglement of roots, and abundant food make this an ideal nursery for fish and invertebrate species such as the spiny lobster (*Panularis argus*), snook (*Centropomus undecimalis*), and mangrove snapper (*Lutjanus apodus*). A wide variety of birds, including the endangered wood stork (*Mycteria Americana*), the double-crested cormorant (*Phalacrocorax auritus*), and the brown pelican (*Pelicanus occidentalis*), use mangroves for nesting, roosting, and protection from predators and the elements. Sessile invertebrates,

such as oysters and barnacles, use the network of roots and tree trunks as points of attachment whenever these surfaces are void of macroalgae. Together with the macroalgae, these invertebrates have been documented to filter large volumes of water thereby maintaining water quality within the mangrove community. During periods of tropical storms and hurricanes, mangroves have been shown to baffle storm and wave energy and create an extensive root system that helps to stabilize the shoreline.

Along the Intracoastal Waterway, there are a series of sixteen piles comprised of spoil material placed by the Florida Inland Navigation District (FIND) from dredging activities. Together these spoil islands total 84.6 acres and are dominated by Australian pine and Brazilian pepper. The spoil islands represent a seed source for dispersal of exotic vegetation throughout the park.

General management measures: The mangrove swamp at St. Lucie Inlet Preserve State Park is in excellent condition. The major threat to this community is erosion from the high volume of vessel traffic in the ICW. This area is designated as a "Minimum Wake Zone" which helps to moderate vessel speed reducing wave action from vessel wakes. The park will continue to support these regulated zones and monitor these areas for any changes in the condition of the mangrove swamp.

Another potential impact is the degradation of the water quality from the periodic discharging of Lake Okeechobee. Large volumes of surface water high in nutrients such as nitrogen and phosphorous flowing into the estuarine system within the preserve could alter the estuarine system by causing eutrophication and a change in species composition. Many coastal wetlands, including mangroves, are nutrient limited and the increase in nutrients from infrequent runoff increases the productivity of the vegetation (Mitsch and Gosselink 1986). Increasing the tidal exchange between the mangroves and the Indian River through restoration of the spoil sites will allow for increased flushing, nutrient import, soil and water aeration, and salinity stabilization. The stabilization of salinity is important, especially in basin mangroves, because it eliminates the invasion of freshwater and exotic plants.

In 1989, the SFWMD established a long-term water quality-monitoring program to detect long-term spatial and temporal trends in the St. Lucie Estuary (SLE). A network of ten stations record data on water entering the SLE from three different canals. This monitoring program led to the Minimum Flows and Levels (MFL) rule for the North Fork of the SLE. To avoid unfavorable low salinity that could impact mesohaline benthic communities in the middle estuary, the SFWMD established that inflows from the watershed and/or flood control releases from Lake Okeechobee should not exceed about 2,000 cubic feet/second (56.6 cubic meters/s) (monthly average). A salinity and water stage-monitoring site was established in May 2007, in cooperation with the Department, on the north side of the St. Lucie Inlet. Data from this site will provide boundary conditions for the District's hydrodynamic/water quality model and high-resolution salinity values for seagrass studies.

The DRP and FIND will work closely together to restore the spoil islands to mangrove forest and are currently seeking funding for the project. In addition to the advantages to the estuarine habitats along the ICW, the coastal uplands within

the park will also be enhanced by removing a dominant seed source for invasive exotics that will result in decreasing the dispersal rate of invasive exotics into these important natural communities. Restoration of this acreage is discussed in the Resource Management Program section.

The park will also continue to enforce and utilize state and federal regulations and designations to protect these valuable natural resources. Mangroves are designated as essential fish habitat and habitat areas of particular concern (HAPC) by the South Atlantic Fishery Management Council. HAPCs are rare, particularly susceptible to human-induced degradation, ecologically important, and most often found in an environmentally stressed area.

Estuarine Unconsolidated Substrate

Desired future condition: The estuarine unconsolidated substrate will consist of expansive unvegetated, open areas of mineral based substrate composed of shell, coralgal, marl, mud, and/or sand (sand beaches). Desired conditions include preventing soil compaction, dredging activities, and disturbances such as the accumulation of pollutants.

Description and assessment: The estuarine unconsolidated substrate is characterized by a bottom composed of loose material (e.g., marl, mud, sand and shell). The best example of this community is found in the tidal creeks and protected bays along the paddling trail and along the mangrove fringe of the ICW. Because of the low energy associated with these areas of the park, seagrass and macroalgae are able to grow in the loose sediment. The most common species of seagrass found at the park are shoal grass (*Halodule wrightii*) intermixed with Paddlegrass (*Halophila decipiens*) and the federally-listed Johnson's seagrass (*Halophila johnsonii*). The seagrass coverage is too sparse and patchy to be considered a grass bed community, but its presence helps to decrease erosion by anchoring the sediment and increase the diversity of this community. Although this habitat type appears barren, it supports a diverse array of infaunal organisms including the parchment tube worm (*Chaetopterus variopedatus*), mollusks like the crown conch (*Melongena corona*) and crabs like the blue crab (*Callinectes sapidus*). Because of the presence of these organisms, the unconsolidated substrate is an important feeding ground for bottom-dwelling fish, invertebrates and wading birds.

General management measures: The estuarine unconsolidated substrate within the park is in good condition. The regulated speed zones on the ICW will help to achieve the desired future condition by minimizing the impacts of erosion on the shallow submerged resources in the area immediately adjacent to the ICW.

Restoration of spoil islands within the park will increase the tidal exchange and will allow for increased flushing, nutrient import, soil and water aeration and salinity stabilization.

Spoil Area

Desired future condition: The spoil areas within the park will be managed to remove priority invasive plant species (Florida Exotic Pest Plant Council (FLEPPC) Category I and II species). Other management measures include restoration efforts designed to minimize the effect of the spoil areas on adjacent natural areas. Cost-effectiveness, return on investment and consideration of other higher priority restoration projects within the park will determine the extent of restoration measures in ruderal areas.

Description and assessment: There are approximately 140 acres of spoil area within this park. Of this, 84.6 acres in a series of sixteen piles are comprised of spoil material placed by FIND along the ICW from dredging activities. The remainder (103 acres) are wash-over and human-altered areas that parallel the shore (landward of the beach communities). Most of the 140 acres are dominated by Australian pines with an understory of native hammock species.

General management measures: The DRP and FIND are collaborating to restore the spoil islands to mangrove forest and are currently seeking funding for the project. In addition to the advantages to the estuarine habitats along the ICW, the coastal uplands within the park will also be enhanced by removing the dominant seed source and decreasing the dispersal rate of invasive exotics into these important natural communities. Restoration of this acreage is discussed in the Resource Management Program section of this component.

Control of FLEPPC Category I and II species in this area, particularly Australian pine and Brazilian pepper, remains a priority to prevent their spread into the natural communities of the park.

Developed

Desired future condition: The developed areas within the park will be managed to minimize the effect of the developed areas on adjacent natural areas. Priority invasive plant species (FLEPPC Category I and II species) will be removed from all developed areas. Other management measures include proper stormwater management and development guidelines that are compatible with prescribed fire management in adjacent natural areas.

Description and assessment: There are five acres of developed areas that are comprised of a dock, boardwalk, ranger station, bunkhouse, shop, restrooms and a picnic pavilion. The boardwalk is approximately one-half mile in length and transverses west to east through the park from the boat dock on the ICW to the Atlantic Ocean.

General management measures: Control of FLEPPC Category I and II species in this area, particularly Australian pine and Brazilian pepper, remains a priority to prevent their spread into the natural communities of the park.

Imperiled Species

St. Lucie Inlet Preserve State Park is an active participant in the statewide marine turtle-monitoring program. The park provides critical nesting habitat for three species of sea turtles: loggerhead (*Caretta caretta*), green (*Chelonia mydas*), and leatherback (*Dermochelys coriacea*). In addition, the park serves as a state index and survey beach for nesting sea turtles. During the nesting season, DRP staff conducts daily surveys of the beach recording the previous night's activities including number of crawls, false crawls, species identification and number of nests. The data collected from the park are used by state and federal agencies to formulate policy on nesting sea turtles. Although all three turtle species can be observed using the offshore resources of the park, loggerheads are seen more frequently by divers lying under ledges or hunting for crustaceans in sandy areas around the reefs.

The population of nesting sea turtles is stable but tends to follow statewide trends. For example, if the population of nesting loggerhead turtles is in decline around the state, this trend is also reflected in the regional population nesting at the park. The major threats to nesting sea turtles, their nests and turtle hatchlings include predation from natural and introduced animals, disorientation from artificial lighting, habitat loss and impediments to nesting from structures and escarpments. St. Lucie Inlet Preserve State Park is adjacent to the Hobe Sound National Wildlife Refuge. Together the two natural areas provide 6.5 miles of undeveloped, protected nesting beach on the northern tip of Jupiter Island with no coastal armament or artificial lighting. Whereas the Refuge uses beach nourishment to replenish its beaches, the Park relies on natural processes to restore and maintain its beach. Under these conditions, the predominant threat at the Park is predation. Raccoons (*Procyon lotor*) destroy more marine turtle eggs in the park than any other predator. However, a host of predators benefit from the nesting season including ghost crabs (*Ocypode quadrata*), nine-banded armadillos (*Dasypus novemcinctus*), and spotted skunks (*Spilogale putorius*). Even snakes such as the Eastern coachwhip (*Masticophis flagellum*) have been observed removing hatchlings from a nest.

Several areas of the park are designated by the U.S. Fish and Wildlife Service as critical habitats for imperiled species. Critical habitat is a term defined and used in the Endangered Species Act. It is a specific geographic area(s) that contains features essential for the conservation of a threatened or endangered species and that may require special management and protection. Critical habitat may include an area that is not currently occupied by the species but that will be needed for its recovery.

The Florida manatee (*Trichechus manatus latirostris*) is a subspecies of the West Indian manatee (*Trichechus manatus*) and inhabits the waters of Martin County year round. The surrounding waters of St. Lucie Inlet Preserve State Park are federally-designated as critical habitat for the recovery of the West Indian manatee by the U.S Fish and Wildlife Service. The Florida manatee lives in freshwater, brackish and marine habitats. Submerged, emergent and floating vegetation are

their preferred food. During the winter, cold temperatures keep the population concentrated in peninsular Florida and many manatees rely on the warm water from natural springs and power plant outfalls. During the summer, they expand their range, and on rare occasions are seen as far north as Rhode Island on the Atlantic coast and as far west as Texas on the Gulf coast.

The most significant problem presently faced by manatees in Florida is death or injury from boat strikes. The long-term availability of warm-water refuges for manatees is uncertain if minimum flows and levels are not established for the natural springs on which many manatees depend and as deregulation of the power industry in Florida occurs. Their survival will depend on maintaining the integrity of ecosystems and habitat sufficient to support a viable manatee population.

Although the boundary of St. Lucie Inlet Preserve State Park does not extend into the ICW and other deep water areas, the park supports the continued designation of manatee protection zones in the ICW and surrounding waters and the posting of manatee warning signs informing boaters that this species may be present.

Many of the listed wading birds such as herons, egrets and woodstorks (*Mycteria americana*) utilize the tidal creeks, mudflats, and mangroves for foraging areas. Least terns (*Sterna antillarum*) use the beach to forage and for shelter. Although some of the imperiled bird species are not residents of the park, they have been observed using the natural resources of the park. The tropical maritime hammock is an important stop over point during migration for neotropical migrants such as the worm-eating warbler (*Helmitheros vermivorus*) and American redstart (*Setophaga ruticilla*). Piping plovers (*Charadrius melodus*) are a winter resident that have been observed foraging and roosting along the beach and mudflats within the park. Sections of the beach and inlet areas have been designated as critical habitat for piping plovers by the US Fish and Wildlife Service. Annual bird census are conducted by DRP biologists and non-governmental organizations, such as Audubon, that help document species and size of populations. In addition, the park will continue to implement a systems management approach that involves managing the resources as a complete ecosystem. This strategy will provide for the resources needed to assist in the recovery and stabilization of the imperiled bird species that use the park.

The DRP will seek a balanced approach to minimize visitor impacts to shorebirds and the park's sensitive coastal habitats, while managing resource-based recreational activities. In collaboration with FWC, other government agencies, local non-governmental organizations, and volunteers, DRP staff will identify and delineate habitats and educate the public about shorebird protection.

Management decisions will be informed by analysis of data on habitat use in the park during prior nesting seasons. This analysis will suggest areas of importance where focused management actions are needed. These actions will typically include:

- Demarcating potential shorebird habitat by enclosing the perimeter of the habitat and buffer area with appropriate fencing and signage.
- Encouraging and focusing visitor activities into areas less suitable for shorebird nesting habitat.
- Monitoring during the nesting season to identify and protect new breeding sites.
- Providing interpretive and educational outreach to the public prior to and during the nesting season to encourage visitor use that protects shorebirds and their habitat.
- When the same breeding sites are used year after year, posting the protected area will occur prior to the season (pre-posting).
- When new breeding sites are indicated, appropriate measures will be implemented, including demarcating new protected areas and expanding or initiating interpretive programs.
- Coordinating with FWC and local law enforcement agencies to ensure compliance with park rules and shorebird protection, as needed.

When it is necessary to limit recreational activities or visitor access to protect nesting habitat, DRP staff or volunteers will provide onsite interpretation to educate visitors about the management of imperiled shorebird habitat and identify suitable recreational areas. These outreach programs will commence prior to nesting seasons and prior to placing limits on access to recreational areas. Pre-posting the identified habitat areas combined with early public notification regarding the park's shorebird protection program will improve visitor compliance with park rules and promote broad-based public stewardship of shorebird nesting, resting, and foraging habitats in the park.

The imperiled plant species found at the park are located in the beach dune, coastal strand and maritime hammock natural communities. The removal of exotic Australian pines from the coastal strand community will greatly improve this habitat for listed plants such as beachstar (*Cyperus pedunculatus*) and inkberry (*Scaevola plumieri*). The park represents the northern range of the endangered satinleaf (*Chrysophyllum oliviforme*) that is found in the maritime hammock. The major threat to the imperiled plant species comes from exotic plant infestation reducing the amount of suitable habitat for these species. Ongoing exotic removal continues to reduce this threat.

Johnson's seagrass (*Halophila johnsonii*) is found in shallow waters that experience minimal disturbance from visitors or vessel traffic. Of the seven species of seagrasses found in Florida, Johnson's seagrass is the only federally-threatened species and the only seagrass known to reproduce asexually. The importance of seagrass in the health of benthic resources has been well documented to include providing food and shelter for recreational and commercial fish species as well as imperiled species, filtering suspended particles, providing food and baffling wave energy. Johnson's seagrass has been documented as a food source for endangered Florida manatees and threatened green sea turtles. Johnson's seagrass is the rarest species of its genus. It has a limited distribution, limited ability to disperse and colonize habitats because of its asexual reproduction, and is dependent on

substrate stability. Threats to this imperiled plant include degraded water quality, pollution, storm action and sedimentation, and dredging. It has been documented in the estuarine unconsolidated community near the main dock in management zone SL-02 (See Management Zone Map) by biologists from other agencies. However, this sighting has not been confirmed by the DRP.

Beachstar (*Cyperus pedunculatus*) is a perennial sedge with stiff leaves that grows in a trailing manner, putting forth a new plantlet along underground rhizomes that root at the nodes. This pioneering species occurs in the beach dune and coastal strand communities. Sand trapping plants such as the beachstar help to stabilize the shifting sands allowing other native dune species to establish, thereby protecting the shoreline and reducing erosion. The primary threats to beachstar is erosion of the beach and dune community from tropical storms and encroachment of woody plants such as coinvine in the coastal strand community. Coinvine often forms dense thickets that shade-out other woody shrubs and groundcover.

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.

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 Scientific Name	Imperiled Species Status				Management Actions	Monitoring Level
	FWC	USFWS	FDACS	FNAI		
PLANTS						
Sea lavender <i>Argusia gnaphalodes</i>			LE	G4, S3	2	Tier 1
Satinleaf <i>Chrysophyllum oliviforme</i>			LT		2	Tier 1

Table 2. Imperiled Species Inventory						
Common and Scientific Name	Imperiled Species Status				Management Actions	Monitoring Level
	FWC	USFWS	FDACS	FNAI		
Beachstar <i>Cyperus pedunculatus</i>			LE		1, 2	Tier 3
Johnson's seagrass <i>Halophila johnsonii</i>			LT	G2, S2		Tier 1
Erect pricklypear <i>Opuntia stricta</i>			LT		2	Tier 1
Florida Keys blackbead <i>Pithecellobium keyense</i>			LT		2	Tier 1
Inkberry <i>Scaevola plumieri</i>			LT		2	Tier 1
Biscayne prickly ash <i>Zanthoxylum coriaceum</i>			LE	G4, S1	2	Tier 1
REPTILES						
Loggerhead marine turtle <i>Caretta caretta</i>	LT	LT		G3, S3	3, 8, 9, 10, 13	Tier 4
Green marine turtle <i>Chelonia mydas</i>	LE	LE		G3, S2	3, 8, 9, 10, 13	Tier 4
Leatherback marine turtle <i>Dermochelys coriacea</i>	LE	LE		G2, S2	3, 8, 9, 10, 13	Tier 4
Gopher tortoise <i>Gopherus polyphemus</i>	LT	N		G3, S3	13	Tier 1
BIRDS						
Piping plover <i>Charadrius melodus</i>	FT	LT		G3, S2	9, 10, 13	Tier 2; Tier 3
Little blue heron <i>Egretta caerulea</i>	LS			G5, S4		Tier 1
Reddish egret <i>Egretta rufescens</i>	LS			G4, S2		
Snowy egret <i>Egretta thula</i>	LS			G5, S3		Tier 1

Table 2. Imperiled Species Inventory						
Common and Scientific Name	Imperiled Species Status				Management Actions	Monitoring Level
	FWC	USFWS	FDACS	FNAI		
Tricolored heron <i>Egretta tricolor</i>	LS			G5, S4		Tier 1
Swallow-tailed kite <i>Elanoides forficatus</i>				G5,S 2		Tier 1
White ibis <i>Eudocimus albus</i>	LS			G5, S4		Tier 1
Merlin <i>Falco columbarius</i>				G4, S2		Tier 1
Peregrine falcon <i>Falco peregrinus</i>				G4, S2		
Southern bald eagle <i>Haliaeetus leucocephalus</i>	LT	LT		G4, S3		Tier 2; Tier 3
Worm-eating warbler <i>Helmitheros vermivorus</i>				G5, S1		Tier 1
Wood stork <i>Mycteria americana</i>	LE	LE		G4, S2		Tier 2; Tier 3
Osprey <i>Pandion haliaetus</i>	LS			G5, S3S4		Tier 1
Brown pelican <i>Pelecanus occidentalis</i>	LS			G4,S 3		Tier 2
Black skimmer <i>Rynchops niger</i>	LS			G5,S 3		Tier 2
American redstart <i>Setophaga ruticilla</i>				G5,S 2		Tier 2
Least tern <i>Sterna antillarum</i>	LT	LE		G4,S 5	10, 13	Tier 2; Tier 3
FISH						
Mangrove rivulus <i>Rivulus marmoratus</i>	LS	LS		G3, S3		Tier 1
CORALS						
Mountain star coral <i>Montastrea faveolata</i>				G1, S1S2	14	Tier 2

Table 2. Imperiled Species Inventory						
Common and Scientific Name	Imperiled Species Status				Management Actions	Monitoring Level
	FWC	USFWS	FDACS	FNAI		
Large ivory coral <i>Oculina varicosa</i>				G3, S1S2	14	Tier 2
MAMMALS						
Florida manatee <i>Trichechus manatus latirostris</i>	LE	LE		G2, S2	13	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.

One of the major obstacles for the exotic control and removal program at St. Lucie Inlet Preserve State Park is accessibility. Located on a barrier island, accessibility to the park is limited to watercraft. There are additional concerns and issues that must be addressed for all projects since they are limited by logistics, the scope of work and the equipment that can be transported. This often increases the funding that is required for large-scale restoration projects. Once on the island, treating certain exotic infestations can be challenging because some areas of the natural communities are isolated and inaccessible.

Before the land came under the stewardship of the DRP, the coastal strand community that exists along the entire eastern portion of the park was dominated by Australian pines and Brazilian peppers. In 2004, an exotic removal program targeted these predominant exotic plant species on 104 acres in the coastal strand and maritime hammock communities. The majority of these exotics were eradicated from park property. Although the project was very successful, exotic plants are beginning to re-colonize certain sections of the project area. This is due to logistics, limited funding and resources. Maintenance and monitoring are conducted by DRP staff on regular intervals or as resources allow.

As mentioned earlier, the pipeline easement corridor is an area of concern for infestation of invasive exotic plants that have formed dense populations of crowfoot grass and Madagascar periwinkle. Martin County has fulfilled the terms of the current easement for treatment of exotic vegetation (five years). This timeline proved inadequate to successfully remove or control this infestation.

Many invasive exotic plants occur on and adjacent to disturbed land. Threats for new invasions come from several sources: exotics already established in the park, seed dispersal by natural means (birds, wind, water, etc.) and neighboring developments. These areas are a high priority for exotic plant treatment because they threaten unique habitats and are a seed source for an otherwise pristine area.

Table 3 contains a list of the FLEPPC Category I and II invasive, exotic plant species found within the park (FLEPPC 2011). 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	SL-03
		3	SL-02
Earleaf acacia <i>Acacia auriculiformis</i>	I	1	SL-01, SL-02, SL-03
Australian-pine <i>Casuarina equisetifolia</i>	I	2	SL-02
		3	SL-01, SL-03
Carrotwood <i>Cupaniopsis anacardioides</i>	I	1	SL-01, SL-02, SL-03
Surinam cherry <i>Eugenia uniflora</i>	I	2	SL-01
Gold Coast jasmine <i>Jasminum dichotomum</i>	I	1	SL-02
		2	SL-01, SL-03
Lantana <i>Lantana camara</i>	I	1	SL-02, SL-01, SL-03
Beach naupaka <i>Scaevola taccada</i>	I	1	SL-02
		3	SL-03, SL-01
Schefflera <i>Schefflera actinophylla</i>	I	1	SL-03
Brazilian pepper <i>Schinus terebinthifolius</i>	I	2	SL-01, SL-02
		3	SL-03
Seaside mahoe <i>Thespesia populnea</i>	I	1	SL-02
		2	SL-01
		3	SL-03
Coconut palm <i>Cocos nucifera</i>	II	1	SL-01, SL-02
		2	SL-03
Durban crowfootgrass <i>Dactyloctenium aegyptium</i>	II	6	SL-02, SL-01
Senegal date palm <i>Phoenix reclinata</i>	II	1	SL-02
		3	SL-03
Castor bean <i>Ricinus communis</i>	II	1	SL-03, SL-02
		2	SL-01
Bowstring hemp <i>Sansevieria hyacinthoides</i>	II	1	SL-02
		2	SL-01
Wedelia <i>Sphagneticola trilobata</i>	II	1	SL-02
		2	SL-01

Common and Scientific Name	FLEPPC Category	Distribution	Management Zone (s)
Mahoe <i>Talipariti tiliaceum</i>	II	1	SL-02
		2	SL-01, SL-03

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.

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.

The red lionfish (*Pterois volitans*) is an Indo-Pacific marine fish that has been recently introduced to the east coast of the United States including coastal Florida, which many believe to be the site where the first lionfish was introduced. Lionfish were first observed in park waters in 2009. They are an ambush predator that prefers the ledges and crevices of the marine consolidated substrate. An extremely adaptive invasive exotic, the lionfish has spread rapidly throughout the Caribbean, the Bahamas, the Florida Keys and the east coast of the United States. Lionfish are voracious predators that are known to eat native fish and crustaceans in large quantities. They are not known to have any native predators and are equipped with venomous dorsal, ventral and anal spines, which deter predators and can cause painful wounds in humans. They have been observed reproducing on deep-water reefs beyond the reach of divers. Lionfish are capable of reproducing year-round, are relatively resistant to native parasites and they are able to outgrow native species with whom they compete for food and space. High rates of prey consumption, a wide variety of diet, and increasing abundance of the fish lead to the concern that the fish may have a very active role in the already declining trend of fish densities. As the fish become more abundant, they are becoming a threat to the fragile ecosystems that they have invaded. Between outcompeting similar fish and having a large diet, the lionfish is drastically changing and disrupting the food chains that hold the marine ecosystems together. In addition, the lionfish are able to tolerate salinity differences over a large range from open ocean to brackish waters. Lionfish are being found in the mangrove swamps of the St Lucie Estuary. This is particularly disturbing since these mangrove swamps serve as a nursery for important commercial and recreational fish species.

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 raccoons, venomous snakes, 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.

