# LOVERS KEY STATE PARK

## UNIT MANAGEMENT PLAN

## APPROVED

## STATE OF FLORIDA

**DEPARTMENT OF ENVIRONMENTAL PROTECTION**

**Division of Recreation and Parks**

**DECEMBER 9, 2005**

# Department of Environmental Protection

Jeb Bush
Governor

Marjory Stoneman Douglas Building
3900 Commonwealth Boulevard, MS 140
Tallahassee, Florida 32399-3000
Phone: (850) 245-2784 Fax: (850) 245-2786

Colleen Castille
Secretary

March 21, 2006

Ms. BryAnne White
Office of Park Planning
Division of Recreation and Parks
3900 Commonwealth Blvd.; M.S. 525
Tallahassee, Florida 32399

Re: Lovers Key State Park Lease #3340

Dear Ms. White:

On December 9, 2005, the Acquisition and Restoration Council recommended approval of the Lovers Key State Park management plan. Therefore, the Office of Environmental Services, acting as agent for the Board of Trustees of the Internal Improvement Trust Fund, approved the management plan for the Lovers Key State Park. Pursuant to Sections 253.034 and 259.032, Florida Statutes, and Chapter 18-2, Florida Administrative Code this plan's ten-year update will be due on December 9, 2015.

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,

Paula L. Allen
Office of Environmental Services
Division of State Lands
Department of Environmental Protection

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## INTRODUCTION

Lovers Key Stat Park is located in Lee County, within the city limits of Bonita Springs, just north of Bonita Beach, Florida. Access to the park is from State Road 865 (Estero Boulevard.). The Vicinity Map and Reference Map provide a geographic context for the park, delineate major roads, developed areas and significant land and water resources either within or nearby the park.

Lovers Key State Park currently contains approximately 1,464 acres. Acquisition began on May 25, 1983 under the Save Our Coast (SOC) Program. During this time, the adjacent Carl Johnson Park, located on the southern part of Lovers Key and managed by Lee County, was providing similar recreational services. In 1996, as a cost-saving measure to avoid replication of services, Lee County signed a letter of agreement with the Division of Recreation and Parks to merge Carl Johnson Park with Lovers Key State Park. The agreement called for the two units to be managed by the Division of Recreation and Parks as a unit of the state park system. Public outdoor recreation and conservation is the designated single use of the property. There are no legislative or executive directives that constrain the use of this property (see Addendum 1).

The park features mangrove fringed canals and tidal lagoons, and consists of four barrier islands -- Lovers Key, Inner Key, Long Key and Black Island -- all approximately two miles offshore from the mainland in the Gulf of Mexico. Collectively the islands form a barrier between the Gulf of Mexico and Estero Bay. Lovers Key is the principal island having beach frontage on the Gulf of Mexico.