Raccoons (*Procyon lotor*) are an abundant native species that impact sea turtle conservation at many Florida beaches through nest depredation (Stancyk, 1982). Compounding the problem, raccoon populations flourish in association with humans because they often receive artificial support through refuse or direct feeding (Smith and Engeman, 2002). They are the top predator on marine turtle nests at St. Lucie Inlet Preserve State Park preying on eggs and hatchlings. Monitoring of nest predation is noted during daily nesting surveys. In an effort to reduce predation rates and help in the recovery of the three listed species of sea turtle, a trap and removal program has been implemented. All predators trapped under this program are removed according to the protocols set forth in the DRP Operations Manual. Predator removal programs have proven very successful. The Hobe Sound National Wildlife Refuge (HSNWR), which forms the southern boundary of the park, has had a predator removal program in place since the early 2000s. The beach at the Refuge is contiguous with the beach at the park. Both are high-density nesting beaches that serve the same three nesting sea turtles. Prior to a predator control program, historical nest predation at HSNWR was 95%. Consequently, predator control was identified as the most important conservation tool at HSNWR, and predator control optimized by predator monitoring led to highly successful results whereby predation had been reduced to low levels (7–13.5% of monitored nests) in 2002 and 2003 (Engeman and Smith 2006) .

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.

Special Natural Features

St. Lucie Inlet Preserve State Park is located in the transition zone between colder temperate and warmer sub-tropical biological provinces resulting in a highly diverse and biologically rich species composition. Here, as perhaps nowhere else in the continental United States, tropical and temperate species coexist and thrive. The park delineates the northern range of the near shore Florida reef tract and many Caribbean coral and tropical fish species. The near shore reef parallels the beach for approximately 4.5 miles. Portions of this tract have up to 15 feet of relief and depths of 35 feet. At least 37 species of hard and soft corals have been identified with several species at the northern limit of their range. Over 260 species of fish have also been identified along the reef. Sea turtles use the reef for resting, foraging and mating.

Aggregations of worm reefs can also be found on the near shore reef. Worm reefs are listed as an imperiled natural community both globally and statewide. They are constructed by a tropical marine worm (*Phragmatopoma lapidosa*) that cements together grains of sand with a protein to form narrow tubes. These reefs grow as larvae build on the existing tubes. The best development of these reefs occurs in St. Lucie and Martin Counties. The worm reefs in the park are in excellent condition.

St. Lucie Inlet Preserve State Park together with the adjacent Seabranche Preserve State Park offers a unique cross-section of natural communities that are part of an intact biological system extending from the offshore reef to uplands of scrubby flatwoods. This dynamic system is rare along the SE Florida coast and offers extraordinary opportunities to experience historical native Florida.

Of the coastal parks in SE Florida, few have management authority of the adjacent nearshore habitats, and of these none have sandy beaches except for St. Lucie Inlet Preserve State Park. Therefore, this park is unique in that it manages and protects both upland and marine components of critical habitat for sea turtle recovery. Three sea turtles: the threatened loggerhead sea turtle (*Caretta caretta*), the endangered green sea turtle (*Chelonia mydas*), and the endangered leatherback sea turtle (*Dermochelys coriacea*), use the park's beach as nesting habitat to deposit their eggs.

Sections of the beach have also been federally-designated as critical habitat for the imperiled piping plover (*Charadrius melodus*). A variety of shorebirds can be seen foraging, resting or nesting undisturbed along the beach. The park is located on migratory paths and the undeveloped beach attracts many migratory species to the park. The estuarine waters of the park as well as those adjacent to the park have been federally-designated as critical habitat for the recovery of the West Indian manatee that inhabits the waters of Martin County year round.

The park contains several disjunct tracts of tropical maritime hammocks. This community is listed by FNAI as imperiled in Florida with fewer than 253 recorded locations (FNAI 1999). Generally, because of the cooler weather, tropical species rapidly decline from Palm Beach County northward along the coast to Cape Canaveral. With the preserve being located near the northern extreme of Florida's subtropical climate, the vegetation is primarily tropical (mastic and pigeon plum) with some temperate (live oak and red bay) plants. Commercial and residential development along the southeast coast of Florida have greatly reduced and fragmented this community. The examples seen in south Florida today represent remnants of a once extensive system. Because of the desirability for development of the remaining coastal property in south Florida, it is certain that the remaining examples of this community will become even more endangered outside of protected areas.

The park also contains one of the best examples of non-impounded mangroves remaining in southeast Florida. In general, red mangroves are typically found in the intertidal zone, while black mangroves are dominant in the upper portion of the intertidal zone (Odum and McIvor 1990). White mangroves are usually found in

patches near a natural disturbance and occur in less frequently flooded areas of the mangrove community. This ecosystem serves as an important nursery for fishes and invertebrates as well as offering protection to uplands by suppressing storm surges. In addition, the mangrove community is an important nesting and roosting site for many wading birds. The park boardwalk, which bisects the mangrove community, offers visitors an elevated view of the mangrove community. A paddling trail meanders through the mangrove swamp along tidal creeks and protected bays where wading birds forage.

Cultural Resources

This section addresses the cultural resources present in St. Lucie Inlet Preserve State Park which may include archaeological sites, historic buildings and structures, cultural landscapes, folklife, 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 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 use in 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.

Pre-Historic 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.

The Florida Master Site File lists no archaeological resources for the park. However, the DRP plans to develop a predictive model for this park that will help to identify potential archeological resources.

Description: Although no archeological resources were found within the park, there are several sites located in close proximity that would indicate these lands might have historical significance. In 1995, a site predictive model was developed for Martin County that divided the county into 11 archeological zones. St Lucie Inlet Preserve State Park is included in the Jupiter Island Archeological Zone, which has the highest predicted site density of all of the zones. In 2005, a remote sensing survey was conducted on the reef tract within the park to identify submerged cultural resources. According to the survey, "Analysis of the magnetic and acoustic remote sensing data identified 778 anomalies and/or concentrations of anomalies." None of these anomalies have been identified or assessed for cultural significance.

St. Lucie Inlet Preserve State Park was included in the Archaeological Resources Sensitivity Modeling in Florida State Parks Districts 4 and 5 conducted by the Alliance for Integrated Spatial Technologies (AIST), University of South Florida. Based on the preliminary results, 1.28% of the park (12.48 acres) is located within high sensitivity areas and 4.29% of the park (41.77 acres) is located within medium sensitivity areas. Future planning and development will be guided by the

results of past surveys and the Archaeological Resources Sensitivity Modeling as well as the Management Procedures included in Addendum 7.

Surveys in the area indicate that shell mounds may have been present at one time, but only scattered shells remain and no artifacts are associated with these sites. It is possible that natural events such as storms, wave, and wind erosion will have degraded or destroyed these sites. Three cultural sites (8MT13, 8MT16 and 8MT33) in close proximity to the preserve are recorded in the Florida Master Site File. These three sites indicate that Native Americans occupied the uplands between 300 CE and 1400 CE. If the preserve were above water during this period, it would not be surprising to find similar evidence indicating the presence of Native Americans utilizing the preserve.

Site 8MT13 is the Joseph Reed Mound and is located just south of the park in Hobe Sound National Wildlife Refuge. No historic sites are known in St. Lucie Inlet Preserve State Park, but limited, if any, surveys have been completed at the park. Based on the rich abundance of natural resources that exist in the park, it can be assumed that the park was used in the past for hunting and fishing. This section of Florida's coastline is one of the most disturbed areas in the state, and as a result, a large area of land has eroded away. Thus, many sites that may have potentially existed near the eastern boundary of the upland portion of the park may be under water.

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. The Florida Master Site File lists no historical resources for the 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.

St. Lucie Inlet Preserve State Park does not maintain a collection of historic, natural history and archaeological objects.

Resource Management Program

Management Goals, Objectives and Actions

Measurable objectives and actions have been identified for each of the DRP's management goals for St. Lucie Inlet 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 Chapters 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, and 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. Florida's native habitats are precisely adapted to natural drainage patterns and seasonal water level fluctuations, and variations in these factors frequently determine the types of natural communities that occur on a particular site. Even minor changes to natural hydrology can result in the loss of plant and animal species from a landscape. Restoring state park lands to original natural conditions often depends on returning natural hydrological processes and conditions to the park. This is done primarily by filling or plugging ditches, removing obstructions to surface water "sheet flow," installing culverts or low-water crossings on roads, and installing water control structures to manage water levels.

Objective: Conduct/obtain an assessment of the park's hydrological restoration needs.

Park and District staff will continually monitor the hydrological function of park and assess the park's natural communities for future restoration needs, as needed.

Because of the continual discharges from Lake Okeechobee, the DRP recognizes the need to design and implement a long-term program to monitor water quality within the park. Staff will continue efforts to partner with other agencies to establish a water quality monitoring program and support other appropriate projects.

Objective: Restore natural hydrological conditions and functions to approximately 80.6 acres of mangrove swamp natural community

Along the ICW, there are a series of sixteen piles comprised of spoil material placed by the FIND from dredging activities. Together these spoil islands total 80.6 acres and are dominated by Australian pine and Brazilian pepper. The spoil islands represent a seed source for dispersal of exotic vegetation throughout the park. This project will enhance coastal habitats for fish and wildlife resources including the federally listed Florida manatee and the state listed mangrove rivulus. Increasing the tidal exchange between the mangroves and the ICW through restoration of the spoil sites will allow for increased flushing, nutrient import, soil and water aeration, and salinity stabilization. The stabilization of salinity is important, especially in basin mangroves, because it eliminates the invasion of freshwater and exotic plants.

The DRP and FIND have identified a multi-year, multi-phase restoration project that involves restoring the spoil islands to a functioning mangrove wetland. The first phase of the project will involve removal of all exotic vegetation from the spoil islands by mechanical means. The second phase involves removing excess spoil to grade of the surrounding mangrove swamp community. The final phase will be to plant the area with native vegetation such as red and black mangroves. Both agencies are researching funding sources for this project.

District biologists will also investigate the feasibility of establishing nesting areas for least terns on one or more of these spoil islands. This would involve removal of all vegetation and maintaining a scarified area devoid of vegetation. The spoil would not be removed.

Natural Communities Management

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

As discussed above, 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.

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.

All prescribed burns in the Florida state park system are conducted with authorization from the FDACS, Florida Forest Service (FFS). Wildfire suppression activities in the park are coordinated with the FFS.

Objective: Determine the feasibility of prescribed burns to control coinvine.

No natural communities within St. Lucie Inlet Preserve State Park are dependent on fire; therefore, no prescribed burn plan has been developed for the park. As no communities will be managed through prescribed burning, no annual burn plan is required.

Prescribed burns are being investigated as a possible management for coinvine (*Dalbergia ecastaphyllum*). Coinvine is a rapidly growing native that is becoming the dominant woody shrub in the coastal strand. Branches extend laterally for great distances along the ground and use roots to anchor themselves in the loose, sandy soil. Although this growth pattern helps with sand stabilization, coinvine often forms dense thickets that shade-out other woody shrubs and groundcover. At the park, coinvine has grown into the crowns of low trees and is threatening the population of the state-listed beachstar. An experimental burn was recently conducted in management zone SL-02 (see Management Zone Map). Initial observations indicate that fire will not be a useful management tool to control the spread of coinvine. However, additional burns are planned for the future when conditions are favorable. If it is determined that prescribed burns do control the encroachment of coinvine or other woody plants into the coastal strand, than a burn plan will be developed for the park.

Natural Community Restoration: In some cases, the reintroduction and maintenance of natural processes is not enough to reach the natural community desired future conditions 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.

Examples that would qualify as natural communities' restoration, requiring annual restoration plans, include large mitigation projects, large-scale hardwood removal and timbering activities, roller-chopping and other large-scale vegetative

modifications. The key concept is that restoration projects will go beyond management activities routinely done as standard operating procedures such as routine mowing, the reintroduction of fire as a natural process, spot treatments of exotic plants, small-scale vegetation management and so forth.

Following are the natural community/habitat restoration and maintenance actions recommended to create the desired future conditions in the coastal strand and beach dune communities.

Objective: Conduct habitat/natural community restoration activities on nine acres of beach dune community.

Park and district staff will collaborate with other government agencies to study the feasibility of removing a large spoil pile located on the northern shore of the park along the St Lucie Inlet. The spoil pile, which was deposited during a dredging operation many years ago, has been steadily eroding into the inlet contributing to sand accretion and shoaling causing potential hazards to navigation within the inlet.

Prior to removal of the spoil pile, the material should be examined to determine if it is suitable for placement on area beaches. Once the determination has been made, removal will be accomplished using cranes, barges and front-end loaders. Following the removal of the dredge material, native vegetation will be planted and maintained. The area also needs to be monitored for the encroachment of exotic vegetation.

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.

Objective: Conduct natural community/habitat improvement activities on five acres of coastal strand community.

District biologists recently closed an access road that ran from north to south behind the primary dunes. The road was used by DRP staff, law enforcement, and biologists conducting turtle surveys to access different areas in the park. However, since the pipeline easement was approved, this access road became obsolete and was closed to vehicular traffic. Biologists decided to rely exclusively on natural recruitment for vegetative re-colonization into this area. No planting of native vegetation will take place. If natural recruitment does not appear to be sufficient for stabilizing and re-colonizing the area, native plants will be used to augment this process. All exotic vegetation will be treated. The area will be monitored periodically to determine the improvement.

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

DRP staff will continue to develop partnerships with other agencies and academic institutions to assist with the updates of inventory lists for additional imperiled species. Numerous agencies currently conduct research projects in the park that sometimes leads to the discovery of additional imperiled species.

Objective: Monitor and document five selected imperiled animal species in the park.

St. Lucie Inlet Preserve State Park is an active participant in the statewide marine turtle monitoring program. Monitoring protocols have been established by the Florida Fish and Wildlife Conservation Commission (FWC). Three species of marine turtles--loggerhead, green, and leatherback--use the beach for nesting. The park serves as a state index and survey beach for nesting marine turtles. During the nesting season, DRP staff conduct daily surveys of the beach recording the previous night's activities including the number of crawls, false crawls, species identification and the number of nests. A representative sample of nests are designated for nest productivity analysis to help determine the number of hatchlings produced from the

park. In addition to the daily surveys, the park also participates in the state's marine turtle stranding and salvage program that collects data on stranded, injured or dead marine turtles. The data collected from the park are used by state and federal agencies to formulate policy on nesting marine turtles. Maintaining long term data on the nesting activity of sea turtles is important to monitor long term nesting trends and address management activities such as beach nourishment and protection from predators.

The piping plover and the least tern utilize several areas of the park including the beach and mudflats to forage and for shelter. The least tern also uses the adjacent beach at the Hobe Sound National Wildlife Refuge for nesting. Nesting by the least tern is significant because of the lack of disturbed beaches in southeast Florida. DRP biologists will monitor the park's beaches for evidence of a population of nesting least terns while conducting shorebird nesting surveys. The winter population of piping plovers will also be documented during these surveys and DRP biologists will participate in the International Piping Plover Winter Census that takes place every five years.

Objective: Maintain predation levels of marine turtle nests at or below ten percent.

Predation from natural and introduced animal species is one of the major threats to marine turtle nests and hatchlings. Raccoons and opossums are the primary predators in the park. Depredation is a part of the natural system and, to a certain extent, compensated by the high reproductive output of sea turtles. However, predators will sometimes become so proficient at finding and destroying nests that they may threaten all the nests on a beach. Resource managers may sometimes control predators such as raccoons by trapping and removing nuisance animals from the beach. DRP staff use a predator trap and removal program to maintain predation levels at or below the required ten percent that was established by the FWC. Raccoons are opportunistic predators that have adapted well to coexist in the urban developments throughout Florida. Scientific documentation indicates that certain behavior is learned and passed on from adult raccoons to their offspring. During the marine turtle nesting season, the population of raccoons raiding nests on the beach increases. For these reasons, the screening does not always prevent nest depredation by raccoons, so it becomes necessary to remove the nuisance predator from the park. The predator removal program is an effective means of controlling nest depredation and is administered by the United States Department of Agriculture.

Objective: Minimize coastal armament and other impediments to nesting by working closely with regulatory and coastal engineering agencies.

Beach nourishment projects alter the physiology and topography of the beach and pose another threat to nesting marine turtles. Following beach nourishment, a certain amount of scarping will take place along the mean high water line where the waves continuously erode the recently deposited beach sand. Over time, the height and severity of the escarpments will decrease to form a more gradual slope. Depending upon the severity, these escarpments can be a hindrance to nesting

marine turtles by preventing their access to the beach. Immediately following a beach nourishment project, nesting frequencies drastically decrease. It may take as long as three years for nesting frequencies to return to levels experienced prior to beach nourishment. The DRP will work closely with other agencies and contractors to minimize impacts to nesting turtles by restricting work to the non-nesting season by continuing to conduct daily nesting surveys.

Objective: Monitor and document two selected imperiled plant species in the park.

Beachstar (*Cyperus pedunculatus*), a perennial sedge with stiff leaves grows in a trailing manner, putting forth a new plantlet along underground rhizomes that root at the nodes. This pioneering species occurs in the beach dune and coastal strand communities. Sand trapping plants such as the beachstar stabilize substrate, allowing other native dune species to establish, thereby protecting the shoreline and reducing erosion.

DRP biologists recently closed an access road that ran from north to south behind the primary dunes through healthy populations of beachstar. A monitoring program was designed and implemented to determine the size and stability of the population. Ten stations have been established with three sites at each station. All stations are located in management zone SL-02 (see Management Zone Map). Monitoring will continue to be conducted on a quarterly basis to record recovery rates of this imperiled species in the formerly impacted areas.

Johnson's seagrass (*Halophila decipiens*) has been documented in the estuarine unconsolidated community near the main dock in management zone SL-02 (see Management Zone Map). Since the first sighting of Johnson's seagrass was recorded over ten years ago, no additional surveys have been conducted. Therefore, DRP biologists will conduct initial surveys to confirm if Johnson's seagrass is present and determine its distribution within park waters. If present, the seagrass will be mapped and a monitoring program will be designed to follow some of the actions outlined in the 2002 Final Recovery Plan for Johnson's seagrass by the National Oceanic and Atmospheric Administration's (NOAA) National Marine Fisheries Service. Many of the recovery actions are beyond the resources of the park. If Johnson's seagrass is found, NOAA will be notified so that the park will be included in the distribution map as critical habitat for the recovery of this listed species.

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: Annually treat three acres of exotic plant species in the park.

The DRP defines the acreage of exotic plants proposed for treatment as an infested area. An infested area is the approximate area of land (in acres) covered by the invasive plants if the plants were accumulated into one area. This distinction more accurately estimates the actual quantity of plants removed. DRP staff will conduct exotic removal treatment at the park for Category I and II invasive exotics. The goal will be to treat exotic species that either have re-sprouted or have recruited into natural communities following previous exotic removal treatments. All communities, including developed, will be targeted. Continuous monitoring and maintenance activities to control re-growth and new infestations will be implemented by DRP staff. Vegetative surveys will continue to be conducted to ascertain the presence of new exotic species.

Under the terms of the land use easement for the pipeline corridor, Martin County was required to fund exotic removal projects for five years following the clearing of park property. The County's obligation under this agreement expired in 2012. The County is not responsible for exotic removal or maintenance treatments after this period and it is not required to return the impacted area to pre-construction condition. The conditions of the land use easement have exacerbated the exotic plant issue at the park. Crowsfoot grass and periwinkle dominate the pipeline corridor. Since the duration of the agreement is for 25 years, DRP staff can only treat the corridor and maintain the exotics at their current level. Once the land use agreement expires, the DRP will develop and implement a restoration plan for the impacted lands that will include re-vegetation with native plants.

Objective: Implement control measures on three nuisance and exotic animal species in the park.

Control measures on one nuisance animal: raccoon, and one exotic animal: nine-banded armadillo, will focus on maintaining predation levels on marine turtle nests at or below the required ten percent that was established by the FWC for State Index Nesting Beaches. Raccoons and opossums are the primary predators that will be removed from the beach under a program contracted by the USDA. The park occasionally has to remove feral or stray cats and dogs from the park. These animals should be turned over to the county animal control facility. Guidelines for removal methods will follow those outlined in the DRP Operations Manual.

Lionfish were first sighted in park waters in 2009. DRP biologists have organized lionfish surveys with biologists and divers from other divisions and agencies to locate and remove all fish that are found. These surveys are conducted monthly, and they have maintained the lionfish population in the park at manageable levels. Fortunately, the park has not experienced the great numbers of these fish that other areas have seen. The DRP follows policies and guidelines for managing this invasive exotic established by FWC.

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.

During the development of this plan, an analysis was made regarding the feasibility of timber management activities in the park. It was determined that the primary management objectives of the unit could be met without conducting timber management activities for this management plan cycle. Timber management will be re-evaluated during the next revision of the 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. All of these 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.

St. Lucie Inlet Preserve State Park is located on the northern tip of Jupiter Island and has 2.7 miles of beach. The St. Lucie Inlet delineates the park's northern boundary. According to the DEP, Bureau of Beaches and Coastal Systems, most of Jupiter Island south of the St. Lucie Inlet is considered critically eroded for 11.5 miles. The northern half of this eroded area extends along St. Lucie Inlet Preserve State Park and the Hobe Sound National Wildlife Refuge. The erosion along this segment of shoreline threatens wildlife habitat that is critical to the recovery of threatened and endangered sea turtles and nesting shorebirds. Three sea turtles: the threatened loggerhead sea turtle (*Caretta caretta*), the endangered green sea turtle (*Chelonia mydas*) and the endangered leatherback sea turtle (*Dermochelys coriacea*) use the park's beach as nesting habitat to deposit their eggs. In addition, the USFWS has designated 1.6 miles of beach south of the inlet as critical habitat

for the piping plover (*Charadrius melodus*). These and other imperiled species benefit from the undisturbed natural communities of the park that support foraging, roosting, and sheltering, and the physical features necessary for maintaining the natural processes that support these critical habitats. The USFWS has determined that the amount of wintering habitat included in the designation appears sufficient to support future recovered populations, and the existence of this habitat is essential to the conservation of the species.

Of the coastal parks in SE Florida, few have management authority of the adjacent nearshore habitats, and of these, none have sandy beaches except for St. Lucie Inlet Preserve State Park. Therefore, this park is unique in that it manages and protects both upland and marine components of the designated critical habitat for sea turtle recovery. As previously stated, three imperiled species of sea turtles use the beach for nesting and they utilize the nearshore habitats for foraging, resting and mating. These areas are also used by turtle hatchlings for refuge from predators when they first enter the ocean after emergence from nest cavities. The nearshore habitats comprise the marine consolidated and unconsolidated substrates of the park that include numerous hard and soft corals, worm reefs and fish assemblages. Several of the coral species are at the northern range of their distribution.

Following several record hurricane seasons, the beach was severely eroded and the jetty damaged. The primary sediment transport current along the coast has been interrupted with the dredging of the St. Lucie Inlet. This interruption and the presence of the inlet have slowed the natural process of sand accretion on the park's beaches. In accordance with the St. Lucie Inlet Management Plan, the USACE and Martin County conduct periodic maintenance dredging of the St Lucie Inlet and the associated navigational channels. One location identified for depositing the dredge material is the beach at the Hobe Sound National Wildlife Refuge (HSNWR) immediately south of the park. The HSNWR does not have the same extent of submerged resources in such close proximity to the shore as the park, and, therefore, does not have the same issues and concerns as the park.

The park has declined to accept beach nourishment because of the detrimental impacts to the reefs, nearshore habitats and the beach. Beach vegetation that is important for creating foredunes is covered during nourishment projects. Re-vegetation or natural recruitment is necessary to help establish foredunes and decrease erosion. Shore stabilization projects fundamentally alter the natural dynamic coastal processes that create and maintain beach and bayside habitats necessary for the recovery and conservation of imperiled species. In the northern portion of the park where beach erosion is the most severe, worm reef is within several hundred yards of the shore. Chronic turbidity resulting from silt disturbed during the dredging process and silt washing off the beach limits productivity and creates an unfavorable substrate for colonizing invertebrates. In addition, sediment deposition on the reef from suspended material in the water will smother many of the colonizing invertebrates and macroalgae that comprise the benthic community. Following beach nourishment, the newly placed sand erodes back into the water creating escarpments that potentially serve as impediments to nesting sea turtles. If the female turtle cannot make it over the scarp, she returns to the sea without

nesting, or lays her eggs below the high water line where the nest will become inundated with salt water. Once the nest has been flooded with salt water, the deposited eggs are destroyed.

The park's beaches are managed for the conservation and recovery of imperiled species. Although recreational opportunities are numerous at the beaches, increased pressure for expanding recreational opportunities persists from different user groups. The DRP needs to consider all possibilities before increasing the carrying capacity for the park with special emphasis on the beach. Increased human disturbance in shorebird habitat can be functionally equivalent to habitat loss if the disturbance prevents birds from using an area, which can lead to roost abandonment and a decrease in the local population. Disturbances can cause shorebirds to spend less time roosting and foraging and more time in alert postures and fleeing from the disturbances expending energy on costly short flights. Although pets are not allowed on any State Park beach, dogs can often be seen scattering flocks of resting or foraging shorebirds.

Systematic review of the DRP's recreation and imperiled species policies as they apply to beach management will assist in better understanding cumulative impacts. Site-specific analysis and implementation of conservation measures should be a high priority for St. Lucie Inlet Preserve State Park. For example, the impacts from disturbance may be lessened by restricting access to roosting and foraging areas and enforcing the no-pet rule on the beach. In addition, educational materials such as signs and brochures can provide valuable information so the public understands the need for conservation measures.

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.

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.

Within the 10-year planning period of this management plan, however, sea level rise is not anticipated to directly affect the natural or cultural resources of St. Lucie Inlet Preserve State Park or the recreation facilities and infrastructure of the park.

Additional Considerations

With the management of public lands, there are often certain issues and situations that are beyond the control of the managing agency. Long-term maintenance of the St. Lucie Inlet is such an issue. Martin County is currently identifying options for maintenance of the inlet, several of which might impact the park's resources. DRP staff are working with the County and other agencies to minimize the impacts to the park and address management issues in future projects. Periodic discharges from Lake Okeechobee may also degrade water quality in the area.

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 managing agency shall consider the findings and recommendations of the land management review team in finalizing the required update of its management plan (see Addendum 8).

St. Lucie Inlet Preserve State Park was subject to a land management review on November 17, 2011. The review team made the following determinations:

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

LAND USE COMPONENT

Introduction

Land use planning and park development decisions for the state park system are based on the dual responsibilities of the Florida Department of Environmental Protection (DEP), Division of Recreation and Parks (DRP). 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. Additional input is received through public workshops, and through environmental and recreational-user groups. With this approach, the DRP 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 expressed 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

St. Lucie Inlet Preserve State Park is located within an unincorporated area of Martin County, about four miles southeast of the City of Stuart and five miles south of St. Lucie County, in the southeast part of the state. Access to the park is by private boat or walking three miles north from Hobe Sound National Wildlife Refuge, which is located on the northern end of Jupiter Island. The park is bounded on the east by the Atlantic Ocean and on the west by the Indian River Lagoon/Intracoastal Waterway. Hobe Sound National Wildlife Refuge is located immediately south of the park. Approximately 900,000 people live within 30 miles of the park (U.S. Census 2010).

The population of Martin County is diverse in terms of demographic characteristics. According to U.S. Census data (2011), approximately one-fifth of residents in the county identify as black, Hispanic or Latino or another minority group. Over half (55%) of residents can be described as youth or seniors (U.S. Census 2011). Martin County ranked fifth statewide in per capita personal income at \$52,798, (above the statewide average of \$39,636) (U.S. Bureau of Economic Analysis 2012).

The park is located in the Central East Vacation Region, which includes Volusia, Brevard, Indian River, St. Lucie, Martin and Okeechobee counties (Visit Florida 2011). According to the 2011 Florida Visitor Survey, eight percent of domestic visitors to Florida visited this region. Of the estimated 6 million domestic visitors who came to this region in 2011, approximately 90 percent traveled for leisure. Visiting the beach/waterfront and shopping were the most popular activities for those visitors to the region. Summer was the most popular season for visitors, but visitation was generally spread throughout the year. Most visitors traveled by air (71 percent), reporting an average stay of 4.2 nights and spending an average of \$105 per person per day (Visit Florida 2011).

There are considerable publicly-owned resource-based recreation opportunities within ten miles of the park. Seabranche Preserve State Park, located directly across the Indian River Lagoon/ICW from St. Lucie Inlet Preserve State Park, provides picnicking, hiking and bicycling trails and opportunities for wildlife viewing. A portion of the East Coast Greenway, a developing 3,000-mile trail system that way links all the major cities of the eastern seaboard between Canada and Key West, runs passes through Seabranche Preserve State Park. Also nearby, Atlantic Ridge Preserve, Jonathan Dickinson and Savannas Preserve State Parks provide biking, hiking and equestrian trails, paddling and boating opportunities, camping, picnicking, swimming and educational and interpretive programs. The Florida Circumnavigational Saltwater Paddling Trail, or the CT, spans 1,515 miles along Florida's coast, from Pensacola to Fort Clinch. Segment 20, a 44.5-mile link from Hobe Sound to Fort Pierce, runs through the ICW adjacent to St. Lucie Inlet Preserve State Park.

Hobe Sound National Wildlife Refuge, a 1,035-acre refuge offers opportunities for public recreation, including nature trails and wildlife observation, environmental education and an interpretive museum, surf fishing and beach use. The adjacent Jensen Beach to Jupiter Inlet Aquatic Preserve is a part of the Indian River Lagoon National Estuary Program, one of 28 designated estuaries of national significance. The natural communities within the estuary's submerged lands and open waters combine to create one of the most productive estuaries in the United States. Recreational uses include boating, fishing and swimming.

Several parks and preserves managed by Martin County are located in the vicinity of St. Lucie Inlet Preserve State Park. Cove Road Park is located directly

across the inlet and provides a paddling launch and small parking area. Peck Lake Park and Twin Rivers Park provide recreational opportunities along the Indian River Lagoon and St. Lucie River, while Jimmy Graham Park and Sandsprit provide boating access as well. Less than five miles west of the park, Halpatokee Regional Park is a 200-acre county park offering picnicking, paddling, hiking trails and active sport fields. Just south of this park is another 100-acres managed by Martin County under lease from the South Florida Water Management District (SFWMD) which provides additional opportunities for fishing, hiking, canoeing, boating, primitive camping, and nature study.

Existing Use of Adjacent Lands

Adjacent land uses surrounding the park are conservation lands, including the Hobe Sound National Wildlife Refuge on Jupiter Island to the south. Lands west of the ICW from the park consist of conservation and recreation lands within Seabranck Preserve State Park. Submerged lands to the west are the Jensen Beach to Jupiter Inlet Aquatic Preserve. On the mainland north of Seabranck, lands adjacent to the ICW are mostly medium to high density residential. To the north of the park, across the St. Lucie Inlet, a low to medium density residential golf course development is located on Sailfish Point. Both public and private boat ramps, and numerous marinas and docks, for private, recreational and commercial use, are located in the immediate vicinity of the park.

Planned Use of Adjacent Lands

Martin County is a relatively small county population-wise in southeast Florida. While it has not experienced the rapid growth rate of St. Lucie County to the north, its growth has been consistent with the overall population growth in the state. From 1980 to 2010, the population of Martin County more than doubled. Growth in the area slowed somewhat during the economic downturn of the late 2000s, and business and real estate growth is projected to increase over the timeframe of this plan. The surrounding area is expected to grow by approximately 35% by 2040 (BEBR 2012), the future development patterns in the area will reflect those identified in the County's plans, especially those for the Community Redevelopment Areas, one of which (Port Salerno) is near the park on the mainland.

Currently, the Martin County Comprehensive Plan indicates that the future land use designation of lands adjacent to the park on Jupiter Island and on the mainland (including Seabranck Preserve State Park) as Public Conservation Area (primarily for conservation of the natural resource). Other adjacent land uses on the mainland include Recreational (primarily for active recreation), Estate Density (up to 2 UPA), Low Density Residential (up to 5 units per acre (UPA)), Medium Density Residential (up to 8 UPA) and Commercial Waterfront (Port Salerno) allowing marinas and other marine-related services and some residential, depending on zoning. Residential future land use categories allow residential plus residential-supportive uses. Other future land use designations found in the vicinity of the park include General Institutional (government

services) and Commercial/Office/Residential (office uses, residential, combinations, limited commercial) (Martin County 2012).

The zoning designations of adjacent land are consistent with the future land use designation. The areas immediately adjacent to the park on Jupiter Island are covered by special barrier island regulations (Jupiter Island zoning designation) that reflect the unique conditions of the barrier islands as they relate to providing essential public services and facilities and preserving environmentally sensitive barrier island coastal habitats. Lands on the mainland are covered by a mix of zoning designations, including Public Service District-2 (PS-2; Seabranche Preserve State Park), several residential categories, mostly single-family (R-1, R-1B, R-2, R-2B, R-3A), Planned Unit Development-Residential (PUD-R), Interim Zoning (minimum standards based on R-2) and Estates/Suburban Homes. Lands within the Port Salerno Community Redevelopment Area are covered by several overlays, including the Cove Road Zoning Overlay (west of SR A1A) and the Town Center Zoning Overlay (Martin County 2013). These overlay districts are established to provide opportunities for traditional neighborhood design and mixed residential and commercial uses in redeveloping areas.

A review of proposed comprehensive plan amendments and proposed developments in Martin County showed several proposed developments in the area which may potentially impact the park. It will be important for DRP staff to participate in the review of all comprehensive plan amendments, proposed zoning changes and development plans that may impact the park in the future.

The Treasure Coast Regional Planning Council and Martin County are both committed to maintaining a balanced, orderly sustainable economic growth the County (TCRPC 2012). The County is working with the State, the United States Army Corps of Engineers and other stakeholders to develop alternatives for management of the St. Lucie Inlet to maintain a safe, navigable channel. DRP staff will continue to work with the County to identify a solution that minimizes impacts to the park's natural communities and recreational resources.

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.

Recreational Resource Elements

This section assesses the park's recreational resource elements, those physical qualities that, either singly or in certain combinations, can support various

resource-based recreation activities. Breaking down the property into such elements provides a means for measuring the property's capability to support potential recreational activities. This process also analyzes the existing spatial factors that either favor or limit the provision of each activity.

Land Area

St. Lucie Inlet Preserve State Park contains approximately 946 acres of uplands on the northern end of Jupiter Island. Four natural communities are represented in the park's upland area, providing diverse wildlife habitat and wide-ranging natural experiences for park visitors. Some areas of the park consist of spoil material placed from dredging operations. Park land provides significant area for many recreational amenities, including beach activities, shared-use trails, picnic areas, primitive camping and necessary support facilities.

Water Area

St. Lucie Inlet Preserve State Park includes 3,888 acres of submerged lands. Four natural communities are represented in the park's submerged areas, including marine worm reef. The park provides access to two substantial bodies of water: the Indian River Lagoon, one of the most important estuarine systems in the United States, and the Atlantic Ocean. Both provide significant opportunities for saltwater recreation, providing opportunities for swimming, fishing, paddling and other activities. The park also includes several tidal creeks and protected bays that run north-south interior to the island, providing paddling and beach access opportunities.

Shoreline

St. Lucie Inlet Preserve State Park features approximately 2.7 miles of high-energy Atlantic shoreline, providing opportunities for swimming, fishing, and other beach activities. The park's eastern shoreline provides critical habitat for rare and endemic species, including sea turtles and shorebirds. Much of the western shoreline consists of dense mangrove vegetation along the Indian River Lagoon. This area primarily provides opportunities for wildlife viewing and observation as well as boating and paddling access to the park. The northern tip of the park overlooks the St. Lucie Inlet.

Natural Scenery

The park's beaches provide visitors with an unobstructed view of the horizon over the Atlantic Ocean. The northern tip of the park is relatively high ground (spoil piles) overlooking the St. Lucie Inlet. The interior tidal creeks and the waters of the Indian River Lagoon provide picturesque paddling routes.

Significant Habitat

The mangroves, one of the best examples of non-impounded mangroves in the southeastern part of the state, provide an important habitat for fish, invertebrates, and a variety of bird species such as herons, wood storks and several egrets. The maritime hammock serves as a stopover for neotropical migrants, and the park's Atlantic shoreline is an important nesting site for sea turtles and shorebirds.

Natural Features

St. Lucie Inlet Preserve State Park, located in the transition zone between temperate and sub-tropical climates, serves as the home to a wide range of species at the edge of their range. The park includes the northern extent of the near shore Florida reef track as well as aggregations of imperiled marine worm reefs.

Archaeological and Historical Features

There are no archaeological or historical features within the park.

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

Historically, settlement on Jupiter Island has been confined to the southern end of the island. Around 1918, a farm was developed at the inlet, though it is thought to have been a cover for the owner's moonshine business. No physical evidence of this activity remains. Past use of this area has been confined to boating and fishing along the numerous waterways.

Future Land Use and Zoning

The DRP 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.

The current future land use designation is Public Conservation, which permits only development compatible with conservation and passive recreation uses. This may include access, parking and other facilities that enable the management of the resource and the public's enjoyment of it (Martin County 2012). The current zoning designation for the entire park is Jupiter Island. This special barrier island designation provides minimum standards for development

that reflect the unique conditions of the barrier islands as they relate to providing essential public services and facilities such as vehicular access, emergency evacuation and preserve environmentally sensitive resources related to barrier islands coastal habitats (Martin County 2013). There are no expected conflicts between the future land use or zoning designations and typical state park land uses.

Current Recreational Use and Visitor Programs

Resource-based outdoor recreation in Florida continually increases in popularity. The growth of Florida's resident and tourist populations brings increasing pressure for access that is more widespread and for denser levels of public use in the natural areas available to the public. Consequently, one of the greatest challenges for public land management today is the balancing of reasonable levels of public access with the need to preserve and enhance the natural and cultural resources of the protected landscapes.

The beach area is the focus of recreational activities at St. Lucie Inlet Preserve State Park. Activities include swimming, snorkeling, scuba diving, sunbathing, fishing, primitive camping, picnicking, hiking and nature appreciation. No spearfishing is permitted within state park boundaries. The park's boat landing provides docking space for 32 vessels. Visitation to the park is generally consistent throughout the year, and the landing facilities often reach capacity on weekends.

The park offers interpretive and educational programming to educate the public on the park's resources. An interpretive kiosk at the entrance area provides park information and education.

St. Lucie Inlet Preserve State Park recorded 14,129 visitors in FY 2012/2013. By DRP estimates, the FY 2012/2013 visitors contributed almost \$900,000 in direct economic impact, the equivalent of adding 14 jobs to the local economy (FDEP 2013).

Other Uses

Martin County conducts periodic maintenance dredging at the inlet. These operations are based at the northern end of the park property, and dredge pipes are routed from the inlet through the park to spoil disposal sites over dedicated easements. The County is currently developing alternatives for future management of the inlet to maintain a safe, navigable channel.

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 St. Lucie Inlet Preserve State Park, all wetlands and floodplain as well as beach dune, coastal strand, maritime hammock and known imperiled species habitat have been designated as protected zones. The park's current protected zone is delineated on the Conceptual Land Use Plan.

Existing Facilities

St. Lucie Inlet Preserve State Park provides a unique opportunity for visitors to experience a natural coastal barrier island ecosystem. The park's limited recreational facilities create a wilderness experience in an urban and densely developed area of the state (see Base Map).

Recreation Facilities

A boardwalk from the park's boat dock takes visitors across mangrove forests and hammocks of live oaks, cabbage palms, paradise trees and wild limes to a neatly preserved Atlantic beach. During the summer months, the island is a critical nesting area for loggerhead, leatherback and green turtles. The preserve is a favorite for researchers and nature enthusiasts interested in learning about the native flora and fauna of Florida barrier islands. A small picnic area with a pavilion and restroom provides picnicking opportunities, and beach activities include swimming, fishing, sunbathing, snorkeling and scuba diving at the park's remote beach. Tram service to the beach operates every weekend and state holidays. A small primitive camping area with a small shelter and fire ring at the north end of the park provides remote overnight opportunities. An informal southern paddling landing provides access to the park's southern beach areas.

Support Facilities

The park's support facilities are located in two main areas. At the entrance area, an entrance station, ranger residence, restrooms, equipment shelter and fuel storage shed provide for staff presence on the island. A three-bay shop near the beach use area provides for vehicle storage and work areas. An inventory of the park's recreational and support facilities is included below.



Beach Use Area

Medium picnic shelter with kiosk
Large grill
Restroom
Outdoor shower

Entrance Area

Dock (32 slips)
Ranger residence (bunkhouse)
Entrance station
Restroom
Equipment shelter
Interpretive kiosk (2)
Fuel storage shed

Shop Area

3-bay shop

Primitive Camping Area

Small shelter
Benches
Grills (2)
Fire pit

Parkwide

Boardwalk (0.6 mile)
Hiking trails (2.9 miles)
Paddling trail (2.5 miles)

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 Plan). 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. As recommended by the FWC Marine Turtle Lighting guidelines, all exterior lighting for current and proposed facilities will utilize "turtle-friendly" lighting. New and improved activities and programs are also recommended and discussed below.

Objective: Maintain the park's current recreational carrying capacity of 1,221 users per day.

The park will continue to provide the current range of recreational day use opportunities and primitive camping. Hiking, paddling, picnicking, nature study, swimming, fishing, snorkeling and other beach activities are popular activities for park patrons.

Objective: Expand the park's recreational carrying capacity by 48 users per day.

Several new opportunities for seasonal overnight camping at the park will expand the park's carrying capacity. A new primitive camping area just north of the beach use area will provide expanded overnight camping opportunities in the park. The northern primitive camping area will provide a stopover for paddlers on the Florida Circumnavigational Saltwater Paddling Trail. The northern primitive camping area will be enhanced and will provide opportunities for paddle-in camping. Camping areas will be closed during sea turtle nesting season from March 1 through October 31. Up to 32 slips at the boat dock will be converted to boat camping to provide overnight opportunities for boaters.

Objective: Continue to provide the current repertoire of five interpretive, educational and recreational programs on a regular basis.

Two in-person, ranger-led activities are currently offered at the park. A guided kayak tour takes visitors along the tidal creek to the southern kayak landing and beach access. Tram talks for visitors using the tram to travel from the entrance area to the beach use area inform visitors about the park's issues and resources. A self-guided plant walk educates visitors about the park ecology and identifies the park's protected plants. Several interpretive signs and kiosks educate visitors about invasive plants, seashells, rip tide currents and other issues. Publications available at the park cover an array of themes, including birds, sea turtles, mangroves, sea grasses, trails and park activities.

Objective: Develop three new interpretive, educational and recreational programs.

The park will develop three new programs to designed to inform visitors of the need to sustain and enhance the existing habitat conditions within the park, including the park's reef systems. The programs will also teach visitors about appropriate wildlife viewing behavior and techniques. Visitor education will be provided in person and through interpretive displays and kiosks at the use entrance area and at the beach use areas.

New activities will consist of both ranger-led and self-guided programs. One of these programs is a park overview for organized groups that visit the park, focusing on the nearshore reef tract and its importance to local fisheries. A self-guided snorkel tour of the reef will include waypoints to mooring buoys with information on reef geology and fish and coral identification. Additional guided walks and other programs providing information about manatees, sea turtles and beach resources will be offered as needed.

Additional interpretive signage will also identify behaviors that are encouraged in the park, while discouraging perennial problem activities, such as littering and disturbing manatees and sea turtles (and their nests). A new kiosk at the south paddling access is proposed. DRP staff will work the Florida Coastal Office and the County to install kiosks with access/boating information and resource interpretation at its County parks which serve as launch points for visitors to the state park and aquatic preserve. DRP staff will coordinate with public lands and the local community to promote awareness and provide educational opportunities about the park.

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 proposed development concept for the park is two-fold. It includes improvements to existing use areas that will enhance the visitor experience and increase access to recreational opportunities. In addition, new facilities are proposed that will add recreational activities that are compatible with those currently offered at the park.

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, 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 St. Lucie Inlet 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.

Objective: Improve/repair five existing facilities and 2.5 miles of paddling trail.

Major repair projects for park facilities may be accomplished within the ten-year term of this management plan, if funding is made available. These include the modification of existing park facilities to bring them into compliance with the Americans with Disabilities Act (a top priority for all facilities maintained by the DRP). The following discussion of other recommended improvements and repairs are organized by use area within the park.

Entrance Area:

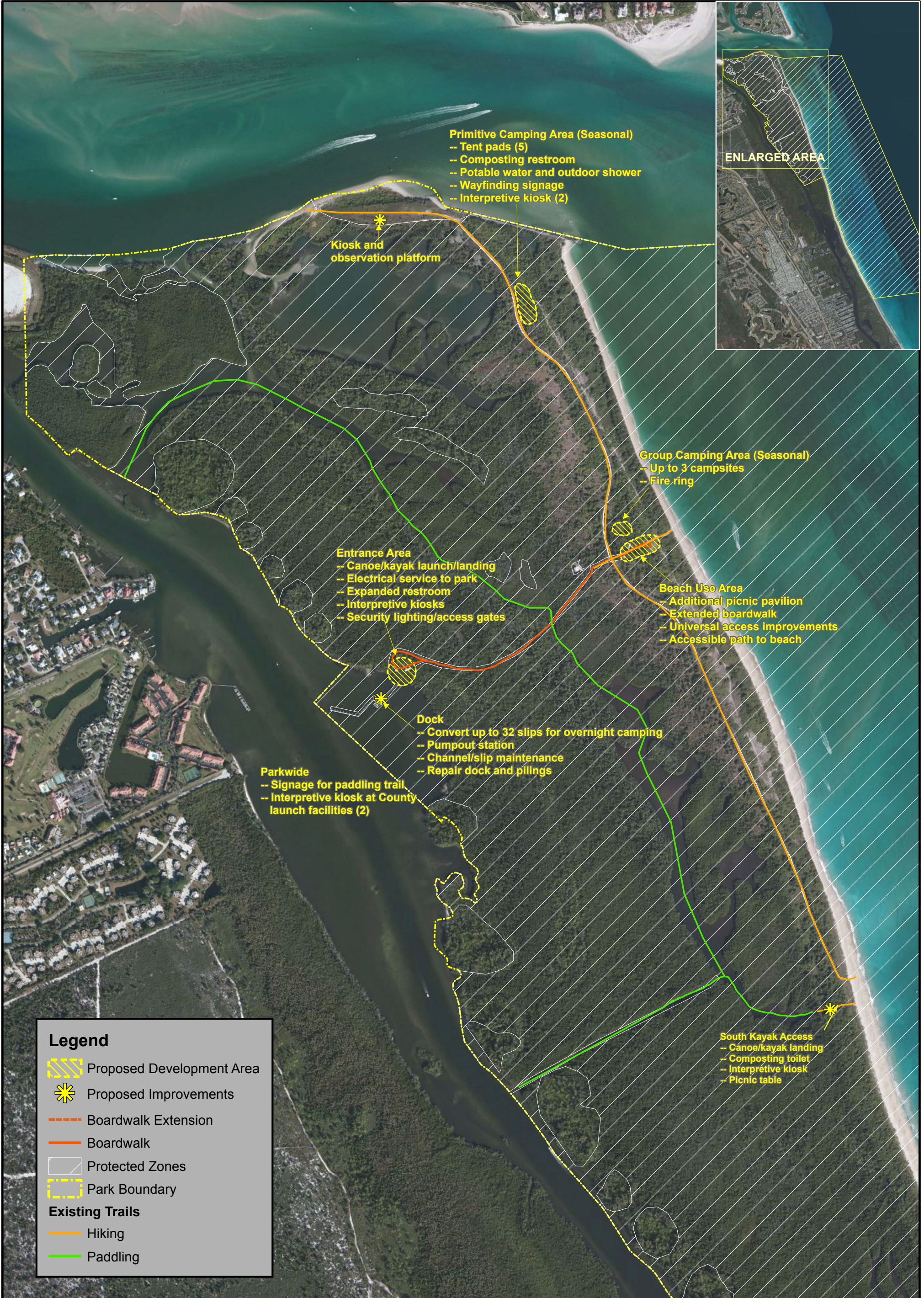
A number of improvements to the entrance area facilities will greatly enhance visitor experience and safety and support facilities.

Boating Facilities: The park's docking facility needs major repairs and reinforcement of the existing dock and pilings. A pumpout station is also recommended to provide additional capacity at the dock. The addition of electrical and water hookups to the boat slips is proposed to allow the slips to be used for overnight boat camping based on demand. One slip would be reserved for overnight use by park volunteers. Maintenance dredging for the channel and dock facilities will also be required to keep the dock area functional for boaters. DRP staff will coordinate with FIND on potential funding opportunities and implementation. A canoe/kayak launch/landing is proposed for the main entrance area as well, including a locking kayak storage rack and signage. All improvements to the entrance area and dock will seem ways to make the facilities as accessible as possible.

Electrical Service: Electrical service is needed at the park and can be provided using existing conduit that runs under the lagoon. This conduit was installed when water utilities were provided to the park. Service should be provided to the dock and, at a minimum, to other facilities in the entrance area, including the restrooms, ranger residence, entrance station and shop.

Potential Concession Opportunities: Space is available at the dock for potential ferry or water taxi service from the mainland. DRP staff will coordinate with Martin County on the development of such a service, which could be provided by a Visitor Service Provider. Any ferry service established would be planned to minimize impacts to the park's resources. A canoe/kayak rental is also envisioned as a potential concession opportunity as park visitation increases with ferry service.