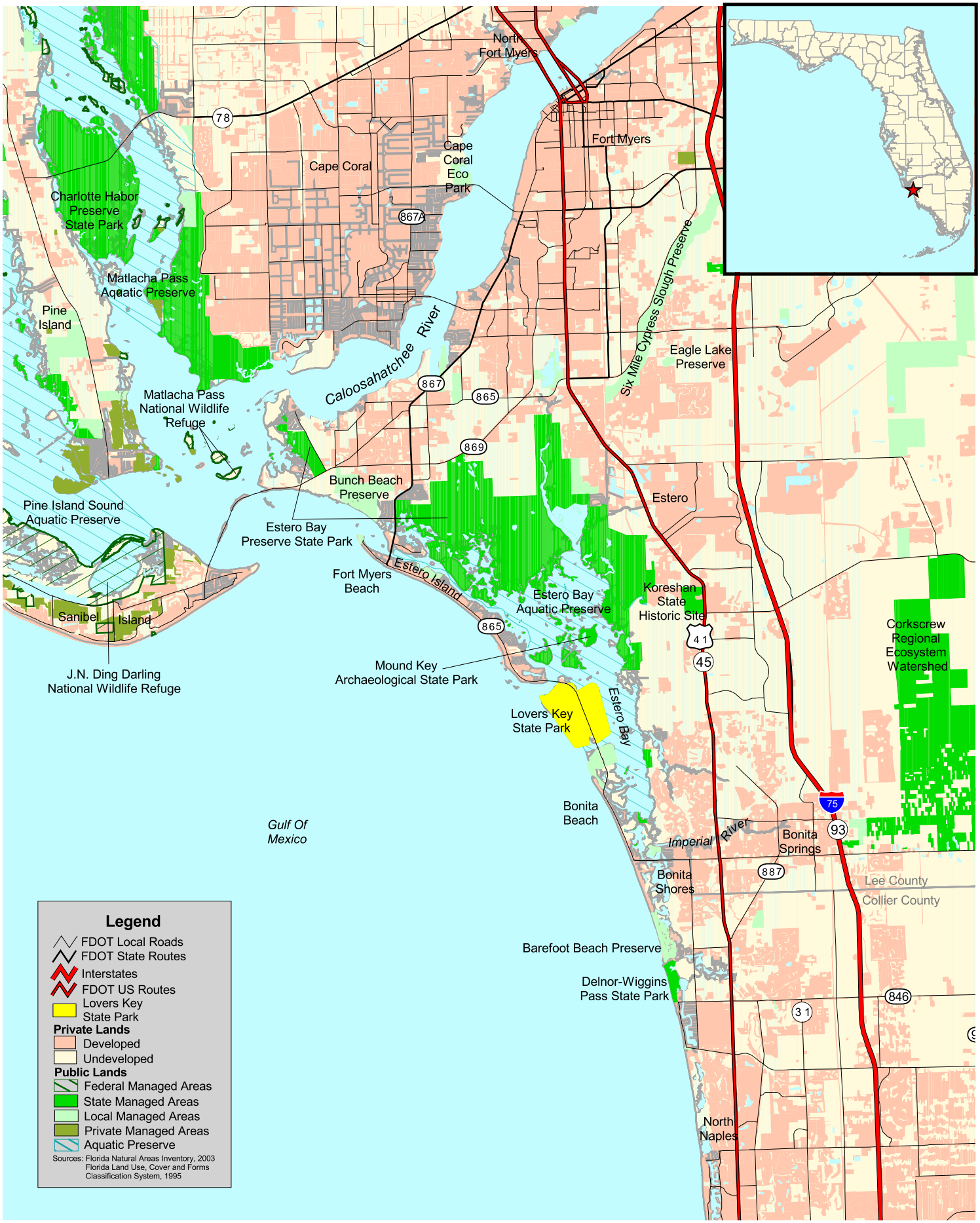
## PURPOSE AND SCOPE OF THE PLAN

This plan serves as the basic statement of policy and direction for the management of Lovers Key State Park as a unit of Florida's state park system. It identifies the objectives, criteria and standards that guide each aspect of park administration, and sets forth the specific measures that will be implemented to meet management objectives. The plan is intended to meet the requirements of Sections 253.034 and 259.032, Florida Statutes, Chapter 18-2, Florida Administrative Code, and intended to be consistent with the State Lands Management Plan. With approval, this management plan will replace the May 6, 1999 approved plan. All development and resource alteration encompassed in this plan is subject to the granting of appropriate permits; easements, licenses, and other required legal instruments. Approval of the management plan does not constitute an exemption from complying with the appropriate local, state or federal agencies. This plan is also intended to meet the requirements for beach and shore preservation, as defined in Chapter 161, Florida Statutes and Chapters 62B-33, 62B-36 and 62R-49, Florida Administrative Code.

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

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

In the development of this plan, the potential of the park to accommodate secondary




# LOVERS KEY STATE PARK

# VICINITY MAP

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


# LOVERS KEY STATE PARK

## REFERENCE MAP

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

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

The use of private land managers to facilitate restoration and management of this unit was also analyzed. Decisions regarding this type of management (such as outsourcing, contracting with the private sector, use of volunteers, etc.) will be made on a case-by-case basis as necessity dictates.

## MANAGEMENT PROGRAM OVERVIEW

### Management Authority and Responsibility

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

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

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

impact public recreational uses.

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

In the management of Lovers Key State Park major emphasis is placed on maximizing the recreational potential of the recreation area; however, preservation of resources remains important. Depletion of a resource by any recreational activity is not permitted. In order to realize the unit's recreational potential, development in the park is aimed at providing facilities that are accessible, convenient and safe, as needed to support recreational use or the unit's natural, aesthetic and educational attributes.

## Park Goals and Objectives

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

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

### Natural and Cultural Resources

**1.** Restore and preserve appropriate coastal natural community types.
- **A.** Eradicate Australian pines, Brazilian pepper and melaleuca from all four islands as a first priority.
- **B.** Restore mangrove and sand dune communities.
- **C.** Create maritime hammock community.
- **D.** Re-introduce or introduce native species into sites that have been disturbed.

**2.** Conserve and protect listed species and their habitats.
- **A.** Prevent disturbance of nesting/wintering shorebirds and sea turtles by recreational users and their pets through education, interpretation, signs, barriers and law enforcement.
- **B.** Continue monitoring programs for nesting sea turtles, ospreys and southern bald eagles and establish monitoring programs for shorebirds, wading birds and neotropical migrants.

**3.** Emphasize shell mound management and correct Florida Master Site File.
- **A.** Develop vegetation management and maintenance schedules to preserve the island shell mound.

**B.** Submit necessary paperwork (e.g. archeological short form) to show the proper location of the shell mound in the Florida Master Site File database.

**Recreation**

**4.** Continue to provide quality resource based outdoor recreational and interpretive programs and facilities at the state park.
- **A.** Maintain facilities and services necessary to provide public access for saltwater beach recreation.
- **B.** Maintain opportunities for boating and fishing access to park waters and Estero Bay Aquatic Preserve and the Great Calusa Blueway paddling trail.
- **C.** Maintain a network of trails that allow exploration of park lands and water by canoeing/kayaking, hiking, and biking.
- **D.** Provide up-to-date, diverse interpretive opportunities through staff-led programs and static interpretive displays.
- **E.** Maintain picnic areas and facilities for use by individuals, families and groups.

**5.** Seek funding to expand recreational and interpretive opportunities through the improvement of programs and the development of new use areas and facilities, as outlined in this management plan.
- **A.** Expand parking and improve visitor circulation within parking areas 1, 2 and 3.
- **B.** Enhance park interpretation by constructing a visitor center**.**
- **C.** Enhance and expand concession services by upgrading existing facilities.
- **D.** Provide additional facilities (restroom, entrance booth) to facilitate and manage beach access along Big Carlos Pass. Collaborate with Lee County to address parking and roadway improvements needed to improve vehicular access and safety.
- **E.** Construct/re-establish necessary boardwalks, overlooks, dune crossovers and tram facilities for beach access upon completion of the renourishment project.
- **F.** Add shelters to the main picnic area and replace/expand those in the special events area.
- **G.** Enhance trail opportunities by constructing an interpretive nature trail, observation platform, shelters along the Black Island Trail and adding canal cuts for paddling access.

**Park Administration/Operations**

**6.** Expand the labor pool available to address park operations and resource management needs, including exotic plant control, maritime hammock creation, and monitoring shorebird and sea turtle nesting activity.
- **A.** Coordinate with the Florida Department of Corrections and the Lee County Sheriff's Office to utilize prison labor to the extent feasible.
- **B.** Continue coordination of volunteer programs and expand participation.
- **C.** Continue participation in Florida Gulf Coast University internship programs.

**7.** Seek local and regional planning coordination to insure compatibility between land use decisions in the larger community and the resources of the park.
- **A.** Monitor proposed land use changes outside the park that may impact resource integrity, and engage in the land use planning process, when necessary, to advance the long-term interests of the park.
- **B.** Attend meetings of The Southwest Florida Regional Planning Council and those of other relevant local organizations for which the planned agenda indicates regional plans that might affect the park.
- **C.** Continue the Division's active involvement with the Lee County Coastal Advisory Council.

**D.** Evaluate all proposed beach renourishment projects at the park on the basis of the Division's dual responsibilities for natural and cultural resource protection and the provision of resource based outdoor recreation.

**7.** Seek funding to improve support and administrative functions through the development of new and/or replacement of existing facilities as outlined in this management plan.
- **A.** Construct additional residences to meet staff housing needs.
- **B.** Connect park facilities to central sewer service.

**8.** Pursue funding, training and partnership opportunities to enhance park programming, operations, resource management.
- **A.** Provide staff with appropriate training opportunities in visitor services, resource management, park operations and interpretation.
- **B.** Enhance ecotourism programs and recreation services through partnerships and park concession operations.