Other Facilities: The restroom should be expanded to provide service for the boat camping slips. Upgrades to the ranger residence are needed, including



Primitive Camping Area (Seasonal)
 -- Tent pads (5)
 -- Composting restroom
 -- Potable water and outdoor shower
 -- Wayfinding signage
 -- Interpretive kiosk (2)

Kiosk and observation platform

Group Camping Area (Seasonal)
 -- Up to 3 campsites
 -- Fire ring

Entrance Area
 -- Canoe/kayak launch/landing
 -- Electrical service to park
 -- Expanded restroom
 -- Interpretive kiosks
 -- Security lighting/access gates

Beach Use Area
 -- Additional picnic pavilion
 -- Extended boardwalk
 -- Universal access improvements
 -- Accessible path to beach

Dock
 -- Convert up to 32 slips for overnight camping
 -- Pumpout station
 -- Channel/slip maintenance
 -- Repair dock and pilings

Parkwide
 -- Signage for paddling trail
 -- Interpretive kiosk at County launch facilities (2)

South Kayak Access
 -- Canoe/kayak landing
 -- Composting toilet
 -- Interpretive kiosk
 -- Picnic table

ENLARGED AREA

Legend

- Proposed Development Area
- Proposed Improvements
- Boardwalk Extension
- Boardwalk
- Protected Zones
- Park Boundary
- Existing Trails**
- Hiking
- Paddling

electrical service (or an upgraded generator). Solar projects will be considered if feasible and will be connected to electrical grid if service becomes available. Other improvements in the entrance area include access gates and security lighting that is sensitive to the needs of wildlife and follows the FWC Marine Turtle Lighting guidelines.

Beach Use Area:

Several enhancements to the beach use area will provide additional facilities and make the area more accessible for visitors. It is recommended that an additional picnic pavilion be installed and the boardwalk extended, with a tram turnaround loop. The existing restroom and picnic pavilion be upgraded for universal accessibility. The facilities and walkways in this use area should be upgraded to provide universal access. The walkway to the beach should be stabilized with an accessible surface to enhance access to the beach as well.

South Kayak Access:

The southern kayak access is a popular paddling destination and should be improved to provide a canoe/kayak landing, composting toilet (if feasible), picnic table and an interpretive kiosk that provides details about park rules, natural communities and other interpretive information.

Primitive Camping Area (North):

The existing primitive camping area has been traditionally used for organized groups, such as scouts. To increase use of the camping area and enhance the visitor experience, several upgrades are proposed for this camping area. A water line (extended from the beach use area) is proposed to provide potable water to this area. The existing group area would be improved with tent pads (5), a composting restroom and an outdoor shower. This area may also serve as a paddle-in site for paddlers on the Florida Circumnavigational Saltwater Paddling Trail (CT) and other paddling routes. Signage and interpretive information will also be installed at the landing site at Hole-in-the-Wall to direct paddlers to the campsites. To minimize impacts on sea turtle nesting, the camping area will be closed during nesting season (March 1 through October 31). An interpretive kiosk will provide information on proper lighting and other details regarding sea turtles, shorebirds and other resource issues. Information will also be provided by park staff when reservations are made.

Parkwide:

St. Lucie Inlet South Jetty and Pipeline Easement: The jetty at the north end of the park is owned by Martin County based on an easement from the Board of Trustees. The County is currently identifying options for maintaining the St. Lucie Inlet channel, which may include modifications to the jetty and/or the pipeline easement that runs north-south through the park (Martin County 2013). The park will work with the County to ensure maintenance and control visitor access to the jetty, which is currently deteriorated, and to clarify responsibilities for maintaining the pipeline easement.

Paddling Trail Signage and Wayfinding: Trail markers and interpretive signs are recommended for the park's internal paddling trail along the tidal creek to provide information about the park's special natural features and imperiled species. Signage and wayfinding for long-distance paddlers along the CT are also recommended. Designation of the tidal creek as a "no combustion motor zone" for trail user safety is also recommended.

Objective: Construct two new facilities.

Primitive Camping Area (South):

The former desalination plant site provides an opportunity to add primitive camping to the park at a more central location than the existing camping area. This area would include up to three primitive campsites with picnic tables and fire rings (serving up to 12 people). Campers would be able to use the existing restroom facilities at the beach use area. As with the northern primitive camping area, these sites, if included in the reservation system, would likely see significant use. To minimize impacts on sea turtle nesting, this camping area will also be closed during nesting season (March 1 through October 31). An interpretive kiosk will provide information on proper lighting and other details regarding sea turtles, shorebirds and other resource issues. Information will also be provided by park staff when reservations are made.

Parkwide:

St. Lucie Inlet Observation Platform and Exhibit: The north end of the island provides high ground suitable for an observation platform and interpretive exhibit. These facilities would provide an opportunity to inform visitors about St. Lucie Inlet and its relationship to the park's natural communities.

Offsite Interpretive Kiosks: The park will also work with the County to install kiosks with park access/boating information and resource interpretation at its waterfront parks which serve as launch points for park visitors.

Facilities Development

Preliminary cost estimates for these recommended facilities and improvements are provided in the Ten-Year Implementation Schedule and Cost Estimates (Table 7) 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 DRP 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:

Beach Use Area

Medium picnic shelter
 Extended boardwalk
 Universal access improvements

Entrance Area

Canoe/kayak launch/landing
 Expanded restroom facility with septic system upgrade
 Interpretive kiosk (2)
 Electrical and water hookups for boat slips (32)
 Pumpout station
 Existing dock repairs
 Electrical service (2,500 feet)
 Channel maintenance (dredging of slips and channel)
 Security lighting and access gates

Primitive Camping Area (North)

(Closed March 1 through October 31)
 Tent pads (5)
 Composting restroom
 Potable water (extend line)
 Outdoor shower
 Wayfinding signage
 Interpretive kiosk (2)

Primitive Camping Area (South)

Primitive campsites (up to three)
 Picnic tables and fire rings

South Kayak Access

Kayak landing
 Composting toilet (if feasible)
 Interpretive kiosk
 Picnic table

Parkwide

Signage on paddling trail
 Interpretive kiosk at County parks (2)

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 4).

The recreational carrying capacity for this park is a preliminary estimate of the number of users the unit could accommodate after the current conceptual development program has been implemented. When developed, the proposed new facilities would approximately increase the unit's carrying capacity as shown in Table 4.

Table 4. Recreational Carrying Capacity

Activity/Facility	Existing Capacity*		Proposed Additional Capacity		Future Capacity	
	One Time	Daily	One Time	Daily	One Time	Daily
Beach Use/Picnicking	238	422			238	422
Shoreline Fishing	109	219			109	219
Paddling	25	50			25	50
Trails						
Hiking Trail	17	35			17	35
Camping						
Primitive Camping	20	20	12	12	32	32
Boat Camping			124	124	124	124
TOTAL	409	746	136	136	545	882

*Existing capacity has been revised from approved plan to better follow DRP carrying capacity 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 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.

Identification of parcels on the optimum boundary map is intended solely for planning purposes. It is not to be used in connection with any regulatory purposes. Any party or governmental entity should not use a property’s identification on the optimum boundary map to reduce or restrict the lawful rights of private landowners. Identification on the map does not empower or suggest that any government entity should impose additional or more restrictive environmental land use or zoning regulations. Identification should not be used as the basis for permit denial or the imposition of permit conditions. At this time, no lands are considered surplus to the needs of the park, and no lands have been identified for acquisition.

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 St. Lucie Inlet Preserve State Park in 2002, 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.

Park Administration and Operations

- Volunteer hours have increased by approximately 20 percent over the past five fiscal years.
- The park worked closely with Martin County to ensure protection of our resources during the Inlet dredging process in 2007 and 2012.
- The park has partnered with various agencies and programs such as Martin County Annual Lionfish Roundup, REEF Great American fish count, Coastal Clean-up and others to promote resource protection of the near shore coastal resources.
- The park is one of 33 beach indexing sites in the state that provide data for researchers worldwide as it relates to sea turtle survival, contributing to the preservation of these unique species.
- Park continues to maintain a close working relationship with local law enforcement agencies.

Resource Management

Natural Resources

- Coral Monitoring: Participated in two coral monitoring programs, the Southeast Coral Reef Evaluation and Monitoring Project (SECREMP), an expansion of the Coral Reef Evaluation and Monitoring Project (CREMP), and the Florida Reef Resilience Program (FRRP).
- Coral tissue sampling was used to assess the reproductive capabilities of the coral community in the park, in conjunction with FWC and NOVA University.

- DRP staff implemented a predator control and monitoring program at the park that removed predators of marine turtle nests from the nesting beach.
- Partnered with FCO staff to conduct routine benthic surveys to determine community composition, including species abundance.
- Since 2007, the Florida Wildlife Research Institute (FWRI) of the Florida Fish and Wildlife Conservation Commission (FWC) has been involved in a snook, *Centropomus undecimalis*, acoustic project, focused on the East Coast of Florida. Research in the park is aimed at determining if the Park may be an important corridor for transmitting spawning individuals or may provide habitat for spawning aggregations.
- Marine Debris Removal: Visual surveys are conducted using SCUBA and GPS to locate and document debris along the reef structure. Benthic organisms directly impacted by marine debris are identified in order to determine the impact marine debris has on the natural resources within St Lucie Inlet Preserve State Park. Although marine debris is removed from the reef system by district biologists whenever possible, commercial interests sponsor an annual reef clean up every summer. Additionally, FCO staff created educational displays with associated waterproof wallet cards that show the park boundary, provide step-by-step instructions for reporting lost gear, and inform users of park rules.
- A buoy system consisting of both boundary and mooring buoys was installed to help protect submerged resources. Boundary buoys delineate the Park's waterward boundary and facilitate compliance with park rules. Mooring buoys reduce direct impacts from boat anchors by providing park visitors a mooring while fishing or diving.
- Turtle surveys are conducted annually in accordance with protocols established by the FWC. The data gathered on nesting leatherback, loggerhead and green turtles is used to help formulate state and federal policies for the management of marine turtles.
- Beach star, an endangered plant, is monitored on a bi-annual basis by district biologists.
- Fish population censusing is conducted annually in conjunction with the Great Annual Fish Count. DRP biologists coordinate with other agencies to gather data on fish species and abundance.
- Researchers from NOVA University (NCRI) and FWC conducted studies of light and coral tissue genetics and reproduction during 2010. Out of 150 genes studied, 31 showed significant activity and are measures of coral stress.
- During 2009, researchers from NOVA University (NCRI) and FWC conducted coring experiments on two coral species: *Diploria clivosa* and *Montastrea cavernosa*. Analysis revealed that skeletal calcification and extension rate were correlated with total flow from the St. Lucie Estuary major canals during 1990-2007 for one *D. clivosa* core. The cores are archived at the NCRI library and can be used for future analyses.
- A water quality monitoring program was implemented by district biologists to study the impacts on the near shore benthic communities caused by the discharging of Lake Okeechobee. Although the funding for this project

- expired researchers with NOVA University (NCRI) have continued monitoring the water quality on a quarterly basis since December 2009.
- Researchers from NOVA University (NCRI) conducted a study of the reproductive condition of *Siderastrea radians*, *Diploria clivosa*, and *Montastrea cavernosa* as part of a SE Florida study during 2009.
 - Lionfish eradication is a primary focus of the invasive exotic control program at the park since the fish was first observed in park waters in 2009. District biologists and partnership with other agency biologists conduct lionfish surveys on a regular basis.
 - In June 2005, the DRP received grant money from the Bureau of Invasive Plant Management to remove and treat 103 acres of Australian pine and Brazilian pepper.
 - DRP staff perform periodic removal and treatment of invasive plants in the park. Cooperative workdays with staff biologists from other agencies are also used to periodically remove and treat invasive plants.
 - Martin County treated invasive exotic plants under mitigation for a dredge pipeline easement from 2007. This mitigation was active for five years and expired in 2012.

Cultural Resources

- There are no cultural resources at the park.

Recreation and Visitor Services

- The park was listed as a site on the Great Florida Birding Trail.
- On weekends, the park operates tram carts to shuttle visitors to the beach.
- The park's paddling trail has seen a large increase in use since the paddling trail map and brochure were developed in 2010.
- Self-guided plant walk developed and implemented by Eagle Scout volunteer in 2012.

Park Facilities

- The park has replaced and repaired structures that were damaged during numerous hurricanes that occurred between 2004 and 2005.
- The park has made many modifications to facilities to enhance compliance with the Americans with Disabilities Act (ADA), thus increasing accessibility of park's facilities and use areas.
- 3300 feet of boardwalk received new deck boards and rails, and 127 pilings were repaired in 2008.
- A two-slip floating dock was replaced in 2004.
- The park was connected to the municipal water supply in 2004 with a water line being jetted under the Intracoastal Waterway.
- Park buildings received new metal roofs in 2004.
- Roll-down storm shutters were installed on the entrance station in 2012.
- Four benches, one kiosk, and a water fountain were installed.

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 7) summarizes 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 7 may need to be adjusted during the ten-year management planning cycle.

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	\$330,000
Objective B	Expand administrative support as new lands are acquired, new facilities are developed, or as other needs arise.	Administrative support expanded	C	\$60,000
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)
Objective A	Conduct/obtain an assessment of the park's hydrological needs.	Assessment conducted/program implemented	LT	\$130,000
Action 1	Conduct an assessment of the park's hydrological needs.	Assessment conducted	ST	\$30,000
Action 2	Design and implement a long-term water quality monitoring program.	Program designed/implemented	UFN	\$100,000
Objective B	Restore natural hydrological conditions and functions to approximately 80.6 acres of mangrove swamp natural community.	# Acres restored or with restoration underway	UFN	\$350,000
Action 1	Remove exotic plant species from 80.6 acres of adjacent spoil islands.	# Acres treated	UFN	\$100,000
Action 2	Remove excess spoil to grade to improve tidal exchange.	# Acres graded	UFN	\$200,000
Action 3	Revegetate spoil islands with native mangrove species.	# Acres planted	UFN	\$50,000

* 2013 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

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 III: Restore and maintain the natural communities/habitats of the park.		Measure	Planning Period	Estimated Manpower and Expense Cost* (10-years)
Objective A	Conduct habitat/natural community restoration activities on 9 acres of beach dune community.	# Acres restored or with restoration underway	LT	\$112,000
Action 1	Develop/update site specific restoration plan	Plan developed/updated	ST	\$12,000
Action 2	Implement restoration plan	# Acres with restoration underway	LT	\$100,000
Objective B	Conduct natural community/habitat improvement activities on five acres of coastal strand community.	# Acres improved or with improvements underway	LT	\$8,000
Action 1	Establish monitoring stations and monitor re-growth through natural recruitment biannually	# Acres restored or with restoration underway	LT	\$8,000
Objective C	Determine the feasibility of prescribed burns to control coinvine.	Feasibility determined	LT	\$5,000
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, as needed.	List updated	C	\$11,000
Objective B	Monitor and document 3 selected imperiled animal species in the park.	# Species monitored	C	\$225,000
Action 1	Implement FFWCC monitoring protocols for 3 imperiled animal species including loggerhead, green and leatherback marine turtles.	# Species monitored	C	\$225,000
Objective C	Maintain predation levels of marine turtle nests at or below 10 percent.	Predation level maintained	C	\$90,000
Objective D	Minimize coastal armament and other impediments to nesting by working closely with regulatory and coastal engineering agencies.	# Species monitored	C	\$75,000
Objective E	Monitor and document 2 selected imperiled plant species in the park.	# Species monitored	C	\$9,000
Action 1	Monitor percent coverage and abundance of beachstar biannually	# Species monitored	C	\$8,000
Action 2	Monitor for presence of Johnson's Seagrass	# Species monitored	C	\$1,000

* 2013 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

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 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	Annually treat 3 acres of exotic plant species in the park.	# Acres treated	C	\$31,000
Action 1	Annually develop/update exotic plant management work plan.	Plan developed/updated	C	\$16,000
Action 2	Implement annual work plan by treating 3 acres in park, annually, and continuing maintenance and follow-up treatments, as needed.	Plan implemented		\$15,000
Objective B	Implement control measures on 3 exotic and nuisance animal species in the park.	# Species for which control measures implemented	C	\$145,000
Action 1	Conduct monthly lionfish surveys	Species removed	C	\$55,000
Action 2	Conduct Predator Removal Program during turtle nesting season	Species removed	C	\$90,000
Goal VI: Protect, preserve and maintain the cultural resources of the park.		Measure	Planning Period	Estimated Manpower and Expense Cost* (10-years)
Objective A	Compile reliable documentation for all recorded historic and archaeological sites.	Documentation complete	C	\$6,000
Action 1	Complete a predictive model for high, medium and low probability of locating archaeological sites within the park.	Probability Map completed	UFN	\$6,000
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 1,221 users per day.	# Recreation/visitor	C	\$250,000
Objective B	Expand the park's recreational carrying capacity by 48 users per day.	# Recreation/visitor	LT	\$45,000
Objective C	Continue to provide the current repertoire of five interpretive, educational and recreational programs on a regular basis.	# Interpretive/education programs	C	\$5,000
Objective D	Develop three new interpretive, educational and recreational programs.	# Interpretive/education programs	LT	\$5,000

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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

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 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	\$500,000
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	LT	\$5,000
Objective C	Improve and/or repair five existing facilities] and 2.5 miles of paddling trail as identified in the Land Use Component.	# Facilities/Miles of Trail	UFN	\$1,100,000
Objective D	Construct two new facilities as identified in the Land Use Component.	# Facilities	UFN	\$115,000
Objective E	Expand maintenance activities as existing facilities are improved and new facilities are developed.	Facilities maintained	C	\$90,000
Summary of Estimated Costs				
	Management Categories			Total Estimated Manpower and Expense Cost* (10-years)
	Resource Management			\$1,197,000
	Administration and Support			\$390,000
	Capital Improvements			\$1,220,000
	Recreation Visitor Services			\$895,000
	Law Enforcement Activities ¹	1Law enforcement activities in Florida State Parks are conducted by the FWC Division of Law Enforcement and by local law enforcement agencies.		

* 2013 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

Addendum 1—Acquisition History

St. Lucie Inlet 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 St. Lucie Inlet Preserve State Park to establish a waterside public park and recreation area south of St. Lucie Inlet.

Sequence of Acquisition

On April 9, 1965, the Trustees, for the use and benefit of the Outdoor Recreational Development Council of the State of Florida, acquired a 309.65-acre property in Martin County, Florida, constituting the initial area of St. Lucie Inlet Preserve State Park. The Trustees acquired this property from the Board of Commissioners of the Florida Inland Navigation District (FIND) through a Dedication Agreement. This agreement allowed a joint use of this District-owned property for both spoil disposal and recreation and park. Prior to the Dedication Agreement, FIND had been using the subject property to deposit dredged material in the improvement and maintenance of the Intracoastal Waterway.

Since the 1965 Dedication Agreement, the Trustees have acquired several other parcels under the Land Acquisition Trust Fund (LATF) program. Nearly 4,000 acres of submerged lands have also been added to the park. Presently the park comprises approximately 4,835 acres.

Title Interest

The Trustees hold fee simple title interest in St. Lucie Inlet Preserve State Park.

Lease Agreement

On September 15, 1969, the Trustees leased St. Lucie Inlet Preserve State Park to the State of Florida Department of Natural Resources, predecessor in interest to the State of Florida Department of Environmental Protection, Division of Recreation and Parks (DRP), under Lease No. 2387. This lease is for a term of ninety-nine (99) years, and it will expire on September 14, 2068.

According to Lease No. 2387, the DRP manages St. Lucie Inlet Preserve State Park for the purposes of preserving, developing, improving, operating and otherwise managing the property for public outdoor recreational, park, conservation and related purposes.

Special Condition on Use

St. Lucie Inlet Preserve State Park is designated single-use to provide resource-based public outdoor recreation and other park related uses. Uses such as water resource development projects, water supply projects, storm-water management projects, and linear facilities and sustainable agriculture and forestry are not consistent with the purposes for which the DRP manages St. Lucie Inlet Preserve State Park.

St. Lucie Inlet Preserve State Park Acquisition History

Outstanding Reservations

The DRP's lease from Trustees stipulates that all the property be used for public outdoor recreation and related purposes. The following outstanding rights, reservations and encumbrances apply to St. Lucie Inlet Preserve State Park.

Instrument: Easement (No. 31519)
Instrument Holder: Martin County
Beginning Date: December 28, 2005
Ending Date: December 27, 2030
Outstanding Rights, Uses, Etc.: This easement allows Martin County to install and maintain a dredged material pipeline on a 50-foot-wide easement on St. Lucie Inlet State Park.

Instrument: Easement (No. 25946)
Instrument Holder: Martin County
Beginning Date: January 31, 1979
Ending Date: Perpetual
Outstanding Rights, Uses, Etc.: This easement allows Martin County to construct, improve and maintain a jetty and breakwater system on the south side of St. Lucie Inlet.

Addendum 2—Advisory Group Members and Report

**Seabranh Preserve State Park & St. Lucie Inlet Preserve State Park
Advisory Group Members**

Local Government Representatives

The Honorable Sarah Heard, Chair
Martin County Board of
County Commissioners
Martin County Administrative Center
2401 SE Monterey Road
Stuart, Florida 34996

Agency Representatives

Mr. John Lakich, Park Manager
Seabranh Preserve and St. Lucie
Preserve State Parks
4810 S.E. Cove Road
Stuart, Florida 34997

Mr. John Marshall, Region 5
Other Public Lands Forester
Florida Forest Service
5458 N Highway 17
Deleon Springs, Florida 32130

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

Mr. Brian Sharpe, Aquatic Preserve
Manager
Jensen Beach to Jupiter Inlet Aquatic
Preserve
3300 Lewis Street
Fort Pierce, Florida 34981

Mr. Bill Miller, Refuge Manager
Hobe Sound National Wildlife Refuge
13640 SE Federal Hwy
PO Box 645
Hobe Sound, Florida 33455

Ms. Janet Zimmerman, Assistant
Executive Director
Florida Inland Navigation District
1314 Marcinski Road
Jupiter, Florida 33477-9498

Mr. Charles W. Barrowclough, Chair
Martin Soil and Water
Conservation District
2401 SE Monterey Road
Stuart, Florida 34996

**Tourist Development Council
Representative**

The Honorable Thomas Bausch Chair
Martin County Tourism Development
Council
Tourism Administration
2401 SE Monterey Road
Stuart, Florida 34996

**Environmental and Conservation
Representatives**

Mr. Greg Braun
Guardians of Martin County
10370 Trailwood Circle
Jupiter, Florida 33478

Mr. Dan Martinelli, Conservation Chair
Audubon of Martin County
c/o Treasure Coast Wildlife Center
8626 SW Citrus Boulevard
Palm City, Florida 34990

Mr. Tony Chatowsky
Cocoplum Chapter, Florida Native
Plant Society
1750 SW Coxswain Place
Palm City, Florida 34990

**Seabranh Preserve State Park & St. Lucie Inlet Preserve State Park
Advisory Group Members**

Recreational User Representatives

Mr. Paul Haydt, State Committee Chair
(Florida)
East Coast Greenway Alliance
c/o St. Johns Water Management
District
P.O. Box 1429
Palatka, Florida 32178-1429

Mr. Jack Roberts
(Paddling community representative)
10705 SE Seabreeze Court
Hobe Sound, Florida 33455

Ms. Audrey Minnis, Seabranh
Trailmaster
Florida Trail Association
Tropical Trekkers Chapter
6090 SW Moore St.
Palm City, Florida 34990

Adjacent Landowners

Mr. Richard Dickerson
Miles Grant Condominium Two, Inc.
5355 S.E. Miles Grant Road, E-202
Stuart, Florida 34997

Mr. Eric Spoelstra, Manager
Barry Mawn, President
Loblolly Community Associations
7407 S.E. Hill Terrace
Hobe Sound, Florida 33455

Seabbranch Preserve State Park & St. Lucie Inlet Preserve State Park Advisory Group Staff Report

The Advisory Group meeting to review the proposed land management plans for Seabbranch Preserve State Park and St. Lucie Inlet Preserve State Park was held at the Jonathan Dickinson State Park Education Center on Wednesday, December 11, 2013, at 9:00 AM.

Calin Ionita represented John Marshall. Elisa Ackerly represented Charles Barrowclough. Mark Haryslak represented Cheryl Williams. Shannon Nazzal represented Thomas Bausch. Eric Spoelstra Paul Haydt did not attend but sent in written comments by email. All other appointed Advisory Group members were present. Attending Division of Recreation and Parks (DRP) staff were John Lakich, Paul Rice, Ernest Cowan, Charles Jabaly, Jeffrey Bach and Jennifer Carver.

Ms. Carver began the meeting by explaining the purpose of the Advisory Group and reviewing the meeting agenda. Ms. Carver summarized public comments received during the previous evening's public workshop. Ms. Carver pointed out that the DRP will be adding additional language regarding general management measures for shorebird protection to the plan and passed the text around for review by Advisory Group members. Ms. Carver then asked each member of the Advisory Group to express his or her comments on the draft plan.

Summary of Advisory Group Comments

Janet Zimmerman (Florida Inland Navigation District (FIND)) stated that FIND is interested in continuing to work with the DRP and the Indian River Lagoon Aquatic Preserves. She mentioned that FIND's Cooperative Assistance Program can provide funding to improve boat access areas and erosion control projects. These are 50/50 matching grants, with the application period opening in January. Ms. Zimmerman pointed out the discussion on page 55 (St. Lucie Inlet) regarding erosion of the spoil piles and stated that FIND has installed Gabion (wire mesh) mats to control erosion (on spoil island M5). Ms. Zimmerman pointed out that FIND is tasked with maintaining Intracoastal Waterway navigation and works with the County on maintenance dredging. She stated that FIND has utilized a sand disposal site in the Hobe Sound National Wildlife Refuge and is looking for near shore disposal sites. She mentioned that the Marine Industries Association of the Treasure Coast conducts the waterway cleanups discussed on page 27 (St. Lucie Inlet).

Brian Sharpe (Florida Coastal Office/Indian River Lagoon Aquatic Preserves) stated that his office is working on several management plans for the Indian River Lagoon and Banana River Aquatic Preserves, combining them into one plan for the system. He stated that the draft plans for St. Lucie Inlet and Seabbranch Preserve State Parks and the Aquatic Preserve plans complement each other. He pointed out that his office manages the spoil islands and would like to coordinate with the DRP regarding any plans for the islands, such as providing suitable areas for least terns (as suggested at the public meeting). Mr. Sharpe also suggested that the DRP and the Florida Coastal Office (formerly Coastal and Aquatic Managed Areas) coordinate on the kiosks at local launch facilities to provide information on both the state parks and the aquatic preserves. Mr. Sharpe mentioned that wood from removal of

Seabranh Preserve State Park & St. Lucie Inlet Preserve State Park Advisory Group Staff Report

Australian pines (and other trees as appropriate) is often provided as firewood at campsites and offered use of FCO's equipment for cutting logs.

Ricardo Zambrano (Florida Fish and Wildlife Conservation Commission (FWC)) commended the DRP on the plans. He also stated that FWC may provide additional comments regarding gopher tortoises, sea turtles and coral reefs separately (see Summary of Written Comments). He mentioned that the plan may reference an old management plan for gopher tortoises. He pointed out that page 16 and a few other places in the St. Lucie Inlet plan incorrectly mention nesting shorebirds. Mr. Zambrano felt the shorebird language would be beneficial in the plan, especially the pre-posting of sensitive areas. He felt that it would be difficult to keep spoil islands clear for bird nesting. Mr. Zambrano indicated that, on a personal note, he was not in favor of ferry service to the island. He was concerned that such a service would bring more disturbance and impact to the island. He felt that access by canoes, kayaks and paddleboards, in addition to private boats, creates less impact.

Commissioner Sarah Heard (Martin County) stated that the draft plans were well-written. Commissioner Heard pointed out that the biggest change in these two parks for Martin County residents came from the construction of the shared use path at Seabranh Preserve State Park. She stated that many residents and staff were concerned about the impacts of the trails, but they have become very popular. She feels that Seabranh will become more popular over time with County residents and visitors. Commissioner Heard also voiced her support for the revised management plans. She stated that several County staff persons had accompanied her to the meeting as well (see Summary of Public Comments for their additional comments).

Jack Roberts (Paddling community) repeated a comment he had made at the public meeting the previous evening. He pointed out that the County's Cove Road Park is a major access point for St. Lucie Inlet Preserve State Park, and he is concerned about the parking situation. He stated that the pavement is in poor condition and visitors are parking on the grass. He was concerned about the potential damage being caused at the site and wondered if the County had any plans for improvements at the site. County representatives present noted the comments and indicated that previous plans to further develop the site had been somewhat controversial.

Bill Miller (Hobe Sound National Wildlife Refuge (NWR)) commended DRP staff on the plans. He asked staff to briefly point out the differences between the current plans and the proposed plans. Staff provided a brief overview of each of the Conceptual Land Use Plans and resource management programs for the parks. Mr. Miller suggested that more law enforcement presence might be necessary if overnight camping is increased or added, especially at Seabranh Preserve State Park. He stated that the partnerships between the DRP and the NWR will continue, especially since St. Lucie Inlet Preserve State Park and the NWR share a border. The park and the NWR will continue to work together on exotics removal and beach renourishment issues. Mr. Miller pointed out that the NWR is willing to accept sand from dredging projects. He inquired how the six-acre target for exotics removal at

Seabranh Preserve State Park & St. Lucie Inlet Preserve State Park Advisory Group Staff Report

Seabranh Preserve State Park was determined. Staff explained that the objective is stated in terms of infested acres (versus gross acres) of exotics treated and is calculated based on density of exotics. Mr. Miller pointed out the aggressive prescribed fire management goals for Seabranh and asked if the DRP is planning to burn at St. Lucie Inlet. Staff responded that a test burn was conducted in the coastal strand to control coinvine, and future burns may be conducted. Mr. Miller offered to partner with the DRP regarding timing of burns and necessary resources. He inquired if the park burns Australian pines or removes them from the site. Staff indicated that the wood is generally maintained onsite. Mr. Miller stated that least terns have nested on the NWR.

Greg Braun (Guardians of Martin County) complimented the DRP on both plans, including the updates to the inventories and additional data provided. He stated that adopting the scrub management guidelines was a great move for Seabranh Preserve State Park. He asked if the channelization of Manatee Creek has hydrologic effects and if culverts would assist with managing water levels in the park. Mr. Braun stated that keeping more water on the park property would be beneficial and inquired if the park does water quality monitoring. DRP staff stated that the hydrologic assessment and water quality monitoring proposed in the plan would identify any issues and make recommendations on this issue. Mr. Braun asked if the berm feature discussed in the natural community description section is a natural feature. He stated that, if it is natural, it would be detrimental to remove it and suggested that it be discussed under a separate section for a coastal berm natural community. Mr. Braun suggested that the DRP partner with agencies managing adjacent lands, such as FIND and Martin County on exotic species control. He pointed out that the plan does not address biological controls related to diseases moving through the natural communities. He stated that Martin County taxpayers contributed money toward the initial purchase of the Seabranh property and suggested that this be mentioned in the plan. Mr. Braun suggested that an observation tower be constructed near the East Coast Greenway (Seabranh) to provide views of the water/beach. He suggested that control of exotics be prioritized based on proximity to seed dispersal sources. Mr. Braun noted his observation that the mosquito control ditch at St. Lucie Inlet Preserve State Park has gotten wider and suggested that the DRP consider prohibiting motorized boats. He also noted that it appears that the mangroves may have been trimmed. He suggested that information on the federally-designated critical habitat for piping plover at St. Lucie Inlet Preserve State Park be included in an appendix or on a map. Mr. Braun asked if the DRP has outreach programs to provide information and presentations to community groups. Mr. Braun also provided staff with corrections to scientific names and other technical items after the meeting.

Rich Dickerson (Miles Grant Condominiums) agreed with Mr. Braun's compliments on the plans. He inquired if the DRP has a plan for addressing budget reductions. DRP staff stated that the Division is continuously reviewing ways to increase revenues and reduce costs, such as installing solar and LED lights, using electric carts, and others. The DRP seeks to educate visitors about the unique resources of the parks, especially those designated as preserves such as these two parks.

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Calin Ionita (Department of Agriculture and Consumer Services, Florida Forest Service (FFS)) suggested that the density (trees per acre) listed in the desired future condition for mesic flatwoods (page 19, Seabranh) be checked with the FWC scrub management guidelines. He pointed out that if scrub is maintained properly, multiple species will benefit and be present, not just Scrub-jay. DRP staff pointed out that the Division strives for good management overall and that Scrub-jay is discussed as an umbrella species. Mr. Ionita asked if the baygall should be considered in "fair" condition if exotics are present as discussed on page 25. DRP staff indicated that the rating is based on the density of exotics. Mr. Ionita suggested the interpretive information along the trails seek to educate visitors about exotic and invasive plants and animals and why they shouldn't be there (in addition to the imperiled species). DRP staff indicated that interpretive displays about diversity and the transition between natural communities provide opportunities to talk about exotics as well. Mr. Ionita mentioned that installation of fire rings at primitive campsites could result in visitors bringing their own wood from outside the park or collecting wood inside the park, both of which can be problematic. DRP staff stated that rules regarding firewood are posted at the park, and the park would generally have wood available for visitors from appropriate sources.

Dan Martinelli (Audubon of Martin County) appreciated the increased emphasis in the plans on measurable objectives and enhanced level of liaison among federal, state and local agencies.

Shannon Nazzal (Martin County Tourism Development Council (TDC)) asked if there was any sort of marketing plan for the parks. She inquired how the DRP provides information to residents and visitors about the parks. Ms. Nazzal mentioned that the TDC has found it helpful to put QR codes at trailheads and trailside kiosks to provide information. She indicated that scouting groups now use smartphones to provide educational information to kids. Ms. Nazzal suggested clarifying that overnight stays will be added to the park (Seabranh) in the objectives regarding increasing carrying capacity. She inquired how camping fees would be collected and whether the primitive camping (at both parks) would be included in the online reservation system. DRP staff indicated that campsites would be monitored, and primitive sites are generally reserved directly through the park manager.

Tony Chatowsky (Martin County Native Plant Society) commended the DRP on the management plans. He felt they were thorough, far-thinking, understandable and clearly-written. Mr. Chatowsky focused on plants in his review of the plans, including thoroughly reviewing the comprehensive plant list and list of endangered/threatened plants that will be monitored. He agreed that monitoring the Vanilla orchid, hand fern, Curtiss' milkweed, Johnson's seagrass and other plants is important (Seabranh). He stated that he has walked through the baygall looking for hand ferns but didn't find them. He was concerned about fire, as the biggest cause of demise of the hand fern is burning. He suggested that the baygall not be burned. DRP staff responded that prescribed fire focuses on the mesic flatwoods community, and the baygall should have wet soils throughout the year,

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so it should not burn. Mr. Chatowsky mentioned he had several corrections to the plant list and provided those to staff after the meeting. He felt the plan to focus on exotic plant removal is very important, and he supported the suggestion to place information at interpretive kiosks regarding exotic plants for public understanding and education. Mr. Chatowsky voiced concerns that camping at Seabbranch might increase the risk of vandalism and unauthorized use of the park due to its location close to a heavily developed area. He has observed similar issues with a park near his home. He mentioned that smoke from campfires blowing into communities may be a problem as well. He encouraged the DRP to carefully consider the idea of putting in overnight campsites with fire and pointed out the travelers on the East Coast Greenway could continue on to Jonathan Dickinson State Park for wonderful camping opportunities. He requested that more benches be installed for hikers along the trails. He pointed out that while page 26 of the St. Lucie Inlet plan mentions king mackerel, he has only seen Spanish mackerel in this area.

Elisa Ackerly (Martin County Soil and Water Conservation District (MCSWCD)) stated that most of her comments were covered by other members. She mentioned that part of the MCSWCD's mission is education, so she was pleased to see education in the plan. She would like to see information about the history of these park lands (and the county and state in general) posted as part of the interpretive and educational information. She stated that this information would fill a gap for residents who may live in Indiantown (in western Martin County) see the value of the parks for resource conservation and water quality. She suggested that equestrian uses be considered for Seabbranch, as there is a lot there to enjoy, though parking for trailers may be an issue. DRP staff indicated that equestrian uses had been discussed, but due to the small size of Seabbranch, the DRP has focused on providing equestrian facilities at larger state parks in the area, including Atlantic Ridge State Park, Jonathan Dickinson State Park and Savannas Preserve State Park.

Audrey Minnis (Florida Trail Association (FTA)/Tropical Trekkers) asked if paddling access could be provided through the mangroves to Hole-in-the-Wall so that paddlers do not have to go out into St. Lucie Inlet. She suggested that paddlers launching at Cove Road be advised to go south to the 25 mph speed area so they can get across the ICW more safely. She supports better mapping of the paddling trail. She asked if the County had considered putting a restroom at Cove Road Park. Regarding the TDC's question about outreach and social media, she mentioned that FTA's activities are listed on Meetup.com. Ms. Minnis suggested that bike racks be installed at additional biking/hiking trail junctions in Seabbranch (in addition to adding benches). She mentioned that the trail map for Seabbranch is outdated and needs to be updated. She suggested a new north loop entrance coming directly through the trailhead. Ms. Minnis suggested that no fires be allowed at campsites in Seabbranch. She asked if feral hogs were still a concern. DRP staff indicated that traps are being used, but there has not been hog activity recently. Ms. Minnis asked for clarification regarding the boardwalk that was included in the previous plan. DRP staff indicated that the boardwalk is no longer proposed. She stated that a newspaper reporter wrote about all the parks in the area a few years ago and suggested that DRP staff reach out to the press. Ms. Minnis inquired if the guided

Seabranh Preserve State Park & St. Lucie Inlet Preserve State Park Advisory Group Staff Report

tours at the parks were successful. DRP staff stated that more people were starting to attend the hikes, and the kayak tour had a good turnout.

Summary of Written Comments

Paul Haydt (East Coast Greenway Alliance) commended DRP staff on the quality of these state park plans and others he has seen in the last several years. He noted that the East Coast Greenway is represented in the plan (Seabranh) and that trailheads and bathrooms for day users and camping opportunities for pedal-through travelers are great amenities along the East Coast Greenway. He suggested that the Alliance would be interested in working with the DRP and Florida Department of Transportation to identify opportunities to improve the trail network, potentially starting with the DRP's District 5. Mr. Haydt also commented on coastal habitat resource management issues. He suggested that coastal resiliency (climate change/sea level rise) be actively anticipated, recognized and planned for in both management plans. He suggested that shoreline park infrastructure, historical and cultural protection concerns and coastal habitat restoration and management should all be included in a "coastal resiliency" component of the plan. Mr. Haydt suggested that some of all of the dredge spoil islands at St. Lucie Inlet Preserve State Park be identified for potential restoration to historical saltmarsh habitat.

Eric Spoelstra (Loblolly Community Associations) wrote that Loblolly supports the DRP's efforts relative to the proposed management plan(s), and they appreciate being kept informed.

Karen Schanzle (Florida Fish and Wildlife Conservation Commission (FWC)) provided comments from the marine turtle subsection of FWC as indicated by Mr. Zambrano. Ms. Schanzle provided specific comments regarding the objective for monitoring imperiled animal species. She suggested that park staff use sub-meter GPS units during nesting survey and that disorientation and Obstructed Nesting Attempt reports be completed as appropriate.

Summary of Public Comments

Deborah Drum (Martin County) stated that both plans are well-written and the whole team should be proud. Martin County is supportive of coordinating on exotics treatment with the DRP, FIND, FFS and other agencies. She pointed out that some exotics at Seabranh are coming over from adjacent lands and that coordination was addressed sufficiently in the plan. She liked the idea of working on publicly promoting awareness of the parks to increase use, education and volunteers. She supported the idea of an appreciation day for federal, state and local lands (as suggested at the public workshop). She mentioned that the St. Lucie Inlet plan recognizes issues related to discharges from Lake Okeechobee but felt that the plan falls short on recommendations to address the problems. She suggested that the plan include requests for funding for water quality monitoring and research on the coral reef system and Johnson's seagrass. She also suggested that the ongoing research at the park provides an opportunity to serve as a clearinghouse for information collected by various agencies. Ms. Drum stated there is a need to better

Seabbranch Preserve State Park & St. Lucie Inlet Preserve State Park Advisory Group Staff Report

organize and share information on impacts to the natural systems from the discharges.

Baret Barry (Martin County) asked if the DRP intended to renew the permit for the gopher tortoise recipient site at Seabbranch and/or convert it from a short-term site to a long-term site. She also asked if the intent was to maintain the site only for projects within Seabbranch. DRP staff stated that the current permit would be renewed, and the intent was to keep the site available for gopher tortoises from state parks within the general area.

Staff Recommendations

The staff recommends approval of the proposed management plans for Seabbranch Preserve State Park and St. Lucie Inlet Preserve State Park as presented, with the following significant changes:

- Incorporate text under the hydrological restoration needs to identify the need for a long-term water quality monitoring program (St. Lucie Inlet).
- Incorporate language regarding the potential for establishing nesting areas for least terns on the spoils islands (St. Lucie Inlet).
- Add text regarding shorebird protection to the imperiled species inventory section (St. Lucie Inlet).
- Expand the text about interpretive and educational programs to include information on invasive and exotic plants and animals and include other opportunities for reaching out to the community (both parks).
- Incorporate text to clarify how the objective for treatment of exotic plants is determined (both parks).
- Modify the text regarding coastal/beach management to reiterate that pets are not allowed on the park's beaches (St. Lucie Inlet).
- Review Addendum 5 (Plant and Animal List) and modify as appropriate to include species observed in the park (both parks).

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 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

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Advisory Group Staff Report**

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

- Bagnold, R.A. 1941. *The Physics of Blown Sand and Desert Dunes*. Meyhuen, London.
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Addendum 4—Soils Descriptions

St. Lucie Inlet Preserve State Park Soils Descriptions

(8) Palm Beach Sand, 0 to 8 percent slopes - This nearly level to gently sloping soil is well drained to excessively drained. It occurs along dunelike ridges that parallel the Beaches and Atlantic Ocean.

Typically, the surface layer is a mixture of black sand and shell fragments that is ca. 8 inches thick. Below this layer is sand and shell fragments to a depth of 80 inches or more.

The upper 5 inches of the sand and shell fragments is dark grayish brown, the next 14 inches is brown, and the lower 53 inches is pale brown.

Included with this soil in mapping are small areas of Canaveral soils and moderately well drained soils near the base of slopes. Within any area, these soils account for less than 10 percent of the map unit.

Palm Beach sand has a water table depth greater than 120 inches and permeability is very rapid throughout the profile. Within this soil type, the available water capacity is very low. In addition, natural fertility and the content of organic matter are very low.

(28) Canaveral Sand, 0 to 5 percent slopes - This soil type consists of very deep, somewhat poorly to moderately well drained, very rapidly permeable soils on side slopes of dune-like ridges bordering depressions and sloughs along the coast in lower Coastal Plain of peninsular Florida. They formed in thick marine deposits of sand and shell fragments. Canaveral soils have a water table within 10 to 40 inches of the surface for 2 to 6 months or more in an average year. They can recede to a depth of 50 inches or more during dry periods. Internal drainage is impeded by this shallow water table.

The surface layer is a dark grayish brown sand mixed with shell fragments, about 8 inches thick. The next layer is pale brown to very pale brown mixed sand and shell fragments, extending to 65 inches or more.

These soils were formerly part of the Palm Beach series and are geographically associated with Anclote, Delray, Palm Beach, Paola, Pompano, St Lucie and Welaka soil series. Most areas of the Canaveral soils remain in their natural state and function as wildlife habitat and recreation. The native vegetation supported by this soil type includes cabbage palm, scattered saw palmetto, magnolias, bays, and slash pine with an understory of gallberry and pineland threeawn.

(30) Bessie Muck - This soil type consists of deep, very poorly drained, slow or very slow permeable organic soils in coastal mangrove swamps that are subject to daily or periodic flooding by high tides. They formed in marine deposits of organic materials over clay and sand sediments. Near the type location, the climate is humid subtropical. The mean annual temperature is about 74 degrees F, and the mean annual precipitation is about 57 inches. Slopes are less than 1 percent.

St. Lucie Inlet Preserve State Park Soils Descriptions

The surface layer is dark reddish brown muck about 18 inches thick and contains a high percentage of fine mineral material. From 18 to 44 inches a very dark grayish brown clay extends with a decrease in organic matter and an increase in fine sand. Below this layer is dark gray fine sand mixed with shell fragments.

Bessie muck was formerly mapped as Tidal Swamp. Fluctuating tides flood the surface daily or during seasonal storm tides. They are located in protected salt water or brackish water areas along the Indian River, the Intracoastal Waterway, and coastal tributary streams.

Included with this soil are small areas of Okeelanta Variant, Aquents, and Canaveral soils. There are also small areas of soils that have less than 16 inches or greater than 40 inches of organic material. In addition, small areas of soils have a mineral surface layer overlying organic materials. Total inclusions in any area are less than 20 percent.

The water table is dependent on tidal action. It is at or above the surface during high tides and storm periods and is within a depth of 10 inches at all other times. The available water capacity is very high in the organic surface layer and high in the clay substratum. Permeability is rapid in the organic layer and slow or very slow in the clay substratum. Natural fertility is medium and salinity is high.

Bessie soils are geographically associated with the Canaveral series. Most areas of the Bessie soils remain in their natural state and function as wildlife habitat. The native vegetation supported by this soil type consists of dense thickets of red, black, and white mangrove trees. In areas with breaks in the canopy, bushy sea-oxeye, sea purslane, leather fern, and low growing succulents such as glasswort in the more open areas.

(50) Wulfert Muck, tidal – This soil type consists of very deep, very poorly drained, rapidly permeable soils in tidal areas along the Gulf Coast in peninsular Florida. They formed in decomposed organic material and underlying materials. Near the type location, the climate is humid subtropical. The mean annual temperature is about 72 degrees F, and the mean annual precipitation is about 52 inches. Slopes are less than 1 percent.

Typically, the surface layer is a dark reddish brown muck about 0-2 inches thick. Dark muck and plant fibers extend from 2-36 inches. Sand mixed with shell fragments occurs below this layer to a depth of 80 inches.

Wulfert soils are geographically associated with Captiva and Kesson soils. However, both of these soils are sandy throughout. The poorly drained Captiva soils are on higher positions and have mollic epipedons. Kesson soils are on similar positions.

This soil is flooded by high tides, both daily and seasonal, and during storm events. At all other times, the water table is within depth of 10 inches. Permeability is rapid in all layers. Water storage capacity is very high in the organic layers and low in the underlying sand and shell layers. Natural fertility is high.

St. Lucie Inlet Preserve State Park Soils Descriptions

Wulfert muck was formerly classified as Tidal Swamp and functions mainly as wildlife habitat. Native vegetation supported by this soil type includes red and black mangroves with scattered patches of white mangroves, needle rush, seashore saltgrass, marshhay cordgrass, and smooth cordgrass.

(50) Durbin Muck, tidal - This nearly level soil is very poorly drained. It occurs in tidal mangrove swamps. Slopes are less than 1 percent. Typically, the surface layer is black muck about 4 inches thick. Next is a dark reddish brown mucky peat about 16 inches thick. Sand mixed with shell fragments occurs below this layer to a depth of 60 inches or more.

Included with this soil are small areas of Aquents, Bessie and Canaveral soils. Also included are small areas of soils that are similar to this Okeelanta Variant soil but have slightly less than 16 inches of organic material and soils that do not have mucky peat in the organic material. Total inclusions in any area are less than 20 percent.

This soil is flooded by high tides, both daily and seasonal, and during storm events. At all other times, the water table is within depth of 10 inches. Permeability is rapid in all layers. Water storage capacity is very high in the organic layers and low in the underlying sand and shell layers. Natural fertility is high. Typical vegetation on this soil includes red and black mangroves with scattered patches of white mangroves.

(53) Udorthents, 0 to 35 percent slopes – Udorthents consist of nearly level, heterogeneous soil material. This material has been excavated, reworked, and reshaped by earthmoving equipment. Udorthents are near urban centers, phosphate-mining operations, major highways and sanitary landfills. They are also associated with dredge spoil material.

Udorthents do not have an orderly sequence of soil layers. This map unit is not associated with or confined to a particular kind of soil. Udorthents are variable and contain discontinuous lenses, pockets, or streaks of black, gray, grayish brown, brown, or yellowish brown sandy or loamy fill material. The thickness of the fill material ranges from 30 to 80 inches or more. Also included are small areas of soil that has slope that ranges from 0 to 5 percent.

Most soil properties are variable. The depth to the seasonal high water table varies with the amount of fill material and artificial drainage. Permeability and the available water capacity vary widely from one area to another.

(67) Kesson Sand, tidal – This soil type consists of deep, very poorly drained, rapid to moderately permeable soils that formed in thick marine deposits of sand and shell fragments in tidal swamps and marshes along the Gulf Coast and Southeast Coast of Peninsular Florida. Slopes range from 0 to 1 percent.

Kesson soils are in tidal swamps and marshes that are flooded during normal high tides. The color, texture, and thickness of the layers of this soil vary from area to

St. Lucie Inlet Preserve State Park Soils Descriptions

another. A common profile has the soil's surface layer of black, very dark gray, or very dark grayish brown and is 10 inches or more thick. It is a mucky sand or a mucky loamy sand. The surface layer is fibrous muck 4 to 6 inches thick. The next layer is black, very dark gray, very dark grayish brown, dark gray, gray, grayish brown, or brown sand, fine sand, or loamy sand.

Kesson soils are geographically associated with Captiva, Myakka, and Wulfert soil series. Kesson soils were formerly mapped as tidal swamp and function mainly as wildlife habitat. Native vegetation supported by this soil type includes red, black and white mangroves, oxeye daisy, and batis.