**9.** Maintain high standards of quality for park facilities and programs.
- **A.** Conduct routine safety and maintenance inspections of facilities and public areas and correct deficiencies as needed. Assure compliance with state and federal safety guidelines.
- **B.** Continue to improve universal access to park facilities in compliance with the Americans with Disabilities Act.

**10.** Support land use planning policies, regulations and acquisition initiatives that serve to enhance management and protection of park resources.

## Management Coordination

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

The U.S. Coast Guard assists in search and rescue, enforcement of state laws and boater's education within park boundaries. The Department of Agriculture and Consumer Services, Division of Forestry (DOF), assists Division staff in the development of wildfire emergency plans and provides the authorization required for prescribed burning. The Florida Fish and Wildlife Conservation Commission (FFWCC), assists staff in the enforcement of state laws pertaining to fish, wildlife and other aquatic life existing within park boundaries. In addition, the FFWCC aids the Division with wildlife management programs, including the development and management of Watchable Wildlife programs. The Department of State, Division of Historical Resources (DHR) assists staff to assure protection of archaeological and historical sites. The Department of Environmental Protection (DEP), Office of Coastal and Aquatic Managed Areas (CAMA) aids staff in aquatic preserves management programs including near shore water quality testing and other technical and analytical support. The DEP, Bureau of Beaches and Coastal Systems aids staff in planning and construction activities seaward of the Coastal Construction Control Line and the development of erosion control projects. The DEP, Division of Law Enforcement assists the enforcement of state laws, park rules and regulations. The DEP Bureau of Invasive Plant Management provides funding for invasive exotic plant removal projects.

Park staff coordinates management of Lovers Key with a variety of departments and agencies associated with area local governments. Lee County Division of Natural Resources assists park staff with resources related to beach and boating issues. Lee County Tourist and Development Council provide funding for park projects and development. Lee County Visitor and Convention Bureau assists with promotional and publicity campaigns. Lee County Mosquito Control coordinates local mosquito control activity and provides insect monitoring, control and spraying reports. Lee County V.O.I.C.E. has assisted park staff with enforcement of state laws, park rules

and parking at festivals and events. Lee County Office of the Sheriff assists park staff in enforcing state laws, traffic control and other related incidents. The City of Bonita Springs and the Town of Ft. Myers Beach assists park staff with special event management and promotion.

The Lions Club Charities, Inc of Bonita Springs provides funds for education, park projects, such as the Black Island Trail. The Citizens Association of Bonita Beach and the P.O.L.O. Club of Ft. Myers assist with organized Coastal Cleanups and Lee County's Adopt-A-Shore Program. The park's Citizen Support Organization (CSO), the Friends of Lover's Key State Park, Inc. support the park's operations and projects through volunteers, fund raising and donations. Their volunteer support is especially appreciated during special events and exotic plant removal efforts. Turtletime Inc. assists the park with sea turtle strandings and provides education, training and technical support related to protection of sea turtles.

## Public Participation

The Division provided an opportunity for public input by conducting a public workshop and an advisory group meeting. A public workshop was held on December 16, 2004. The purpose of this meeting was to present this draft management plan to the public. A DEP Advisory Group meeting was held on December 17, 2004. The purpose of this meeting was to provide the Advisory Group members the opportunity to discuss this draft management plan.

## Other Designations

Lovers Key State Park is not within an Area of Critical State Concern as defined in section 380.05, Florida Statutes. Currently it is not under study for such designation. The park is a component of the Florida Greenways and Trails System.

A portion of this unit is included within the boundary of the Estero Bay Aquatic Preserve under provision of the Florida Aquatic Preserve Act of 1975 (section 258.35, Florida Statutes). All waters, excluding those areas within the boundaries of the former Carl Johnson Park, within the unit have been designated as Outstanding Florida Waters, pursuant to Chapter 62-302 Florida Administrative Code. Administered by the Department of Environmental Protection, this program was created by Section 403.061, Florida Statutes, and protects lakes, rivers and streams against degradation of existing ambient water quality.

# RESOURCE MANAGEMENT COMPONENT

## INTRODUCTION

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

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

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

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

## RESOURCE DESCRIPTION AND ASSESSMENT

Lovers Key State Park is located in southwestern Lee County between southern Fort Myers Beach and northern Bonita Beach. In addition to the island known as Lovers Key, the park is comprised of three other islands. Black Island is the most disturbed of the islands, having been dissected with an artificial canal system. Inner Key and Long Key still have considerable natural communities left, especially mangrove swamps (marine tidal swamps). Lovers Key is the island fronting the Gulf. It has an intact beach dune community.

### Natural Resources

#### Topography

The park is within the Gulf Coastal Lagoons and Barrier Chain subzone of the Coastal Lowlands physiographic region. The elevation of the park ranges from mean sea level to about five feet, with the exception of a man-made dredge mound of some twenty feet. On Black Island, past dredge and fill activities have created approximately three miles of winding canals and uplands that displaced the original mangroves. The former owner planned to develop a series of canals with waterfront lots in the 1970s.

#### Geology

Prior to the initial Pleistocene glacial melt, sea level lay approximately 82 meters (270 feet) above the present shoreline. Dry land on the Floridian Plateau was restricted to a few small islands lying in Polk County, and another group near the Trail Ridge near Jacksonville.

Subsequent sea-level fluctuations gradually left more of the Floridian Plateau exposed.

The various elevations of the Pleistocene shorelines and the alternation of marine and freshwater beds in certain limestone and marl formations provide a record of sea level fluctuations during the great ice age. The advances and retreats of great ice sheets over the North American continent alternately raised and lowered the regional sea levels. In Florida that resulted in a variety of Pleistocene deposits including quartz sands, shell beds, and limestone, and marl.

In southern Florida, the strata of the Pleistocene are composed of the sands of marine terraces such as the Caloosahatchee, Anastasia, Fort Thompson, Key Largo Limestone and Miami formations. In addition to sand and clay deposits, Lovers Key State Park is underlain by the Anastasia Formation, a coquinoid limestone.

## Soils

Five soil types have been identified in the park from the Soils of Lee County, Florida (Henderson, 1984) (see Soils Map). A detailed description of these soil types is contained in Addendum 3. Soil erosion in maritime habitats is, in part, a natural phenomenon. The principal concern in public use areas is to ensure that the public does not walk in parts of beach dune communities that are already stabilized either by vegetation or in the process of being stabilized. On a small scale, erosion of park soils can also be minimized by one or a combination of the following methods: direct seeding of native grasses (including broomsedge, etc.) and planting sea oat rhizomes. On a larger scale, park managers will need to be aware of nearby dredging and beach re-nourishment so that the park is considered when regional plans are developed. The Southwest Florida Regional Planning Council might be a source of information for future development plans that could affect beachfront erosion in the park. Any placement of recreational facilities should acknowledge the dynamic natural processes of the barrier island to minimize damage and destruction.

## Minerals

No information is available on minerals for this park.

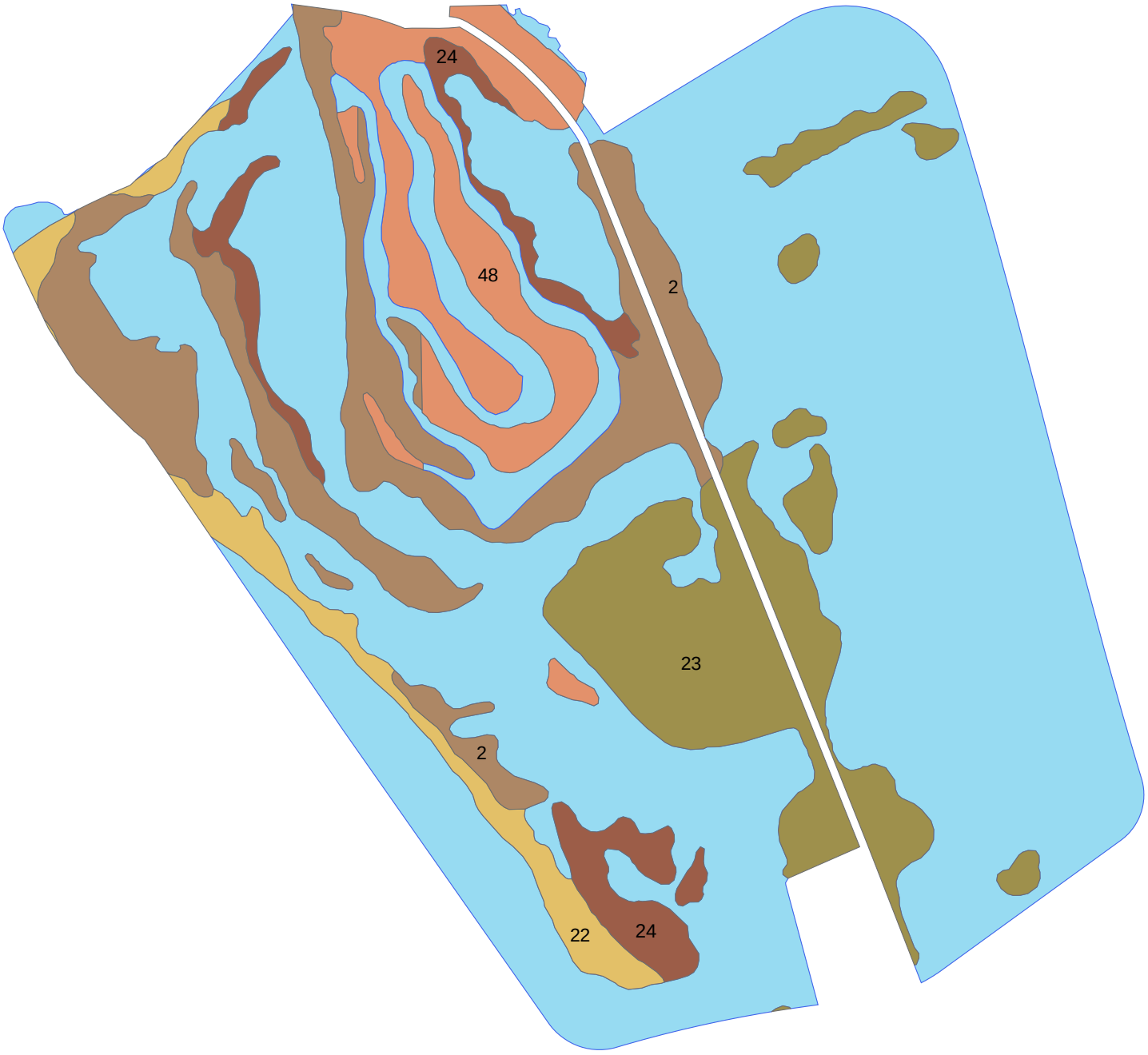
## Hydrology

The park is within the Estero Bay drainage basin. However, as a barrier island located well offshore, Lovers Key and its adjacent islands are not directly affected by regional hydrology. A winding canal system now forms most of what used to be an intact mangrove ecosystem on Black Island. Most of the drainage in this segment of the park is internal with some flow on the east side of Black Island through the mangroves. Rainwater seeps into the porous sand of the artificial upland created by development.

**Surface water.** Much of the soil is very porous with a corresponding high absorption rate. However, much of Black Island was originally estuarine tidal swamp from which fill was taken to form uplands. These soils do not have the same absorptive abilities as the porous sand. There are two small, shallow ponds on Black Island. One is seasonal and the second retains enough water during the dry season to support at least one alligator.
The water from the artificial canal system flows out the east side of Black Island through the mangroves. After it goes through the mangroves, it flows across a shallow bay then through Little Carlos Pass, into Estero Bay and the deeper water channels leading north, around to Big Carlos Pass, and then out into the Gulf of Mexico.

## Natural Communities

The system of classifying natural communities employed in this plan was developed by the




LEGEND

- 2 - Canaveral fine sand
- 22 - Beaches
- 23 - Wulfart muck
- 24 - Kesson fine sand
- 48 - St. Augustine sand
- Water

N

0 625 1,250 2,500 Feet

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

# LOVERS KEY STATE PARK

# SOILS MAP

Florida Natural Areas Inventory (FNAI, 1990). The premise of this system is that physical factors, such as climate, geology, soil, topography, hydrology and fire frequency generally determine the species composition of an area, and that areas which are similar with respect to these factors will tend to have natural communities with similar species compositions. Obvious differences in species composition can occur, despite similar physical conditions. In other instances, physical factors are substantially different, yet the species compositions are quite similar. For example, coastal strand and scrub--two communities with similar species compositions--generally have quite different climatic environments, and these necessitate different management programs.