Addendum 5—Plant and Animal List

St. Lucie Inlet Preserve State Park Plants

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

Giant leather fern	<i>Crostichum danaeifolium</i>	
Asian sword fern.....	<i>Nephrolepis multiflora*</i>	
Avery's sword fern	<i>Nephrolepis x averyi</i>	
Golden polypody.....	<i>Phlebodium aureum</i>	
Resurrection fern.....	<i>Pleopeltis polypodioides</i> var. <i>michauxiana</i>	
Whisk fern	<i>Psilotum nudum</i>	
Chinese ladder brake	<i>Pteris vittata</i> *	
Widespread maiden fern	<i>Thelypteris kunthii</i>	
Shoestring fern	<i>Vittaria lineata</i>	

ANGIOSPERMS

Monocots

Bushy bluestem.....	<i>Andropogon glomeratus</i> var. <i>pumilus</i>	
Southern sandbur	<i>Cenchrus echinatus</i>	
Coastal sandbur	<i>Cenchrus incertus</i>	
Sanddune sandbur.....	<i>Cenchrus tribuloides</i>	
Coconut palm.....	<i>Cocos nucifera</i> *	
Baldwin's flatsedge	<i>Cyperus croceus</i>	
Swamp flatsedge	<i>Cyperus ligularis</i>	
Beachstar	<i>Cyperus pedunculatus</i>	BD, CS
Flatleaf flatsedge	<i>Cyperus planifolius</i>	
Fourangle flatsedge.....	<i>Cyperus tetragonus</i>	
Manyspike flatsedge.....	<i>Cyperus polystachyos</i> var. <i>texensis</i>	
Nutgrass	<i>Cyperus rotundus*</i>	
Tropical flatsedge	<i>Cyperus surinamensis</i>	
Durban crowfootgrass	<i>Dactyloctenium aegyptium*</i>	
Hurricanegrass.....	<i>Fimbristylis cymosa</i>	
Rein orchid	<i>Habenaria floribunda</i>	
Mangrove spiderlily	<i>Hymenocallis latifolia</i>	
Shore rush.....	<i>Juncus marginatus</i>	
Woodsgrass	<i>Oplismenus hirtellus</i>	
Bitter panicgrass	<i>Panicum amarum</i>	
Guineagrass.....	<i>Panicum maximum*</i>	
Thin paspalum	<i>Paspalum setaceum</i>	
Seashore paspalum.....	<i>Paspalum vaginatum</i>	
Rose natalgrass.....	<i>Rhynchelytrum repens</i> *	
Cabbage palm	<i>Sabal palmetto</i>	
Bowstring hemp	<i>Sansevieria hyacinthoides*</i>	
Saw palmetto.....	<i>Serenoa repens</i>	
Earleaf greenbrier	<i>Smilax auriculata</i>	
Smooth cordgrass.....	<i>Spartina alterniflora</i> var. <i>glabra</i>	

* Non-native Species

St. Lucie Inlet Preserve State Park Plants

Common Name	Scientific Name	Primary Habitat Codes (for imperiled species)
Saltmeadow cordgrass	<i>Spartina patens</i>	
Smutgrass	<i>Sporobolus indicus</i> *	
Seashore dropseed	<i>Sporobolus virginicus</i>	
Ballmoss	<i>Tillandsia recurvata</i>	
Southern needleleaf	<i>Tillandsia setacea</i>	
Spanish moss	<i>Tillandsia usneoides</i>	
Giant wild pine	<i>Tillandsia utriculata</i>	
Purple sandgrass	<i>Triplasis purpurea</i>	
Sea oats	<i>Uniola paniculata</i>	
Tropical signalgrass	<i>Urochloa subquadriflora</i> *	
Spanish bayonette	<i>Yucca aloifolia</i>	
Dicots		
Rosary pea	<i>Abrus precatorius</i> *	
Yellow joyweed	<i>Alternanthera flavescens</i>	
Seaside joyweed	<i>Alternanthera maritima</i>	
Common ragweed	<i>Ambrosia artemisiifolia</i>	
Torchwood	<i>Amyris elemifera</i>	
Toothcup	<i>Ammania latifolia</i>	
Pond apple	<i>Annona glabra</i>	
Marlberry	<i>Ardisia escallonioides</i>	
Sea lavender	<i>Argusia gnaphalodes</i>	BD, CS
Annual saltmarsh aster	<i>Aster subulatus</i>	
Black mangrove	<i>Avicennia germinans</i>	
Silverling	<i>Baccharis glomeruliflora</i>	
Groundsel tree	<i>Baccharis halimifolia</i>	
Saltwort	<i>Batis maritima</i>	
Spanish needles	<i>Bidens alba</i> var. <i>radiata</i>	
Bushy seaside oxeye	<i>Borrchia frutescens</i>	
Gumbo limbo	<i>Bursera simaruba</i>	
Gray nicker-bean	<i>Caesalpinia bonduc</i>	
Coastal searocket	<i>Cakile lanceolata</i>	
Jamaican capertree	<i>Capparis cynophallophora</i>	
Limber caper	<i>Capparis flexuosa</i>	
Papaya	<i>Carica papaya</i> *	
Australian-pine	<i>Casuarina equisetifolia</i> *	
Madagascar periwinkle	<i>Catharanthus roseus</i> *	
Sugarberry	<i>Celtis laevigata</i>	
Spadeleaf	<i>Centella asiatica</i>	
Day jessamine	<i>Cestrum diurnum</i> *	
Partridge pea	<i>Chamaecrista fasciculata</i>	
Hairy partridge-pea	<i>Chamaecrista nictitans</i> var. <i>aspera</i>	
Limestone sandmat	<i>Chamaesyce blodgettii</i>	
Dixie sandmat	<i>Chamaesyce bombensis</i>	

* Non-native Species

St. Lucie Inlet Preserve State Park Plants

Common Name	Scientific Name	Primary Habitat Codes (for imperiled species)
Hairy spurge	<i>Chamaesyce hirta</i>	
Seaside spurge.....	<i>Chamaesyce mesembryanthemifolia</i>	
Common snowberry	<i>Chiococca alba</i>	
Coco plum	<i>Chrysobalanus icaco</i>	
Satinleaf	<i>Chrysophyllum oliviforme</i>	
Tread-softly	<i>Cnidioscolus stimulosus</i>	
Pigeon plum.....	<i>Coccoloba diversifolia</i>	
Seagrape.....	<i>Coccoloba uvifera</i>	
Dwarf Canadian horseweed	<i>Conyza canadensis</i> var. <i>pusilla</i>	
Smooth rattlebox.....	<i>Crotolaria pallida</i> *	
Coastal croton.....	<i>Croton glandulosus</i>	
Gulf croton	<i>Croton punctatus</i>	
Carrotwood.....	<i>Cupaniopsis anacardioides</i> *	
Gulf coast swallowwort	<i>Cynanchum angustifolium</i>	
Coinvine.....	<i>Dalbergia ecastaphyllum</i>	
Varnishleaf	<i>Dodonea viscosa</i>	
Florida tasselflower	<i>Emilia fosbergii</i> *	
Coralbean.....	<i>Erythrina herbacea</i>	
White stopper	<i>Eugenia axillaris</i>	
Spanish stopper	<i>Eugenia foetida</i>	
Dog-fennel	<i>Eupatorium capillifolium</i>	
Lateflowering thoroughwort.....	<i>Eupatorium serotinum</i>	
Marshgentian	<i>Eustoma exaltatum</i>	
Inkwood; butterbough.....	<i>Exothea paniculata</i>	
Strangler fig	<i>Ficus aurea</i>	
Laurel fig.....	<i>Ficus microcarpa</i> *	
Narrowleaf yellowtops	<i>Flaveria linearis</i>	
Florida swampprivet.....	<i>Forestiera segregata</i>	
Downy milkpea.....	<i>Galactia volubilis</i>	
Southern beeblossom.....	<i>Gaura angustifolia</i>	
Narrow-leaved blolly	<i>Guapira discolor</i>	
East Coast dune sunflower	<i>Helianthus debilis</i>	
Scorpionstail	<i>Heliotropium angiospermum</i>	
Seaside heliotrope	<i>Heliotropium curassavicum</i>	
Camphorweed	<i>Heterotheca subaxillaris</i>	
Hibiscus	<i>Hibiscus rosa-sinensis</i> *	
Sea hibiscus.....	<i>Hibiscus tiliaceus</i> *	
Moonflowers	<i>Ipomoea alba</i>	
Beach morningglory	<i>Ipomoea imperati</i>	
Oceanblue morningglory	<i>Ipomoea indica</i> var. <i>acuminata</i>	
Railroad vine.....	<i>Ipomoea pes-caprae</i> subsp <i>brasiliensis</i>	
Heavenlyblue morningglory	<i>Ipomoea violacea</i>	
Bloodleaf	<i>Iresine diffusa</i>	
Seacoast marshelder.....	<i>Iva imbricata</i>	

* Non-native Species

St. Lucie Inlet Preserve State Park Plants

Common Name	Scientific Name	Primary Habitat Codes (for imperiled species)
Virginia saltmarsh mallow	<i>Kosteletzkya virginica</i>	
Black ironwood	<i>Krugiodendron ferreum</i>	
White mangrove	<i>Laguncularia racemosa</i>	
Creeping cucumber	<i>Melothria pendula</i>	
Florida Keys hempvine	<i>Mikania cordifolia</i>	
Climbing hempvine	<i>Mikania scandens</i>	
Balsampear	<i>Momordica charantia*</i>	
Red mulberry	<i>Morus rubra</i>	
Wax myrtle	<i>Myrica cerifera</i>	
Lancewood	<i>Ocotea coriacea</i>	
Seabeach evening-primrose	<i>Oenothera humifusa</i>	
Pricklypear	<i>Opuntia humifusa</i>	
Erect pricklypear	<i>Opuntia stricta</i>	CS
Common yellow woodsorrel.....	<i>Oxalis corniculata</i>	
Virginia creeper	<i>Parthenocissus quinquefolia</i>	
Corky-stemmed passionflower ..	<i>Passiflora suberosa</i>	
Red bay	<i>Persea borbonia</i>	
Drummond's leafflower.....	<i>Phyllanthus abnormis</i>	
American pokeweed	<i>Phytolacca americana</i>	
Florida Keys blackbead	<i>Pithecellobium keyense</i>	CB, CS, MAH
Sweetscent	<i>Pluchea odorata</i>	
Doctorbush; Native plumbago ..	<i>Plumbago scandens</i>	
Paintedleaf	<i>Poinsettia cyathophora</i>	
Showy milkwort.....	<i>Polygala grandiflora</i>	
Rustweed	<i>Polypremum procumbens</i>	
Wild coffee	<i>Psychotria nervosa</i>	
Live oak	<i>Quercus virginiana</i>	
White indigoberry	<i>Randia aculeata</i>	
Myrsine	<i>Rapanea punctata</i>	
Red mangrove.....	<i>Rhizophora mangle</i>	
Rougeplant	<i>Rivina humilis</i>	
Perennial glasswort.....	<i>Salicornia perennis</i>	
Coastal plain willow.....	<i>Salix caroliniana</i>	
Inkberry	<i>Scaevola plumieri</i>	BD, CS
Beach naupaka.....	<i>Scaevola sericea*</i>	
Brazilian-pepper	<i>Schinus terebinthifolius*</i>	
Shoreline seapurslane	<i>Sesuvium portulacastrum</i>	
Cuban jute.....	<i>Sida rhombifolia</i>	
False mastic.....	<i>Sideroxylon foetidissimum</i>	
Paradise tree.....	<i>Simarouba glauca</i>	
Spiny sowthistle	<i>Sonchus asper*</i>	
Yellow necklacepod variety.....	<i>Sophora tomentosa</i> var. <i>truncata</i>	
Bay-cedar.....	<i>Suriana maritima</i>	
West Indian almond	<i>Terminalia catappa*</i>	

* Non-native Species

St. Lucie Inlet Preserve State Park Plants

Common Name	Scientific Name	Primary Habitat Codes (for imperiled species)
Poison ivy.....	<i>Toxicodendron radicans</i>	
Forked bluecurls.....	<i>Trichostema dichotomum</i>	
Caesarweed.....	<i>Urena lobata*</i>	
Hairy pod cowpea.....	<i>Vigna luteola</i>	
Florida grape.....	<i>Vitis cinerea</i> var. <i>floridana</i>	
Muscadine grape.....	<i>Vitis rotundifolia</i>	
Creeping wedelia.....	<i>Wedelia trilobata</i> *	
Biscayne prickly ash.....	<i>Zanthoxylum coriaseum</i>	MAH
Wild-lime.....	<i>Zanthoxylum fagara</i>	

MARINE PLANTS

Seagrass

Shoal grass.....	<i>Halodule wrightii</i>	
Paddle grass.....	<i>Halophila dicipiens</i>	
Johnson's seagrass.....	<i>Halophila johnsonii</i>	EUS

Macroalgae

Chlorophyta (Green Algae)

.....	<i>Bryopsis pennata f. secunda</i>	
Flat green feather alga.....	<i>Caulerpa mexicana</i>	
Oval-blade alga.....	<i>Caulerpa prolifera</i>	
Green grape alga.....	<i>Caulerpa racemosa</i>	
.....	<i>Caulerpa racemosa f. macrophyso</i>	
Green feather alga.....	<i>Caulerpa sertularioides</i>	
.....	<i>Caulerpa brachypus*</i>	
.....	<i>Caulerpa verticillata</i>	
.....	<i>Codium</i> spp.	
Large leaf watercress alga.....	<i>Halimeda discoidea</i>	
Stalked lettuce leaf alga.....	<i>Halimeda tuna</i>	
Scalloped disk alga.....	<i>Halimeda tuna f. platydisca</i>	
Mermaid's fans.....	<i>Udotea</i> spp.	

Phaeophyta (Brown Algae)

Y-branched alga.....	<i>Dictyota menstrualis</i>	
Y-branched alga.....	<i>Dictyota pulchella</i>	
.....	<i>Jania</i> spp.	
Scroll alga.....	<i>Padina sanctae-crucis</i>	
.....	<i>Padina perindusiata</i>	

Rhodophyta (Red Algae)

Coralline alga.....	<i>Amphiroa</i> spp.	
Tubular thicket algae.....	<i>Galaxaura marginata</i>	
.....	<i>Halymenia echinophysa</i>	

* Non-native Species

St. Lucie Inlet Preserve State Park Plants

Common Name	Scientific Name	Primary Habitat Codes (for imperiled species)
.....	<i>Halymenia floresia</i>	
Red bush alga	<i>Laurencia poiteau</i>	
Red alga.....	<i>Bryothamnion triquetrum</i>	

St. Lucie Inlet Preserve State Park Animals

**Primary Habitat Codes
(for all species)**

Common Name	Scientific Name	
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PORIFERA

(Sponges)

Erect rope sponge.....	<i>Amphimedon compressa</i>	MCNS
Brown variable sponge	<i>Anthosigmella varians</i>	MCNS
Yellow tube sponge	<i>Aplysina fistularis</i>	MCNS
Branching vase sponge.....	<i>Callyspongia</i> spp.....	MCNS
Chickenliver sponge	<i>Chondrilla nucula</i>	MCNS
Red boring sponge.....	<i>Cliona deletrix</i>	MCNS
Orange boring sponge	<i>Cliona lampa</i>	MCNS
Red sponge.....	<i>Haliclona rubens</i>	MCNS
Green sponge.....	<i>Haliclona viridis</i>	MCNS
Vase sponge	<i>Ircinia campana</i>	MCNS
Stinker sponge.....	<i>Ircinia felix</i>	MCNS
Black ball sponge.....	<i>Ircinia strobilina</i>	MCNS
Pink lumpy sponge.....	<i>Monachora</i> spp.	MCNS
Lavender rope sponge	<i>Niphates erecta</i>	MCNS
Rope sponge.....	<i>Niphates</i> spp.	MCNS
Sticky orange sponge	<i>Pseudaxinella lunaecharta</i>	MCNS
Blue Caribbean sponge.....	<i>Sigmadocia caerulea</i>	MCNS

CNIDARIANS

(Corals, Anemones, Jellyfish)

Scleractinia (Hard Corals)

Elliptical star coral	<i>Dichocoenia stokesii</i>	MCNS
Knobbed brain coral	<i>Diploria clivosa</i>	MCNS
Symmetrical brain coral.....	<i>Diploria strigosa</i>	MCNS
Golfball coral.....	<i>Favia fragum</i>	MCNS
Sinuuous cactus coral	<i>Isophylla sinuosa</i>	MCNS
Ten-ray star coral	<i>Madracis decactis</i>	MCNS
Maze coral.....	<i>Meandrina meandrites</i>	MCNS
Great star coral	<i>Montastrea cavernosa</i>	MCNS
Mountain star coral	<i>Montastrea faveolata</i>	MCNS
Knobby cactus coral	<i>Mycetophyllia aliciae</i>	MCNS
Difuse ivory bush coral	<i>Oculina diffusa</i>	MCNS
Robust ivory tree coral	<i>Oculina robusta</i>	MCNS
Delicate ivory bush coral.....	<i>Oculina tenella</i>	MCNS
Large ivory coral.....	<i>Oculina varicosa</i>	MCNS
Hidden cup coral.....	<i>Phyllangia americana</i>	MCNS
Mustard hill coral	<i>Porites astreoides</i>	MCNS
Finger coral	<i>Porites porites</i>	MCNS
Disk coral	<i>Scolymia</i> spp.	MCNS
Lesser starlet coral	<i>Siderastrea radians</i>	MCNS
Greater starlet coral.....	<i>Siderastrea siderea</i>	MCNS

St. Lucie Inlet Preserve State Park Animals

Common Name	Scientific Name	Primary Habitat Codes (for all species)
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Knobby star coral	<i>Solenastrea bournoni</i>	MCNS
Smooth star coral	<i>Solenastrea hyades</i>	MCNS
Blushing star coral	<i>Stephanocenia intercepts</i>	MCNS

Octocoralia (Soft Corals)

Corky sea finger	<i>Briarium asbestinum</i>	MCNS
White telesto	<i>Carijoa riisei</i>	MCNS
Knobby sea rod	<i>Eunicea</i> spp.	MCNS
Common sea fan	<i>Gorgonia ventalina</i>	MCNS
Regal sea fan	<i>Leptogorgia hebes</i>	MCNS
Colorful sea whip	<i>Leptogorgia virgulata</i>	MCNS
Spiny sea rod	<i>Muricea</i> spp.	MCNS
Slit-pore sea rod	<i>Plexaurella dichotoma</i>	MCNS
Slit-pore sea rod	<i>Plexaurella grisea</i>	MCNS
Slit-pore sea rod	<i>Plexaurella</i> spp.	MCNS
Sea plume	<i>Psuedopterogorgia</i> spp.	MCNS
Angular sea whip	<i>Pterogorgia anceps</i>	MCNS
Yellow sea whip	<i>Pterogorgia citrina</i>	MCNS
Grooved-blade sea whip	<i>Pterogorgia guadalupensis</i>	MCNS

Hydrozoans

Feather plume hydroid	<i>Aglaophenia lateccarinata</i>	MCNS
Branching fire coral	<i>Millepora alcicornis</i>	MCNS
Blade fire coral	<i>Millepora complanata</i>	MCNS
Branching hydroid	<i>Sertullarella speciosa</i>	MCNS
Portugese man-of-war	<i>Physalia physalis</i>	MCNS
By-the-wind sailor	<i>Velella velella</i>	MTC

Anenomes

Corkscrew anemone	<i>Bartholomea annulata</i>	MCNS
Giant anemone	<i>Condylactis gigantea</i>	MCNS
Mat anemone	<i>Zoanthus pulchellus</i>	MCNS

Zoanthids

White encrusting zoanthid	<i>Palythoa caribaeorum</i>	MCNS
Sun zoanthid	<i>Palythoa grandis</i>	MCNS
Maroon sponge zoanthid	<i>Parazoanthus puertoricense</i>	MCNS
Zoanthid	<i>Zoantharia</i> spp.	MCNS

Jellyfish

Moon jelly	<i>Aurelia aurita</i>	MCNS, MUS
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CTENOPHORES

Sea walnut	<i>Mnemiopsis mccradyi</i>	MCNS, MUS
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* Non-native Species

St. Lucie Inlet Preserve State Park Animals

**Primary Habitat Codes
(for all species)**

Common Name	Scientific Name	
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POLYCHAETES

(Segmented Worms)

Split-crown feather duster	<i>Anamobaea orstedii</i>	MCNS
Black spotted feather duster.....	<i>Brachioma nigromaculata</i>	MCNS
Parchment tube worm	<i>Chaetopterus variopedatus</i>	EUS
Spaghetti worm	<i>Eupolymnia crassicornis</i>	MUS
Bearded fireworm	<i>Hermodice carunculata</i>	MCNS
Medusa worm	<i>Loimia medusa</i>	EUS
Worm rock.....	<i>Phragmatopoma caudata</i>	MWR
Magnificent feather duster	<i>Sabellastarte magnifica</i>	MCNS
Christmas tree worm.....	<i>Spirobranchus giganteus</i>	MCNS

CRUSTACEANS

Ivory barnacle.....	<i>Balanus eburneus</i>	MCNS
Boxed blue crab	<i>Calappa</i> spp.	MUS
Orange claw hermit crab.....	<i>Calcinus tibicen</i>	MUS
Lesser blue crab	<i>Callinectes similis</i>	EUS, MUS
Blue crab.....	<i>Callinectes sapidus</i>	EUS, MUS
Blue land crab	<i>Cardisoma guanhumii</i>	MS, MAH
Batwing coral crab	<i>Carpilius corallinus</i>	MCNS
Say's Mud Crab	<i>Dyspanopeus sayi</i>	EUS, MS
Common mole crab.....	<i>Emerita talpoida</i>	MUS
Mangrove crab	<i>Goniopsis cruentata</i>	MS
Calico crab.....	<i>Hepatis epheliticus</i>	MCNS
Spider crab	<i>Libinia dubia</i>	MCNS, MUS
Wharf roach.....	<i>Ligia exotica</i> *	MS
Horseshoe crab	<i>Limulus polyphemus</i>	EUS
Channel clinging crab	<i>Mithrax spinosissimus</i>	MCNS
Stone crab.....	<i>Mennipe mercenaria</i>	EUS, MUS
Ghost crab.....	<i>Ocypode quadrata</i>	BD
Florida spiny lobster	<i>Panularis argus</i>	MCNS
Spotted lobster	<i>Panularis guttatus</i>	MCNS
Pink shrimp	<i>Penaeus duorarum</i>	MUS
Nimble spray crab.....	<i>Percnon gibbesi</i>	MCNS
Giant hermit crab	<i>Petrochirus diogenes</i>	EUS, MCNS
Spanish lobster	<i>Scyllarides aequinoctialis</i>	MUS, MCNS
Marsh crab species	<i>Sesarma cinereum</i>	MS
Banded coral shrimp	<i>Stenopus hispidus</i>	MCNS
Arrow crab.....	<i>Stenorhyncus seticornis</i>	MCNS
Atlantic sand fiddler	<i>Uca pugilator</i>	MS
Mudflat Fiddler	<i>Uca rapax</i>	MS

* Non-native Species

St. Lucie Inlet Preserve State Park Animals

Common Name	Scientific Name	Primary Habitat Codes (for all species)
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Sunray venus.....	<i>Macrocallista nimbosa</i>	MUS
Southern quahog.....	<i>Mercenaria campechiensis</i>	MUS
Favored telling	<i>Tellina fausta</i>	MUS

Cephalopods

Common octopus.....	<i>Octopus vulgaris</i>	MCNS
Caribbean reef squid	<i>Sepioteuthis sepiodea</i>	MCNS, MUS

INSECTS

Dragonflies

Common green darner	<i>Anax junius</i>	CS, DV
Twilight darner.....	<i>Gynacantha nervosa</i>	MS

Grasshoppers, Crickets and Katydid

Linear-winged grasshopper	<i>Aptenopedes sphenarioides</i>	CS
Tropical house cricket.....	<i>Grylodes sigillatus*</i>	DV
Spotted-winged grasshopper	<i>Orphulella pelidna</i>	CS
American grasshopper.....	<i>Schistocerca americana</i>	CS
Seaside grasshopper	<i>Trimerotropis maritima</i>	BD, CS

Stick Insects

Two-striped walkingstick.....	<i>Anisomorpha buprestoides</i>	CS, DV
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True Bugs, Cicadas and Hoppers

Seaside cicada	<i>Diceroprocta viridifascia</i>	CS, MAH
Large milkweed bug	<i>Oncopeltus fasciatus</i>	CS

Antlions, Lacewings and Owlflies

Antlion sp.....	<i>Myrmeleon</i> sp.....	CS, DV
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Flies

Black saltmarsh mosquito	<i>Ochlerotatus taeniorhynchus</i>	MS
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Butterflies and Skippers

Gulf fritillary	<i>Agraulis vanillae</i>	CS, MAH
Florida white.....	<i>Appias drusilla</i>	CS
Monk skipper	<i>Asbolis capucinus</i>	CS, DV
Great southern white	<i>Ascia monuste</i>	CS
Sachem.....	<i>Atalopedes campestris</i>	CS
Polydamas swallowtail	<i>Battus polydamas</i>	CS
Soldier	<i>Danaus eresimus</i>	CS
Queen	<i>Danaus gilippus</i>	CS
Monarch.....	<i>Danaus plexippus</i>	CS
Fulvous hairstreak	<i>Electro Strymon angelia</i>	CS, MAH