Due to massive dredging on Black Island, prior to State acquisition of Lovers Key, only remnants of natural communities now remain. In addition to ruderal/developed land, Lovers Key State Park contains five distinct natural communities (see Natural Communities Map). The acreage for each natural community is reflected on the Natural Communities Map. Park specific assessments of the existing natural communities are provided below. A complete list of the plant and animal species occurring in the park is contained in Addendum 4.

**Beach dune.** This community attains its best development at the north end of Lovers Key and extends southward paralleling the beach. It was formerly dominated by Australian pines (*Casuarina equisetifolia*), but these infestations are close to being eliminated. When they are removed, the beach dune community will soon attain a pristine appearance.

**Coastal Strand.** This community was not recognized as distinct during the previous version of this plan. Exotic removal, particularly of Australian pines, has been so successful in the last five years that this community is showing up behind the beach dune. Some of this coastal strand acreage is in the earlier stages of recovery following recent removal of exotic vegetation and may not be typical. It should be in better condition by the end of this next ten year planning cycle. The vegetation near the shop maintenance complex, despite its location, has also been mapped as coastal strand. In time, it will probably succeed to maritime hammock if not disturbed.

**Maritime hammock.** The present maritime hammock is in an incipient phase and has increased in size since the previous version of this plan was written. The arborescent species are cabbage palms (*Sabal palmetto*), Jamaica dogwoods (*Piscidia piscipula*), strangler figs (*Ficus aurea*), gumbo-limbos (*Bursera simaruba)*, catclaws (*Pithecellobium unguis-cati*), buttonwoods (*Concocarpus erectus*) and seagrapes (*Coccoloba uvifera*). One of the management goals is to restore lands that were formerly mangrove swamp to a community that best approximates a maritime hammock. The first step is exotic removal and much progress has already been made toward this end.

**Marine tidal swamp.** The most extensive natural community in the park is marine tidal swamp. Long Key has the most acreage. Elsewhere this community consists of several fringing communities that partly border the islands. Red mangroves (Rhizophora mangle) and black mangroves (*Avicennia germinans*) are the most abundant, followed by white mangroves (*Laguncularia racemosa*) and buttonwoods.

**Marine unconsolidated substrate.** These mudflats are extensive intertidal areas found bordering the shorelines between mangroves and seagrass beds. This dynamic community changes size from year to year. Mudflats occur between Lovers Key and Inner Key, between Inner Key and Black Island, and between Black Island and Long Key. Some of the flats support


LEGEND

- 1 - Beach Dune-29.59 ac.
- 5 - Coastal Strand-40.57 ac.
- 7 - Maritime Hammock-36.81 ac.
- 79 - Marine Tidal Swamp-302.73 ac.
- 80 - Marine Unconsolidated Substrate-920.28 ac.
- 84 - Ruderal-89.60 ac.
- 85 - Developed-43.65 ac.

N

0 625 1,250 2,500 Feet

Prepared by:
Florida Department of Environmental Protection
Division of Recreation and Parks
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# LOVERS KEY STATE PARK

# NATURAL COMMUNITIES MAP

marine grasses. This community type also includes the subtidal, intertidal and supratidal beach habitat below the Beach Dune community. Vegetation is sparse in this zone, but similar to that of the mud flats proper; it is a rich feeding zone for wading and shorebirds that are able to probe below the surface for infaunal organisms that include isopods, amphipods, polychaetes, mollusks and crustaceans. These feeding grounds support nesting shorebird colonies. The benthic organisms also provide a good food source for animals that venture down from the uplands during low tide.

**Ruderal and Developed areas.** Black Island was once a mangrove island. In the 1960s, dredging converted it into upland with a serpentine canal winding through the interior. Portions of the interior were planted as a tree nursery; the remainder was kept mowed. In the 1999 version of the Unit Management Plan (UMP), clumps of tropical hardwood trees that would normally indicate a maritime hammock community had become established in a few locations. Since then much progress has been made to reduce exotic plant acreage and some of this former ruderal vegetation has become maritime hammock. This has been accomplished through park staff and volunteer work and by means of exotic plant removal grants. Johnson and Muller (1993) mention a coastal grassland community at the south end of Lovers Key. They go on to state that Australian pine has invaded the community, but note that grassy openings still occur. Through the exotic removal actions described above, many of the exotic plants in that ruderal community have been removed, and the resulting mapped ruderal acreage there is considerably less than in the past. The Guide to the Natural Communities of Florida (FNAI, 1990), lists the nonnative (and naturalized) ruderal species, crowfoot grass (*Dactyloctenium aegyptium*), as a coastal grassland species. This species is common in ruderal areas of the park.

## Designated Species

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

Lovers Key State Park provides habitat for 22 designated animal species and two designated plant species. Five of the designated animal species are federally listed as either threatened or endangered. These are the bald eagle (*Haliaeetus leucocephalus*), West Indian manatee (*Trichechus manatus*), Atlantic loggerhead turtle (*Caretta caretta*), American alligator (*Alligator mississippiensis*) and the crested caracara (*Caracara cheriway*)(a transient species).

## Special Natural Features

Lovers Key State Park does not possess any natural features that are unique to barrier islands in this part of the Gulf of Mexico.

# Cultural Resources

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

compromised quickly. A resource in poor condition suffers obvious declines in physical integrity from year to year. A poor condition suggests immediate action to reestablish physical stability.

A review of the Florida Master Site File (FMSF) revealed three sites -- LL01788, LL01924 and LL01947. Two of these sites -- the first, a building site, and the last, an Indian midden – are considered worthy of priority follow-up, while file and site information for LL01924 needs clarification before any follow-up can be accomplished.

The building site, LL01788, is comprised of what appears to be concrete foundation blocks with deteriorated wooden post ends protruding vertically from the piers. The historic structural remains date to the late 19th or early 20th century. While there is no known documentation about a structure in this area, a local story refers to a pirate living in a house somewhere in the vicinity. Its location in a mangrove estuary, surrounded by red mangrove and buttonwood trees, makes the site inaccessible. The 1997 Resource Management Evaluation (RME) report assessed its condition as good, and recommended periodic monitoring of the site through photo points. This recommendation will be incorporated into the regular park inspection program.

The mound (LL01947) has been given the name Black Island Midden. Although it is not known, whether it was substantially larger in the past or not, the mound appears to be intact and in fair condition according to the resource management evaluation team (Younker *et al*., 1997). During the writing of this edition of the plan, the mapped location in the FMSF was found to be in error. Efforts are under way by the park to correct this discrepancy in the FMSF database (See "Site Locations" below). This correction would also allow the presently mapped site to be used as the location for an observation tower if desired. The island midden's cultural and temporal affiliation is unknown. It has never been surveyed by a professional archaeologist. Park staff has reported finding ceramic shards and shell tools on the surface of the midden. According to the Florida Master Site File, the island's former owner, who dredged a long, winding canal system in the vicinity in the late 1960s and early 1970s, spared the midden, although the impact of this dredging around its perimeter is unknown. While the site location is fairly inaccessible, increased use of the canals for canoeing and fishing may increase the threat of vandalism, looting and erosion. Furthermore, unmanaged vegetation continues to threaten the midden's integrity. The 1997 RME report assessed its condition as fair, and recommended recording the site with the Florida Master Site File; mapping its location with GPS; photographing the site; conducting a Level I or II survey of the site, particularly prior to any park development in the vicinity; developing and implementing a vegetation and maintenance schedule; and monitoring the site on a regular basis. Park Management recorded the site with the Florida Master Site Files in 1997. A vegetation management and maintenance schedule is being developed.

As for LL01924, as noted above, The Florida Master Site File information on that site should be clarified. For example, there is no site name associated with it, and there is currently no site file information at the Bureau of Natural and Cultural Resources on this site (Triel Lindstrom, Archaeology Assistant, DEP, personal communication).

## RESOURCE MANAGEMENT PROGRAM

### Special Management Considerations

#### Timber Management Analysis

Chapters 253 and 259, Florida Statutes, require an assessment of the feasibility of managing timber in land management plans for parcels greater than 1,000 acres if the lead agency determines that timber management is not in conflict with the primary management objectives of

the land. The feasibility of harvesting timber at this park during the period covered by this plan was considered in context of the Division's statutory responsibilities, and an analysis of the park's resource needs and values. The long-term management goal for forest communities in the state park system is to maintain or re-establish old-growth characteristics to the degree practicable, with the exception of early successional communities such as sand pine scrub and coastal strand.

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

**Additional Considerations**

**Creation of maritime hammock community.** A primary special management consideration is to create maritime hammock communities on uplands that were created during the commercial development stage of private ownership. Considerable progress has been made and the process continues with native hammock species continuing to spread.

**Shore birds and sea turtles.** Another special management consideration is that nesting and resting sites for shorebirds should be mapped. Some shore bird nesting was observed in the summer of 2003 for the first time in a number of years. In addition, beaches used by sea turtles will be indicated on a map. The purpose of this mapping is to facilitate the decision-making process regarding activities or facilities. The mapped sites will be a matter of record. As noted above, impacts on nesting shorebirds and sea turtles by problem species like the raccoon may be revealed during the mapping or monitoring.

For nesting shore birds, in particular, nesting habitats shall be monitored to determine levels of disturbance; and appropriate measures shall be taken to ensure the protection and maintenance of the nesting habitat. Management activities will include installation of appropriate signs to prohibit access, and use of other measures such as posts, high visibility string, tape, or line to prevent access to bird nesting areas before and throughout seasonal nesting activities, in accordance with Division Resource Management Procedures Numbers 3 and 13. In addition to the above actions, park visitors will be informed about sensitive bird habitats through interpretative handouts and programs.

Finally, in order to operate an effective shorebird protection program, it is essential to control both feral and domestic cats and dogs in accordance with Division Resource Management Policy Number 1 and DEP Program Directive 930. Local pet ordinances shall be enforced and educational programs with nearby neighbors will be implemented.

**Restrictions on watercraft.** Restrictions on certain watercraft are necessary to protect the documented presence of manatees, juvenile turtles and wading birds in the park as well as to protect seagrass beds. Specifically special management consideration will involve restricting the use of motorized watercraft on some waters within the boundaries of the park. This includes the canal system and certain other interior waters. Boat traffic will be restricted to self propelled canoes, kayaks, paddleboats and small boats using electric trolling motors. Signs will be used as necessary to avoid confusion about where motorized boat traffic will be allowed. Permits for signs are currently in progress. In park waters where motorized traffic is allowed, in order to provide adequate habitat protection for the animals mentioned above and seagrass beds, it may become necessary to pursue a regulatory idle speed zone (with appropriate signs). Boating safety

considerations may make such restrictions necessary as well.

**Internal canal system.** If the internal, canal system is opened to Estero Bay, as recommended in the Land Use Component of this plan, any cuts made should be of suitable dimensions to allow for passage of manatees and dolphins. The need for base line data on water quality is emphasized under "Research Needs" below.

**Native species restoration.** Since much of the native vegetation has been removed from the park by the previous owner, an intensive revegetation plan and program needs to be implemented, especially in the ruderal areas. It would be desirable to transform some of the ruderal areas on Black Island into maritime hammock.

## Management Needs and Problems

The greatest management need involves removal of exotic vegetation and native plant restoration throughout the park. This includes both beach dune and maritime hammock natural communities and restoration of the ruderal areas located within the unit.

## Management Objectives

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

The principal resource management objectives at this park are:

- the elimination of exotic plants, (primarily Australian pines)
- restoration and protection of dunes
- restoration or creation of maritime hammock vegetation to the greatest extent feasible
- protection and monitoring of marine turtle nesting areas.

## Management Measures for Natural Resources

### Hydrology

It is conceivable that ecological considerations (for example, improving water quality) require management of the canal system. An opinion shall be requested from the South Florida Water Management District. Currently there are no known water conservation issues at this unit.

### Prescribed Burning

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

There are no pyrogenic communities at this park and therefore there are no burn plans.

## Designated Species Protection

The welfare of designated species is an important concern of the Division. In many cases, these species will benefit most from proper management of their natural communities. At times, however, additional management measures are needed because of the poor condition of some communities, or because of unusual circumstances that aggravate the particular problems of a species. The Division will consult and coordinate with appropriate federal, state and local agencies for management of designated species.