* Non-native Species

St. Lucie Inlet Preserve State Park Animals

Common Name	Scientific Name	Primary Habitat Codes (for all species)
Barred yellow	<i>Eurema दौरa</i>	CS, DV
Little yellow	<i>Eurema lisa</i>	CS, DV
Zebra heliconian	<i>Heliconius charitonius</i>	CS, MAH
Ceraunus blue	<i>Hemiargus ceraunus</i>	CS
Common buckeye	<i>Junonia coenia</i>	CS
Mangrove buckeye	<i>Junonia evarete</i>	MS, CS
Tropical buckeye	<i>Junonia genoveva</i>	CS
Mangrove skipper	<i>Phocides pigmalion</i>	MS, CS
Cloudless sulphur	<i>Phoebis sennae</i>	CS
Large orange sulphur	<i>Phoebis agarithe</i>	CS, MAH
Hammock skipper	<i>Polygonus leo</i>	CS, MAH
Checkered white	<i>Pontia protodice</i>	BD, DV
Martial scrub-hairstreak	<i>Strymon martialis</i>	BD, CS
Dorantes longtail	<i>Urbanus dorantes</i>	CS
Long-tailed skipper	<i>Urbanus proteus</i>	CS
Red admiral	<i>Vanessa atalanta</i>	CS
Painted lady	<i>Vanessa cardui</i>	CS
American lady	<i>Vanessa virginiensis</i>	CS

Moths

Titan sphinx moth	<i>Aellopos titan</i>	CS
Black witch moth	<i>Ascalapha odorata</i>	CS, MAH
Florida io moth	<i>Automeris io lilith</i>	CS, MAH
Giant leopard moth	<i>Ecpantheria scribonia</i>	CS, MAH
Mournful sphinx moth	<i>Enyo lugubris</i>	CS, MAH
Ello sphinx moth	<i>Erinnyis ello</i>	CS, DV
Gaudy sphinx moth	<i>Eumorpha labruscae</i>	CS, MAH
Edwards' wasp moth	<i>Lymire edwardsii</i>	CS, DV, MAH
Carolina sphinx moth	<i>Manduca sexta</i>	CS, DV
Puss moth	<i>Megalopyge opercularis</i>	CS, DV, MAH
White-tipped black moth	<i>Melanchroia chephise</i>	CS
Fig sphinx moth	<i>Pachylia ficus</i>	CS, DV, MAH
Saddleback caterpillar moth	<i>Sibine stimulea</i>	CS, MAH
Tersa sphinx moth	<i>Xylophanes tersa</i>	CS

Ants, Bees and Wasps

Honey bee	<i>Apis mellifera</i> *	CS, DV
Florida carpenter ant	<i>Camponotus floridanus</i>	MTC
Red imported fire ant	<i>Solenopsis invicta</i> *	MTC

Spiders

Silver argiope	<i>Argiope argentata</i>	CS
Dewdrop spider species	<i>Argyrodes nephilae</i>	MAH
Tropical orb-weaver	<i>Eriophora ravilla</i>	CS, DV, MAH
Spinybacked orbweaver	<i>Gasteracantha cancriformis</i>	CS, MAH

* Non-native Species

St. Lucie Inlet Preserve State Park Animals

Common Name	Scientific Name	Primary Habitat Codes (for all species)
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Orchard orb-weaver	<i>Leucauge venusta</i>	MAH, MS
Golden silk orbweaver	<i>Nephila clavipes</i>	MAH
Regal jumping spider	<i>Phidippus regius</i>	CS

Whipscorpions

Spotted tailless whipscorpion....	<i>Phrynus marginemaculata</i>	MAH
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ECHINODERMS

Sea Urchins

Common arbacia urchin	<i>Arabacia punctulata</i>	MCNS
Long-spined sea urchin.....	<i>Diadema antillarum</i>	MCNS
Rock-boring urchin.....	<i>Echinometre lucunter</i>	MCNS
Reef urchin	<i>Echinometra viridis</i>	MCNS
Slate-pencil sea urchin	<i>Eucidaris tribuloides</i>	MCNS
Variiegated urchin	<i>Lytechinus variegatus</i>	MCNS
Heart urchin.....	<i>Moiria atropos</i>	MUS
West Indian sea egg	<i>Tripluessa ventricosa</i>	MUS
Five-keyhole sand dollar	<i>Mellita quinquesperforata</i>	MUS

Sea Stars

Gray Sea Star	<i>Luidia clathrata</i>	MUS
Blunt-spined brittle star.....	<i>Opheocoma echinata</i>	MUS
Cushion sea star.....	<i>Oreaster reticulatus</i>	MUS

Crinoids

Golden crinoid	<i>Davidaster rubiginosa</i>	MCNS
Black and white crinoid.....	<i>Nemaster grandis</i>	MCNS

Sea Cucumbers

Five toothed sea cucumber	<i>Actinopygia agassizii</i>	MUS
Florida sea cucumber	<i>Holothuria floridana</i>	MUS
Three-rowed sea cucumber	<i>Isostichopus badionotus</i>	MUS
Hidden sea cucumber	<i>Pseudothyone belli</i>	MUS

TUNICATES

Black tunicate	<i>Ascidia nigra</i>	MCNS
Black condominium tunicate....	<i>Eudistoma obscuratum</i>	MCNS
Purple berry compound tunicate	<i>Eudistoma</i> spp.	MCNS
Smooth condiminium tunicate ..	<i>Eudistoma</i> spp.....	MCNS
Hard purple/brown tunicate.....	<i>Eudistoma</i> spp.....	MCNS
Pleated sea squirt	<i>Styela plicata</i>	EUS, MS

St. Lucie Inlet Preserve State Park Animals

**Primary Habitat Codes
(for all species)**

Common Name

Scientific Name

CHONDRICHTYES (Sharks, Rays)

Spotted eagle ray	<i>Aetobatus narinari</i>	MCNS, MUS
Bull shark	<i>Carchrhinus leucas</i>	MCNS, MUS, EUS
Southern stingray	<i>Dasyatis americana</i>	MCNS, MUS, EUS
Atlantic stingray	<i>Dasyatis sabina</i>	MCNS, MUS, EUS
Bluntnose stingray	<i>Dasyatis say</i>	MCNS, MUS, EUS
Nurse shark	<i>Ginglymostoma cirratum</i>	MCNS, MUS
Spiny butterfly ray	<i>Gymnura altavela</i>	MCNS, MUS
Smooth butterfly ray	<i>Gymnura micrura</i>	MCNS, MUS
Manta ray	<i>Manta birostris</i>	MCNS, MUS
Scalloped hammerhead shark...	<i>Sphyma tiburo</i>	MCNS, MUS
Yellow stingray	<i>Urolophus jamaicensis</i>	MCNS, MUS

OSTEICHTYES (Bony Fishes)

Sergeant major	<i>Abudefduf saxatilis</i>	MCNS
Doctorfish.....	<i>Acanthurus chirurgus</i>	MCNS
Ocean surgeonfish	<i>Acanthurus bahianus</i>	MCNS
Blue tang	<i>Acanthurus coeruleus</i>	MCNS
Key worm eel	<i>Ahlia egmontis</i>	MCNS
Scrawled filefish	<i>Aluterus scriptus</i>	MCNS
Orange filefish.....	<i>Aluterus schoepfii</i>	MCNS
Redspotted hawkfish	<i>Amblycirrhitus pinos</i>	MCNS
Black margate.....	<i>Anisostremus surinamensis</i>	MCNS
Porkfish.....	<i>Anisostremus virginicus</i>	MCNS
Barred cardinalfish.....	<i>Apogon binotatus</i>	MCNS
Flamefish	<i>Apogon maculates</i>	MCNS
Two-spot cardinalfish	<i>Apogon psuedomaculatus</i>	MCNS
Belted cardinalfish	<i>Apogon townsendi</i>	MCNS
Sheepshead	<i>Archosargus probatocephalus</i>	MCNS
Sea bream.....	<i>Archosargus rhomboidalis</i>	MCNS, MUS
Hardhead catfish	<i>Arius felis</i>	MUS
Blackfin cardinalfish	<i>Astropogon puncticulatus</i>	MCNS
Gafftopsail catfish	<i>Bagre marinus</i>	MCNS
Striped croaker	<i>Bairdiella sanctaeluciae</i>	MCNS
Gray triggerfish	<i>Balistes carolinensis</i>	MCNS
Queen triggerfish.....	<i>Balistes vetula</i>	MCNS
Spotfin hogfish.....	<i>Bodianus pulchellus</i>	MCNS
Spanish hogfish.....	<i>Bodianus rufus</i>	MCNS
Peacock flounder	<i>Bothus lunatus</i>	MCNS
Atlantic menhaden.....	<i>Brevoortia tyrannus</i>	MCNS
Sharpnose puffer.....	<i>Canthigaster rostrata</i>	MCNS, EUS
Jolthead porgy	<i>Calamus bajonado</i>	MCNS
Saucereye porgy	<i>Calamus calamus</i>	MCNS

* Non-native Species

St. Lucie Inlet Preserve State Park Animals

Common Name	Scientific Name	Primary Habitat Codes (for all species)
Sheepshead	<i>Calamus penna</i>	MCNS
Whitespotted filefish	<i>Cantherhines macrocerus</i>	MCNS
Orangespotted filefish	<i>Cantherhines pullus</i>	MCNS
Ocean triggerfish	<i>Canthidermis sufflamen</i>	MCNS
Yellow jack	<i>Caranx bartholomaei</i>	MCNS, MUS
Blue runner	<i>Caranx crysos</i>	MCNS, MUS
Jack crevalle	<i>Caranx hippos</i>	MCNS, MUS
Horse-eye jack	<i>Caranx latus</i>	MCNS, MUS
Bar jack	<i>Caranx rubber</i>	MCNS, MUS
Black jack	<i>Caranx lugubris</i>	MCNS, MUS
Fat snook	<i>Centropomus parallelus</i>	MCNS, MUS
Common snook	<i>Centropomus undecimalis</i>	MCNS, MUS
Black sea bass	<i>Centropristes striata</i>	MCNS
Cherubfish	<i>Centropyge argi</i>	MCNS
Graysby	<i>Cephalopholis cruentata</i>	MCNS
Coney	<i>Cephalopholis fulva</i>	MCNS
Yellowface pikeblenny	<i>Chaenopsis limbaughi</i>	MCNS
Atlantic spadefish	<i>Chaetodipterus faber</i>	MCNS, MUS
Longnose butterflyfish	<i>Chaetodon aculeatus</i>	MCNS
Four-eye butterflyfish	<i>Chaetodon capistratus</i>	MCNS
Reef butterflyfish	<i>Chaetodon sedentarius</i>	MCNS
Spotfin butterflyfish	<i>Chaetodon ocellatus</i>	MCNS
Banded butterflyfish	<i>Chaetodon striatus</i>	MCNS
Spotted burrfish	<i>Chilomycterus atinga</i>	MCNS
Striped burrfish	<i>Chilomycterus schoepfi</i>	MCNS
Atlantic bumper	<i>Chlororscombrus chrysurus</i>	MCNS
Blue chromis	<i>Chromis cyanea</i>	MCNS
Yellowtail reeffish	<i>Chromis enchrysurus</i>	MCNS
Brown chromis	<i>Chromis multilineata</i>	MCNS
Purple reeffish	<i>Chromis scotti</i>	MCNS
Creole wrasse	<i>Clepticus parrae</i>	MCNS
Colon goby	<i>Coryphopterus dicrus</i>	MCNS
Bridled goby	<i>Coryphopterus glaucofraenum</i>	MCNS
Masked goby	<i>Coryphopterus personatus</i>	MCNS
Bluelip parrotfish	<i>Cryptotomus roseus</i>	MCNS
Atlantic flying fish	<i>Cypselurus heterurus</i>	MCNS, MUS
Siver seatrout	<i>Cynoscion nothus</i>	MCNS, MUS
Flying gurnard	<i>Dactylopterus volitans</i>	MCNS, MUS
Round scad	<i>Decapterus punctatus</i>	MCNS, MUS
Mackerel scad	<i>Decapterus macarellus</i>	MCNS, MUS
Irish mojarra	<i>Diapterus auratus</i>	MCNS, MUS
Striped mojarra	<i>Diapterus plumieri</i>	MCNS, MUS
Sand perch	<i>Diplectum formosum</i>	MCNS, MUS
Silver porgy	<i>Diplodus argenteus</i>	MCNS
Spottail pinfish	<i>Diplodus holbrooki</i>	MCNS

* Non-native Species

St. Lucie Inlet Preserve State Park Animals

Common Name	Scientific Name	Primary Habitat Codes (for all species)
Balloonfish.....	<i>Diodon holocanthus</i>	MCNS
Porcupinefish	<i>Diodon hystrix</i>	MCNS
Sharksucker.....	<i>Echeneis naucrates</i>	MCNS
Chain moray	<i>Echidna catenata</i>	MCNS
Rainbow runner	<i>Elagatis bipinnulata</i>	MCNS
Lady fish	<i>Elops saurus</i>	MCNS
Sailfin blenny	<i>Emblemaria pandionis</i>	MCNS
Rock hind	<i>Epinephelus adscensionis</i>	MCNS
Red hind	<i>Epinephelus guttatus</i>	MCNS
Goliath grouper	<i>Epinephelus itajara</i>	MCNS
Red grouper.....	<i>Epinephelus morio</i>	MCNS
Nassau grouper	<i>Epinephelus striatus</i>	MCNS
Highhat	<i>Equetus acuminatus</i>	MCNS
Jackknife fish	<i>Equetus lanceolatus</i>	MCNS
Spotted drum.....	<i>Equetus punctatus</i>	MCNS
Cubbyu	<i>Equetus umbrosus</i>	MCNS
Silver jenny	<i>Eucinostomus gula</i>	MCNS
Mottled mojarra.....	<i>Eucinostomus lefroyi</i>	MCNS, MUS
Flagfin mojarra.....	<i>Eucinostomus melanopterus</i>	MCNS, MUS
Little tunny	<i>Euthynnus alletteratus</i>	MCNS, MUS
Golden topminnow	<i>Fundulus chrysotus</i>	EUS, MUS
Marsh killifish	<i>Fundulus confluentis</i>	EUS, MUS
Gulf killifish.....	<i>Fundulus grandis</i>	EUS, MUS
Yellowfin mojarra.....	<i>Gerres cinereus</i>	MCNS, MUS
Goldspot goby	<i>Gnatholepis thompsoni</i>	MCNS
Orangesided goby	<i>Gobiosoma dilepsis</i>	MCNS
Spotlight goby.....	<i>Gobiosoma louisae</i>	MCNS
Neon goby.....	<i>Gobiosoma oceanops</i>	MCNS
Green moray.....	<i>Gymnothorax funebris</i>	MCNS
Goldentail moray	<i>Gymnothorax miliaris</i>	MCNS
Spotted moray	<i>Gymnothorax moringa</i>	MCNS
Purplemouth moray	<i>Gymnothorax vicinus</i>	MCNS
White margate	<i>Haemulon album</i>	MCNS
Tomtate	<i>Haemulon aurolineatum</i>	MCNS
Caesar grunt.....	<i>Haemulon carbonarium</i>	MCNS
Smallmouth grunt.....	<i>Haemulon chrysargyreum</i>	MCNS
French grunt.....	<i>Haemulon flavolineatum</i>	MCNS
Spanish grunt	<i>Haemulon macrostomum</i>	MCNS
Cottonwick	<i>Haemulon melanurum</i>	MCNS
White grunt	<i>Haemulon plumieri</i>	MCNS
Sailors choice.....	<i>Haemulon parra</i>	MCNS
Bluestriped grunt.....	<i>Haemulon sciurus</i>	MCNS
Striped grunt	<i>Haemulon striatum</i>	MCNS
Slippery dick.....	<i>Halichoeres bivittatus</i>	MCNS
Yellowhead wrasse.....	<i>Halichoeres garnoti</i>	MCNS

* Non-native Species

St. Lucie Inlet Preserve State Park Animals

Common Name	Scientific Name	Primary Habitat Codes (for all species)
Rainbow wrasse	<i>Halichoeres pictus</i>	MCNS
Blackear wrasse	<i>Halichoeres poeyi</i>	MCNS
Puddingwife	<i>Halichoeres radiatus</i>	MCNS
Clown wrasse	<i>Halichoeres maculipinna</i>	MCNS
Scaled sardine.....	<i>Harengula jaguana</i>	MCNS
Pearly razorfish	<i>Hemipteronotus novacula</i>	MCNS
Balao	<i>Hemiramphus balao</i>	MCNS
Ballyhoo	<i>Hemiramphus brasiliensis</i>	MCNS
Glasseye snapper	<i>Heteropriacanthus cruentatus</i>	MCNS
Townsend angelfish	<i>Holocanthus</i> sp.	MCNS
Blue angelfish	<i>Holocanthus bermudensis</i>	MCNS
Queen angelfish	<i>Holocanthus ciliaris</i>	MCNS
Rock beauty.....	<i>Holocanthus tricolor</i>	MCNS
Squirrelfish	<i>Holocentrus ascensionsis</i>	MCNS
Longspine squirrelfish.....	<i>Holocentrus rufus</i>	MCNS
Barred blenny	<i>Hypleurochilus bermudensis</i>	MCNS
Barred hamlet	<i>Hypoplectrus puella</i>	MCNS
Yellowtail hamlet	<i>Hypoplectrus chlorurus</i>	MCNS
Black hamlet.....	<i>Hypoplectrus nigricans</i>	MCNS
Barred hamlet.....	<i>Hypoplectrus puella</i>	MCNS
Butter hamlet.....	<i>Hypoplectrus unicolor</i>	MCNS
Bermuda chub.....	<i>Kyphosus sectatrix</i>	MCNS, MUS
Palehead blenny	<i>Labrisomus gobio</i>	MCNS
Downy blenny	<i>Labrisomus kalisherae</i>	MCNS
Hairy blenny	<i>Labrisomus nuchipinnis</i>	MCNS
Hogfish	<i>Lachnolaimus maximus</i>	MCNS
Spotted trunkfish	<i>Lactophrys bicaudalis</i>	MCNS
Scrawled cowfish	<i>Lactophrys quadricornis</i>	MCNS
Pinfish.....	<i>Lagodon rhomboids</i>	MCNS
Spot croaker	<i>Leiostomus xanthurus</i>	MCNS
Wrasse bass	<i>Liopropoma eukrines</i>	MCNS
Mutton snapper	<i>Lutjanus analis</i>	MCNS
Schoolmaster snapper	<i>Lutjanus apodus</i>	MCNS
Blackfin snapper	<i>Lutjanus buccanella</i>	MCNS
Gray snapper	<i>Lutjanus griseus</i>	MCNS
Dog snapper	<i>Lutjanus jocu</i>	MCNS
Mahogany snapper.....	<i>Lutjanus mahogoni</i>	MCNS
Lane snapper	<i>Lutjanus synagris</i>	MCNS
Sand tilefish.....	<i>Malacanthus plumeiri</i>	MCNS, MUS
Rosy blenny	<i>Malacoctenus macropus</i>	MCNS
Saddled blenny	<i>Malacoctenus triangulates</i>	MCNS
Tarpon	<i>Megalops atlanticus</i>	MCNS, MUS
Black durgon.....	<i>Melichthys niger</i>	MCNS
Whiting	<i>Merlangius merlangus</i>	MUS
Atlantic croaker	<i>Micropogon undalatus</i>	MCNS

* Non-native Species

St. Lucie Inlet Preserve State Park Animals

Common Name	Scientific Name	Primary Habitat Codes (for all species)
Harlequin pipefish.....	<i>Micrognathus ensenadae</i>	MCNS
Yellowtail damselfish	<i>Microspathodon chrysurus</i>	MCNS
Fringed filefish	<i>Monocanthus ciliatus</i>	MCNS
Planehead filefish.....	<i>Monacanthus hispidus</i>	MCNS
Slender filefish	<i>Monocanthus tuckeri</i>	MCNS
Black mullet.....	<i>Mugil cephalus</i>	EUS, MUS
Silver mullet	<i>Mugil curema</i>	EUS, MUS
Yellow goatfish.....	<i>Mulloidichthys martinicus</i>	MUS
Goldentail moray	<i>Muraena miliaris</i>	MCNS
Black grouper.....	<i>Mycteroperca bonaci</i>	MCNS
Gag grouper	<i>Mycteroperca microlepis</i>	MCNS
Yellowmouth grouper	<i>Mycteroperca interstitialis</i>	MCNS
Scamp	<i>Mycteroperca phenax</i>	MCNS
Sharptail snake eel	<i>Myrichthys breviceps</i>	MCNS
Blackbar soldierfish.....	<i>Myripristis jacobus</i>	MCNS
Yellowtail snapper.....	<i>Ocyurus chrysurus</i>	MCNS
Reef croaker	<i>Odontoscion dentex</i>	MCNS
Atlantic leatherjacket	<i>Oligoplites saurus</i>	MCNS, MUS
Redlip blenny	<i>Ophioblennius atlanticus</i>	MCNS
Yellowhead jawfish.....	<i>Opistognathus aurifrons</i>	MUS
Banded jawfish.....	<i>Opistognathus macrognathus</i>	MUS
Spotfin jawfish	<i>Opistognathus robinisi</i>	MUS
Threadfin herring.....	<i>Opistonema oglinum</i>	MCNS, MUS
Seaweed blenny	<i>Parablennius marmoreus</i>	MCNS
Banded blenny	<i>Paraclinus fasciatus</i>	MCNS
Lancer dragonet	<i>Paradiplogrammus bairdi</i>	MCNS, MUS
Gulf flounder.....	<i>Paralichthys albigutta</i>	MUS
Southern flounder.....	<i>Paralichthys lethostigma</i>	MUS
Glassy sweeper	<i>Pempheris schomburgkii</i>	MCNS
Dusky cardinalfish	<i>Phaeoptyx pigmentaria</i>	MCNS
Gray angelfish.....	<i>Pomacanthus arcuatus</i>	MCNS
French angelfish	<i>Pomacanthus paru</i>	MCNS
Black drum	<i>Pogonias cromis</i>	MCNS
Barbu	<i>Polydactylus virginicus</i>	MCNS
Bluefish.....	<i>Pomatomus saltatrix</i>	MCNS
Bigeye	<i>Priacanthus arenatus</i>	MCNS
Spotted goatfish	<i>Psuedopeneus maculates</i>	MUS
Blue goby	<i>Ptereleotris calliurus</i>	MUS
Red lionfish.....	<i>Pterois volitans*</i>	MCNS
Cobia	<i>Rachycentro canadum</i>	MCNS, MUS
Atlantic guitarfish	<i>Rhinobatos lentiginosus</i>	EUS, MUS
Mangrove rivulus.....	<i>Rivulus marmoratus</i>	MS, EUS
Spotted soapfish.....	<i>Rypticus subbifrenatus</i>	MCNS
Whitespotted soapfish	<i>Rypticus maculates</i>	MCNS
Greater soapfish.....	<i>Rypticus saponaceus</i>	MCNS

* Non-native Species

St. Lucie Inlet Preserve State Park Animals

Common Name	Scientific Name	Primary Habitat Codes (for all species)
Molly miller.....	<i>Scartella cristata</i>	MCNS
Midnight parrotfish.....	<i>Scarus coelestinus</i>	MCNS
Blue parrotfish	<i>Scarus coeruleus</i>	MCNS
Striped parrotfish	<i>Scarus iseri</i>	MCNS
Rainbow parrotfish.....	<i>Scarus guacamaia</i>	MCNS
Princess parrotfish	<i>Scarus taeniopterus</i>	MCNS
Queen parrotfish	<i>Scarus vetula</i>	MCNS
Red drum	<i>Sciaenops ocellatus</i>	EUS, MUS
King mackerel	<i>Scomberomorus cavalla</i>	MCNS, MUS
Spanish mackerel	<i>Scomberomorus maculatus</i>	MCNS, MUS
Cero mackerel.....	<i>Scomberomorus regalis</i>	MCNS, MUS
Spotted scorpionfish.....	<i>Scorpaena plumieri</i>	MCNS
Cigar minnow.....	<i>Sardinella anchovia</i>	MCNS, MUS
Spanish sardine.....	<i>Sardinella aurita</i>	MCNS, MUS
Bigeye scad	<i>Selar crumenophthalmus</i>	MCNS, MUS
Lookdown.....	<i>Selene vomer</i>	MCNS
Greater amberjack.....	<i>Seriola dumerili</i>	MCNS, MUS
Pygmy sea bass.....	<i>Serraniculus pumilio</i>	MCNS
Lantern bass.....	<i>Serranus baldwini</i>	MCNS
Twinspot bass	<i>Serranus flaviventrus</i>	MCNS
Pygmy seabass	<i>Serranus pumilio</i>	MCNS
Belted sandfish.....	<i>Serranus subligarius</i>	MCNS
Tobaccofish.....	<i>Serranus tabacarius</i>	MCNS
Harlequin bass	<i>Serranus tigrinus</i>	MCNS
Greenblotch parrotfish.....	<i>Sparisoma atomarium</i>	MCNS
Redband parrotfish	<i>Sparisoma aurofrenatum</i>	MCNS
Redtail parrotfish.....	<i>Sparisoma chrysopterum</i>	MCNS
Yellowtail (redfin) parrotfish	<i>Sparisoma rubripinne</i>	MCNS
Stoplight parrotfish	<i>Sparisoma viride</i>	MCNS
Southern puffer	<i>Sphoeroides nephelus</i>	MCNS
Bandtail puffer	<i>Sphoeroides splengleri</i>	MCNS
Checkered puffer	<i>Sphoeroides testudineus</i>	MCNS
Great barracuda	<i>Sphyraena barracuda</i>	MCNS, MUS
Southern sennet.....	<i>Sphyraena picudilla</i>	MCNS, MUS
Guachanche barracuda	<i>Sphyraena guachancho</i>	MCNS, MUS
Checkered blenny	<i>Starksia ocellata</i>	MCNS
Longfin damselfish	<i>Stegastes diencaeus</i>	MCNS
Scarlet damselfish	<i>Stegastes dorsopunicans</i>	MCNS
Dusky damselfish	<i>Stegastes adustus</i>	MCNS
Beaugregory	<i>Stegastes leucostictus</i>	MCNS
Bicolor damselfish.....	<i>Stegastes partitus</i>	MCNS
Threespot damselfish	<i>Stegastes planifrons</i>	MCNS
Cocoa damselfish.....	<i>Stegastes variabilis</i>	MCNS
Atlantic needlefish	<i>Strongylura marina</i>	MUS
Redfin needlefish	<i>Strongylura notata</i>	MUS