As noted earlier, Addendum 5 contains a list of the designated species in the park and their status. United States Fish and Wildlife Service (USFWS) recovery plans have been prepared for the bald eagle, crested caracara, West Indian manatee and Atlantic loggerhead turtle. Management recommendations in these plans will be followed where applicable. Increasing public awareness through interpretive literature and programs is another management measure that often benefits designated species and establishing monitoring plans.

Other listed animal species, including the Atlantic green turtle, hawksbill and Kemp's ridley, have been documented near Lovers Key through stranding and salvage records; but because these species have not been definitely documented within park boundaries, they cannot be officially added. Documentation includes, but is not limited to, FNAI element occurrence records (EORs).

## Exotic Species Control

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

**Plants.** Twenty-one exotic species occur in the park with eleven species being serious enough pests to be included on the Exotic Pest Plant Council's 2003 *List of Florida's Most Invasive Species*, Category I and II. The most serious exotic problems at this park are caused by Australian pines, which have taken over much of the beach, and Brazilian pepper (*Schinus terebinthifolius*) that primarily invades uplands. Several other species of exotic trees have been planted or have escaped into the park. Leadtree (*Leucanea leucocephala*), laurel fig (*Ficus microcarpa*) and Australian umbrella tree (*Schefflera actinophylla*) are the worst. These trees should be removed. There are a number of native tropical hardwoods that would be suitable for landscaping or for community restoration.

A large row of sea hibiscus (*Talipariti tiliaceum),* formerly known as *Hibiscus tiliaceus*) seaside mahoe (also known as portia tree or cork tree (*Thespesia populnea*) were removed from the north end of the park. This area is in a maintenance stage and is being revegetated.

**Animals.** Four species of exotic vertebrate animals have been identified: the armadillo (*Dsypus novemcinctus*), the Cuban anole (*Anolis sagrei sagrei*), the Cuban tree frog (*Osteopilus septentrionalis*) and an unidentified species of gecko. There is no practical way of eradicating the last three-mentioned species, but it might be possible to rid the park of armadillos eventually, since the islands are relatively small.

The fifth exotic animal, an invertebrate, is the fire ant (*Solenopsis invicta*). Amdro is being used on the colonies.

## Problem Species

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

The raccoon (*Procyon lotor*) is the only significant problem species in the park. Monitoring of sea turtles and shorebird nesting has shown that large raccoon populations have been a problem. Raccoons are one of the major threats to sea turtles in Florida, destroying 70 percent of nests on some uninhabited beaches (Johnson and Barbour 1990). Educating the public about not feeding the animals is important, but experience has already shown that a trap and remove program is still necessary. Since the previous plan was written, the park has utilized its permit to trap and remove raccoons with some success.

## Management Measures for Cultural Resources

The management of cultural resources is often complicated because these resources are irreplaceable and extremely vulnerable to disturbances. The advice of historical and archaeological experts is required in this effort. Approval from Department of State, Division of Historical Resources (DHR) must be obtained before taking any actions, such as development or site improvements that could affect or disturb the cultural resources on state lands (see DHR Cultural Management Statement).

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

As indicated earlier, a review of the Florida Master Site File revealed three sites, two of which have been deemed significant. One of these is a shell mound, the other a building site. Recommendations of a 1997 RME (Younker *et al*. 1997) included:

1. That the shell mound be monitored on a regular basis
2. That both an archeological short form and a map for the shell mound be submitted to the Division of Historical Resources
3. That vegetation management and maintenance schedules for the shell mound be followed.

Since the evaluation, the second recommendation has been carried out. However, as pointed out earlier (and as discussed below), after checking with the original land developer, it was determined that the wrong site was mapped. The mound is actually on the small island in the canal and not the elevated area where a tower might be built. A vegetation management and maintenance schedule is being developed. The evaluation also recommended that the building site be monitored periodically through photopoints. This recommendation will also be followed.

**Site locations.** There is indeed a discrepancy between the mapped location of LL01947 Black Island Midden in the Florida Master Site Files and Division's cultural resource data in Arcview. Based on written descriptions of the site location, it appears that the Florida Master Site File quad map is correct in depicting the midden on the tip of a small island in a canal that runs around Black Island; however, FMSF may have it inaccurately entered in their GIS system. Park

staff should contact FMSF and the Office of Park Planning (FPS) to provide an update on the accurate location of the site.

In July 2003, while reviewing the Florida Master Site File records at BNCR, Triel Lindstrom, DEP Archaeology Assistant, noticed that a correction had been noted for LL01788's site location on the FMSF quad map, relocating it from across the canal from Black Island to a body of land several fingers of land away to the west. Park staff should contact FMSF and the Office of Park Planning (FPS) to verify the accuracy of this site.

**Tower installation.** The installation of an observation tower is proposed for a piece of high ground located across the canal from the south tip of Black Island. This location was erroneously labeled as site LL01947, Black Island Midden. The midden is actually located on a small island in the canal itself, while this high ground is actually composed of dredge spoil. Once the park clears up this mapping error, project planners should then proceed to submit detailed information on the nature of the project to DHR for Compliance and Review.

**Site monitoring and maintenance.** These two management activities are critical to cultural resource management. Park management will contact BNCR for assistance with drafting monitoring and maintenance plans which are needed to address primary concerns for these park cultural sites. Primary concerns with shell mound appear to be vegetation, erosion, and the potential for looting. Primary concerns with the structural remains appear to be vegetation and deterioration due to natural forces. Monitoring typically consists of regular site visits (frequency depending on the rate of deterioration and seriousness of threats) to document the site's condition both with written narrative and photographs, so that its condition can be tracked and maintenance plans adjusted as needed. BNCR has issued guidelines for the maintenance of earthen structures, which includes shell middens. A copy of this was included with the 1997 RME, and can be forwarded to park staff if needed.

**Cultural resource records.** The 1997 RME recommended that the park's cultural resource records should be organized according to BNCR guidelines. Records pertaining to the park's cultural resources should be retained, organized, and easily accessible for management purposes. This has been accomplished.

## Research Needs

### Natural Resources

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

Findings of the 1997 RME recommended that comprehensive animal surveys need to be conducted in the park; this includes macroinvertebrates. This has not yet been completed. Volunteers should be used whenever possible.

The issue of further opening of the canal system has been introduced earlier in the plan and is discussed again in the Land Use Component. It is assumed that opening the canal system would increase the tidal flushing and therefore presumably improve water quality. Increased oxygen levels associated with tidal flushing alone should ultimately improve water quality within the canals. However, in order to substantiate these presumptions, research in the form of acquisition

of base line data, will be necessary prior to any manipulation of the canal system.