* Non-native Species

St. Lucie Inlet Preserve State Park Animals

Common Name	Scientific Name	Primary Habitat Codes (for all species)
Channel flounder	<i>Syacium micrurum</i>	MUS
Inshore lizardfish	<i>Synodus foetens</i>	MUS
Sand diver	<i>Synodus intermedius</i>	MUS
Bluehead wrasse	<i>Thalassoma bifasciatum</i>	MCNS
Pompano	<i>Trachinotus carolinus</i>	MCNS, MUS
Permit.....	<i>Trachinotus falcatus</i>	MCNS, MUS
Palometa	<i>Trachinotus goodie</i>	MCNS, MUS
Hogchoker	<i>Trinectes maculates</i>	MUS
Rosy razorfish	<i>Xyrichtys martinicensis</i>	MCNS
Green razorfish	<i>Xyrichtys splendens</i>	MCNS

AMPHIBIANS

Frogs and Toads

Southern toad	<i>Bufo terrestris</i>	CS
Green treefrog	<i>Hyla cinerea</i>	CS, MAH
Squirrel treefrog	<i>Hyla squirella</i>	CS, MAH
Cuban treefrog	<i>Osteopilus septentrionalis</i> *	MTC

REPTILES

Crocodylians

American crocodile.....	<i>Crocodylus acutus</i>	EUS, MS
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Turtles and Tortoises

Loggerhead turtle	<i>Caretta caretta</i>	BD, MUS, MCNS
Green turtle	<i>Chelonia mydas</i>	BD, MUS, MCNS
Leatherback turtle	<i>Dermodochelys coriacea</i>	BD, MUS, MCNS
Gopher tortoise	<i>Gopherus polyphemus</i>	CS, DV

Lizards

Green anole	<i>Anolis carolinensis</i>	CS, DV, MAH
Cuban green anole.....	<i>Anolis porcatu</i> *	CS, DV, MAH
Brown anole	<i>Anolis sagrei</i> *	MTC
Six-lined racerunner.....	<i>Cnemidophorus sexlineatus sexlineatus</i> ...	BD, CS
Green iguana	<i>Iguana iguana</i> *	CS, MS
Ground skink	<i>Scincella laterale</i>	CS, DV, MAH

Snakes

Eastern diamondback rattlesnake	<i>Crotalus adamanteus</i>	CS, MAH
Southern ringneck snake	<i>Diadophis punctatus punctatus</i>	MTC
Scarlet kingsnake	<i>Lampropeltis triangulum</i>	CS
Eastern coachwhip	<i>Masticophis flagellum</i>	BD, CS, MAH
Eastern coral snake.....	<i>Micrurus fulvius</i>	CS, MAH

* Non-native Species

St. Lucie Inlet Preserve State Park Animals

**Primary Habitat Codes
(for all species)**

Common Name	Scientific Name	
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BIRDS

Loons

Common loon..... *Gavia immer* MCNS

Pelicaniformes

Anhinga *Anhinga anhinga* MS, EUS
 Magnificent frigate bird..... *Fregata magnificens* OF
 Northern gannet..... *Morus bassanus* BD, OF
 American white pelican..... *Pelecanus erythrorhynchos*..... MS, MUS, OF
 Brown pelican *Pelecanus occidentalis* MS, MUS, OF
 Double-crested cormorant..... *Phalacrocorax auritus* EUS, MS, OF

Wading Birds

Roseate spoonbill..... *Ajaia ajaja* EUS, MS
 Great egret..... *Ardea alba* MS
 Great blue heron *Ardea herodias* MS
 Cattle egret *Bubulcus ibis* MTC
 Green heron *Butorides virescens* MS
 Little blue heron *Egretta caerulea* MS
 Reddish egret..... *Egretta rufescens*..... MS
 Snowy egret *Egretta thula* MS
 Tricolored heron *Egretta tricolor* MS
 White ibis *Eudocimus albus*..... DV, MS, EUS
 Wood stork *Mycteria americana* MS, EUS
 Black-crowned night heron..... *Nycticorax nycticorax* MS
 Yellow-crowned night heron *Nyctanassa violacea* BD, MS

Ducks

Wood duck *Aix sponsa* EUS, MUS
 Egyptian Goose *Alopochen aegyptiacus**..... EUS, MUS
 Northern pintail *Anas acuta* EUS, MUS
 American wigeon *Anas Americana*..... EUS, MUS
 Green-winged teal *Anas crecca* EUS, MUS
 Northern shoveler *Anas clypeata*..... EUS, MUS
 Blue-winged teal..... *Anas discors*..... EUS, MUS
 Mottled duck..... *Anas fulvigula*..... EUS, MUS
 Mallard..... *Anas platyrhynchos* EUS, MUS
 American black duck *Anas rubripes* EUS, MUS
 Gadwall..... *Anas strepera* EUS, MUS
 Lesser scaup *Aythya affinis* EUS, MUS
 Redhead..... *Aythya Americana* EUS, MUS
 Ring-necked duck *Aythya collaris*..... EUS, MUS
 Canvasback *Aythya valisineria* EUS, MUS
 Red-breasted merganser *Mergus serrator* EUS, MUS

* Non-native Species

St. Lucie Inlet Preserve State Park Animals

Common Name	Scientific Name	Primary Habitat Codes (for all species)
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Hooded merganser	<i>Lophodytes cucullatus</i>	EUS, MUS
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Grebes

Horned grebe	<i>Podiceps auritus</i>	EUS, MUS
Pied-billed grebe.....	<i>Podilymbus podiceps</i>	EUS, MUS

Hawks, Eagles and Kites

Cooper's hawk.....	<i>Accipiter cooperii</i>	OF
Sharp-shinned hawk	<i>Accipiter striatus</i>	MTC, OF
Red-tailed hawk	<i>Buteo jamaicensis</i>	CS, DV, MAH, OF
Red-shouldered hawk.....	<i>Buteo lineatus</i>	CS, DV, MAH, OF
Broad-winged hawk	<i>Buteo platypterus</i>	OF
Swallow-tailed kite.....	<i>Elanoides forficatus</i>	OF
Merlin	<i>Falco columbarius</i>	CS, DV,MAH, OF
Peregrine falcon	<i>Falco peregrinus</i>	OF
American kestrel	<i>Falco sparverius</i>	CS, DV, MAH, OF
Bald eagle	<i>Haliaeetus leucocephalus</i>	MTC
Osprey	<i>Pandion haliaetus</i>	MTC

Vultures

Turkey vulture	<i>Cathartes aura</i>	BD, MAH, DV
Black vulture.....	<i>Coragyps atratus</i>	BD, MAH, DV

Shorebirds

Spotted sandpiper	<i>Actitis macularia</i>	BD, MUS
Ruddy turnstone.....	<i>Arenaria interpres</i>	BD, MUS
Sanderling.....	<i>Calidris alba</i>	BD, MUS
Dunlin.....	<i>Calidris alpina</i>	BD, MUS
Red knot	<i>Calidris canutus</i>	BD, MUS
Least sandpiper	<i>Calidris minutilla</i>	BD, MUS
Semipalmated sandpiper	<i>Calidris pusilla</i>	BD, MUS
Willet.....	<i>Catoptrophorus semipalmatus</i>	BD, MUS
Piping plover.....	<i>Charadrius melodus</i>	BD, MUS
Semipalmated plover	<i>Charadrius semipalmatus</i>	BD, MUS
Wilson's plover.....	<i>Charadrius wilsonia</i>	BD, MUS
Killdeer	<i>Charadrius vociferous</i>	BD, MUS
American oystercatcher	<i>Haematopus palliatus</i>	BD
Short-billed dowitcher	<i>Limnodromus griseus</i>	BD, EUS
Long-billed dowitcher	<i>Limnodromus scolopaceus</i>	BD, EUS
Marbled godwit.....	<i>Limosa fedoa</i>	EUS, MS
Black-bellied plover.....	<i>Pluvialis squatarola</i>	BD, MUS

Gulls, Terns and Skimmers

Black tern.....	<i>Chlidonias niger</i>	BD, EUS, MUS
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* Non-native Species

St. Lucie Inlet Preserve State Park Animals

Common Name	Scientific Name	Primary Habitat Codes (for all species)
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Herring gull	<i>Larus argentatus</i>	BD, EUS, MUS, MAH
Laughing gull	<i>Larus atricilla</i>	BD, EUS, MUS, MAH
Ring-billed gull	<i>Larus delawarensis</i>	BD, EUS, MUS, MAH
Lesser blacked-back gull	<i>Larus fuscus</i>	BD, EUS, MUS, MAH
Great black-backed gull	<i>Larus marinus</i>	BD, EUS, MUS, MAH
Bonaparte's gull	<i>Larus philadelphia</i>	BD, EUS, MUS, MAH
Black skimmer	<i>Rynchops niger</i>	BD, MUS
Least tern.....	<i>Sterna antillarum</i>	BD, EUS, MUS
Caspian tern	<i>Sterna caspia</i>	BD, EUS, MUS
Forster's tern	<i>Sterna forsteri</i>	BD, EUS, MUS, MAH
Common tern.....	<i>Sterna hirundo</i>	BD, EUS, MUS
Royal tern	<i>Sterna maxima</i>	BD, EUS, MUS
Gull-billed tern	<i>Sterna nilotica</i>	BD, EUS, MUS
Sandwich tern	<i>Sterna sandvicensis</i>	BD, EUS, MUS
Lesser yellowlegs	<i>Tringa flavipes</i>	BD, EUS, MUS
Greater yellowlegs	<i>Tringa melanoleuca</i>	BD, EUS, MUS

Turkeys and Quails

Northern bobwhite	<i>Colinus virginianus</i>	CS, MAH
Wild turkey	<i>Meleagris gallopavo</i>	CS, MAH

Doves

Rock dove	<i>Columba livia</i> *.....	MTC
Common ground-dove.....	<i>Columbina passerina</i>	DV
Mourning dove	<i>Zenaida macroura</i>	MTC

Cuckoos

Yellow-billed cuckoo	<i>Coccyzus americanus</i>	MAH, MS
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Owls

Eastern screech owl	<i>Otus asio</i>	CS, MAH
Barred owl.....	<i>Strix varia</i>	CS, MAH

Goatsuckers

Chuck-will's-willow	<i>Caprimulgus carolinensis</i>	MAH, DV
Whip-poor-will.....	<i>Caprimulgus vociferous</i>	MAH, DV
Common nighthawk	<i>Chordeiles minor</i>	MAH, DV

Kingfishers

Belted kingfisher	<i>Ceryle alcyon</i>	MS, EUS
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Woodpeckers

Northern flicker	<i>Colaptes auratus</i>	MAH, DV
Pileated woodpecker	<i>Dryocopus pileatus</i>	MAH
Red-bellied woodpecker.....	<i>Melanerpes carolinus</i>	MTC

* Non-native Species

St. Lucie Inlet Preserve State Park Animals

Common Name	Scientific Name	Primary Habitat Codes (for all species)
Downy woodpecker.....	<i>Picoides pubescens</i>	MAH
Hairy woodpecker	<i>Picoides villosus</i>	MAH
Yellow-bellied sapsucker	<i>Sphyrapicus varius</i>	MAH, DV
Flycatchers		
Eastern wood-pewee.....	<i>Contopus virens</i>	MAH
Great crested flycatcher.....	<i>Myiarchus crinitus</i>	MAH
Gray kingbird	<i>Tyrannus dominicensis</i>	MAH
Eastern kingbird	<i>Tyrannus tyrannus</i>	MAH
Vireos		
Yellow-throated vireo	<i>Vireo flavifrons</i>	MAH
White-eyed vireo	<i>Vireo griseus</i>	MAH
Red-eyed vireo.....	<i>Vireo olivaceus</i>	MAH
Blue-headed vireo.....	<i>Vireo solitarius</i>	MAH
Flycatchers and Kingbirds		
Eastern phoebe	<i>Sayornis phoebe</i>	CS, DV
Shrikes		
Loggerhead shrike	<i>Lanius ludovicianus</i>	CS, RD, DV
Jays and Crows		
American crow	<i>Corvus brachyrhynchos</i>	MTC
Fish crow.....	<i>Corvus ossifragus</i>	MTC
Blue jay	<i>Cyanocitta cristata</i>	MTC
Swallows and Martins		
Barn swallow.....	<i>Hirundo rustica</i>	MTC
Purple martin	<i>Progne subis</i>	OF
Tree swallow.....	<i>Tachycineta bicolor</i>	DV
Wrens		
Carolina wren.....	<i>Thryothorus ludovicianus</i>	MAH
House wren	<i>Troglodytes aedon</i>	DV
Hummingbirds		
Ruby-throated hummingbird	<i>Archilochus colubris</i>	CS, DV
Kinglets		
Ruby-crowned kinglet.....	<i>Regulus calendula</i>	MAH
Gnatcatchers		
Blue-gray gnatcatcher	<i>Polioptila caerulea</i>	MAH

* Non-native Species

St. Lucie Inlet Preserve State Park Animals

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

Gray catbird.....	<i>Dumetella carolinensis</i>	MAH, DV
Northern mockingbird.....	<i>Mimus polyglottos</i>	MTC
Brown thrasher	<i>Toxostoma rufum</i>	MAH, DV

Thrushes

American robin.....	<i>Turdus migratorius</i>	CS
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Waxwings

Cedar Waxwing	<i>Bombycilla cedrorum</i>	BD, CS, MAH
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Warblers

Black-throated blue warbler	<i>Dendroica caerulescens</i>	MAH
Yellow-rumped warbler.....	<i>Dendroica coronata</i>	MAH
Prairie warbler.....	<i>Dendroica discolor</i>	CS, DV
Yellow-throated warbler.....	<i>Dendroica dominica</i>	MAH
Palm warbler.....	<i>Dendroica palmarum</i>	CS, DV
Yellow Warbler	<i>Dendroica petechia</i>	MAH, MS
Pine warbler.....	<i>Dendroica pinus</i>	MAH
Blackpoll warbler	<i>Dendroica striata</i>	MAH
Cape may warbler.....	<i>Dendroica tigrina</i>	MAH
Common yellowthroat	<i>Geothlypis trichas</i>	MAH
Worm-eating warbler	<i>Helmitheros vermivorus</i>	MAH
Black-and-white warbler	<i>Mniotilta varia</i>	MAH
Northern parula	<i>Setophaga americana</i>	MAH
Prothonotary warbler	<i>Protonotaria citrea</i>	MAH
Ovenbird	<i>Seiurus aurocapillus</i>	MAH
American redstart.....	<i>Setophaga ruticilla</i>	MAH
Orange-crowned warbler	<i>Vermivora celata</i>	MAH
Hooded warbler	<i>Wilsonia citrina</i>	MAH

Meadowlarks, Blackbirds and Orioles

Red-winged blackbird	<i>Agelaius phoeniceus</i>	MS
Bobolink.....	<i>Dolichonyx oryzivorus</i>	MAH
Northern Oriole	<i>Icterus galbula</i>	MAH
Common grackle	<i>Quiscalus quiscula</i>	MTC
Boat-tailed grackle.....	<i>Quiscalus major</i>	MTC
Eastern meadowlark	<i>Sturnella magna</i>	MTC

Cardinals, Buntings and Grosbeaks

Northern cardinal.....	<i>Cardinalis cardinalis</i>	MTC
Painted bunting	<i>Passerina ciris</i>	CS, MAH
Indigo bunting	<i>Passerina cyanea</i>	CS, MAH
Rose-breasted grosbeak	<i>Pheucticus ludovicianus</i>	DV, MAH

St. Lucie Inlet Preserve State Park Animals

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

Seaside sparrow (Atlantic race)	<i>Ammodramus maritimus</i>	CS, MAH
Nelson's sharp-tailed sparrow	<i>Ammodramus nelsoni</i>	CS, MAH
Grasshopper sparrow	<i>Ammodramus savannarum</i>	CS, MAH
Savannah sparrow	<i>Passerculus sandwichensis</i>	CS, MAH
Rufous-sided Towhee	<i>Pipilo erythrophthalmus</i>	CS, MAH

Swifts

Chimney swift	<i>Chaetura pelagica</i>	OF
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Finches

Pine siskin	<i>Spinus pinus</i>	OF
American goldfinch	<i>Spinus tristis</i>	CS, MAH

MAMMALS

Didelphids

Virginia opossum	<i>Didelphis virginiana</i>	CS, DV, MAH
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Weasels and Skunks

Eastern spotted skunk	<i>Spilogale putorius</i>	MTC
River otter	<i>Lutra canadensis</i>	EUS

Lagomorphs

Eastern cottontail	<i>Sylvilagus floridanus</i>	MTC
Marsh rabbit	<i>Sylvilagus palustris</i>	MTC

Rodents

Black rat	<i>Rattus rattus</i> *	MTC
Eastern gray squirrel	<i>Sciurus carolinensis</i>	DV, MAH
Hispid cotton rat	<i>Sigmodon hispidus</i>	MTC

Armadillos

Nine-banded armadillo	<i>Dasypus novemcinctus</i> *	MTC
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Carnivores

Coyote	<i>Canis latrans</i> *	MTC
Domestic cat	<i>Felis catus</i> *	MTC
Bobcat	<i>Lynx rufus</i>	BD, CS, MAH, MS
Raccoon	<i>Procyon lotor</i>	MTC
Gray fox	<i>Urocyon cinereoargenteus</i>	MAH

Sirens

Florida manatee	<i>Trichechus manatus</i>	EUS
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* Non-native Species

St. Lucie Inlet Preserve State Park Animals

Common Name	Scientific Name	Primary Habitat Codes (for all species)
Cetaceans		
Bottle-nosed dolphin	<i>Tursiops truncatus</i>	MUS, EUS, MCNS

Natural Community Abbreviations for Habitat

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

Natural Community Abbreviations for Habitat

Strand Swamp STS
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

Natural Community Abbreviations for Habitat

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

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

FNAI GLOBAL RANK DEFINITIONS

- G1 Critically imperiled globally because of extreme rarity (5 or fewer occurrences or less than 1000 individuals) or because of extreme vulnerability to extinction due to some natural or 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)
- 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)

Imperiled Species Ranking Definitions

- 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.
- 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

Imperiled Species Ranking Definitions

vulnerability and threats to support proposing to list the species as endangered or threatened.

E(S/A) Endangered due to similarity of appearance.

T(S/A) Threatened due to similarity of appearance.

STATE

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

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

LT Listed as Threatened Species by the 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.

LS 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?

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.

Imperiled Species Ranking Definitions

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

Addendum 8 —Land Management Review

February 6, 2011

TO: Marianne Gengenbach, Program Administrator
Division of State Lands

FROM: Parks Small, Chief, Bureau of Natural and Cultural Resources 
Division of Recreation and Parks

Albert Gregory, Chief, Office of Park Planning 
Division of Recreation and Parks

SUBJECT: Response to Draft Land Management Review (LMR)
St. Lucie Inlet Preserve State Park

The Land Management Review draft report provided to DRP determined that management of St. Lucie Inlet Preserve State Park by the Division of Recreation and Parks met the two tests prescribed by law. Namely, the review team concluded that the land is being managed for the purposes for which it was acquired and in accordance with the land management plan.

Below are Additional Recommendations and Checklist Findings (items the LMR determined should be further addressed in the management plan update) of the draft LMR report, with our Manager's Response to each. The responses were prepared via a coordinated effort of the park, district office, and our offices.

The team recommends that park staff increase efforts to treat recently established invasive exotic plants along the pipeline easement. (VOTE: 5+, 0-)

Managing Agency Response: Agree; the park and staff will continue to address this area. However, as the easement lease is a 25 year commitment and will potentially be disturbed regularly for the length of the lease, it will not be a high priority for exotic treatment as compared to natural areas of the park.

The team recommends that more be done to initiate survey of Johnson's seagrass. (VOTE: 5+, 0-)

Managing Agency Response: Agree; primary inventory and monitoring focus must be on species that require special management attention. All-species inventory generally must be a lower priority than actually conducting actions to manage habitats. As needed, costs for inventory will be included in the Unit Management Plan, but can only be allocated as funds become available on a statewide priority needs basis.

The team recommends that DRP assess the demand and feasibility for ferry access to this park. (VOTE: 4+, 1-)

Managing Agency Response: The Division will consider these recommendations during the next unit management plan revision.

PLAN REVIEW

Management of natural communities, specifically beach dune/interdunal swale, coastal strand, estuarine composite substrate and mangrove swamp, with documentation in the management plan.

Managing Agency Response: Agree; this will be addressed in the next Unit Management Plan revision.

Listed species: Protection & Preservation, specifically Johnson's seagrass, with documentation in the management plan.

Managing Agency Response: Agree; this will be addressed in the next Unit Management Plan revision.

Discussion regarding deficiencies relating to natural resource survey, more specifically other habitat management effects monitoring, with documentation in the management plan.

Managing Agency Response: Agree; this will be addressed in the next Unit Management Plan revision.

Restoration of Ruderal Areas, specifically spoil areas, with documentation in the management plan.

Managing Agency Response: Agree; this will be addressed in the next Unit Management Plan revision.

Non-Native, Invasive & Problem Species, specifically the prevention of plants, animals and pests/pathogens and the control of pest/pathogens, with documentation in the management plan.

Managing Agency Response: Agree; this will be addressed in the next Unit Management Plan revision.

Resource Protection, specifically the signage and law enforcement presence, with documentation in the management plan.

Managing Agency Response: Agree; this will be addressed in the next Unit Management Plan revision.

Adjacent Property Concerns, specifically discussion of potential surplus land determination, with documentation in the management plan.

Managing Agency Response: Agree. The Division will address adjacent property concerns and the determination of surplus lands in the update of the management plan.

Environmental Education & Outreach, specifically wildlife, invasive species and habitat management activities determination, with documentation in the management plan.

Managing Agency Response: Agree; this will be addressed in the next Unit Management Plan revision.

Managed Area Uses, specifically dredging, with documentation in the management plan.

Managing Agency Response: Agree; this will be addressed in the next Unit Management Plan revision.

FIELD REVIEW

Listed species: Protection & Preservation, specifically piping plover and Johnson's sea grass, with documentation in the management plan.

Managing Agency Response: Primary inventory and monitoring focus must be on species that require special management attention. All-species inventory generally must be a lower priority than actually conducting actions to manage habitats. As needed, costs for inventory will be

included in the Unit Management Plan, but can only be allocated as funds become available on a statewide priority needs basis.

Restoration of Ruderal Areas, specifically spoil areas, with documentation in the management plan.

Managing Agency Response: Agree; the Division will consider these recommendations during the next unit management plan revision.

Public Access, specifically ferry, with documentation in the management plan.

Managing Agency Response: The Division will consider these recommendations during the next unit management plan revision.

Environmental Education & Outreach, specifically wildlife, invasive species, habitat management activities and interpretive facilities, with documentation in the management plan.

Managing Agency Response: The Division will consider these recommendations during the next unit management plan revision.

Infrastructure, regarding staff and funding, with documentation in the management plan.

Managing Agency Response: Agree. If it is determined that additional staff are needed at the time of the next unit management plan revision, it will be included in the plan. However, no new staff can be assigned to this or any other park unit unless they are appropriated by the Legislature or reassigned from other units. Funding is determined annually by the Florida Legislature.

Thank you for your attention.

GK

CC: Paul Rice, Chief, Bureau of Parks District 5
Kevin Jones, Assistant Chief, Bureau of Parks District 5
John Lakich, Park Manager, St. Lucie Inlet Preserve State Park
Ernie Cowan, Environmental Specialist, Bureau of Parks District 5