**Cultural Resources**

1. The 1997 RME report recommended two archaeological surveys --a Level I or II of the Black Island Midden, and a Level I of the rest of the park. Since many people are not clear on what these 'levels' refer to, the specific archaeological testing needed at the park should be detailed instead. Therefore, for Black Island Midden, an archaeological survey should be conducted to document, record, and prescribe stabilization treatment for the shell midden recorded in the FMSF as LL01947. Additionally, the entire park should be subject to a reconnaissance survey to locate and record archaeological sites, bound their horizontal and vertical extent, and provide recommendations for management of any archaeological sites or features.

## Resource Management Schedule

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

## Land Management Review

Section 259.036, Florida Statutes, established land management review teams to determine whether conservation, preservation, and recreation lands titled in the name of the Board of Trustees of the Internal Improvement Trust Fund (board) are being managed for the purposes for which they were acquired and in accordance with a land management plan adopted pursuant to s. 259.032, the board of trustees, acting through the Department of Environmental Protection (department). The managing agency shall consider the findings and recommendations of the land management review team in finalizing the required update of its management plan.

Lovers Key State Park was subject to a land management review on June 30, 2005 (see Addendum 7). The review team made the following determinations:

1. The land is being managed for the purpose for which it was acquired.

2. The actual management practices, including public access, complied with the management plan for this site.

# LAND USE COMPONENT

## INTRODUCTION

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

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

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

## EXTERNAL CONDITIONS

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

Lovers Key State Park is located in Lee County within the Bonita Springs city limits. The park is located on the Lee Island Coast, less than 10 miles from I-75 and roughly midway between Fort Myers and Naples. Nearly 887,000 people reside within 50 miles of the park, which includes a portion of the Punta Gorda and all of the Ft. Myers-Cape Coral metropolitan areas. The 2001estimated population of Lee County (454,918) has grown 36 percent since 1990, and is projected to grow an additional 32 percent by 2015. Lee County has a significant retiree population with 25 percent of residents aged 65 or over, resulting in a median age (45 years) that exceeds the state average (BEBR, University of Florida, 2002). Per-capita personal income is also higher than levels reported for the rest of the state (U.S. Census Bureau, 2000). Above average rates of population growth, particularly among seniors, and income, suggests that citizens of Lee County have both the time and resources to engage in resource-based recreation.

This area is also increasing its tourist population, with new facilities and services for visitors being developed at a rapid rate. The beaches of Fort Myers and Sanibel are heavily promoted as “what’s right with the world” with over 2 million visitors reported in 2003 (Klages, 2004). A high demand for resource based recreational opportunities is expected to remain for both residents and visitors alike.

With the development of recreational facilities, visitation at the park has risen rapidly over the

last ten years, varying from a low of 63,059 in FY 1993-94 to a high of 806,379 in FY 2002-03. Visitation generally peaks in February and March and reaches its lowest during the summer months. The park was the second most visited of the 30 units in Florida Park Service (FPS) District 4 during FY 2002-03. By Division estimates, these visitors contributed over 23 million dollars in direct economic impact and the equivalent of 404 jobs to the local economy (Florida Department of Environmental Protection, 2003). The park currently generates the third greatest economic impact out of the 158 units in the state park system.

## Existing Use of Adjacent Lands

The park is bounded by Big Carlos Pass to the north, Estero Bay to the east, New Pass to the south and the Gulf of Mexico to the west. State Road 865 (Estero Boulevard) bisects the eastern side of the park. A condominium resort is situated on the northern tip of Black Island across State Road 865. Lee County manages a dog park adjacent to the southern boundary and New Pass. Fort Myers Beach is located on Estero Island just across Big Carlos Pass and is intensively developed with mid-rise and high-rise residential and commercial uses. Big Hickory Island lies south of New Pass and is a mix of undeveloped, privately-owned wetlands and conservation lands, much of which is retained by Lee County. The northern most portions are developed with private recreational facilities. The community of Bonita Beach is located a short distance further south on Little Hickory Island and contains a mix of moderate to medium density residential and commercially developed areas.

Several other significant land and water resources exist near the park (see Vicinity Map). In addition to Estero Bay, the Caloosahatchee and Imperial Rivers, they include areas managed by CAMA (Estero Bay, Pine Island Sound, Matlacha Pass, Aquatic Preserves), Division of Recreation and Parks (Estero Bay Preserve State Park, Mound Key Archeological State Park, Koreshan State Historic Site, Delnor-Wiggins Pass State Park), South Florida Water Management District (Corkscrew Regional Ecosystem Watershed), U.S. Fish and Wildlife Service (Caloosahatchee, J.N. “Ding” Darling, Pine Island and Matlacha Pass National Wildlife Refuges), FFWCC (Little Estero Island Critical Wildlife Area), and Lee County (Six Mile Cypress Slough, Bowditch Point, Matanzas Pass, Big Hickory Island, San Carlos Bay-Bunche Beach Preserves) and Collier County (Barefoot Beach Preserve). These areas provide important wildlife habitat and conservation functions in addition to other resource-based recreation opportunities including, hiking, birding, nature and historic resource appreciation, full facility camping, picnicking, swimming, fishing, boating, and scuba diving. The park is also located along The Great Calusa Blueway, a paddling trail established by Lee County that connects Pine Island Sound and Estero Bay and is slated to be included in the FFWCC Great Florida Birding Trail.

## Planned Use of Adjacent Lands

Future land use designations adjacent to the park include Medium Density Multi-Family Residential (tip of Black Island), and Resource Protection and Conservation (Big Hickory Island) (City of Bonita Springs, 2002). Medium Density Multi-Family Residential lands allow for single and multi-family units (6 du/gross acre), public schools, group homes, foster care facilities and limited commercial uses. Resource Protection includes privately owned wetland areas that allow for limited residential use (1 du/20 gross acres) and recreational uses that will not affect existing ecological functions. Conservation lands include publicly owned environmentally sensitive lands set aside for long-term conservation use. Lands immediately adjacent to the park are not anticipated to experience significant change in use due to their already being developed or in government ownership.

Given the continued growth rate of this area of Florida, undeveloped parcels along the

coastline that are not included in future state or local government acquisitions are likely to be developed for medium-high density residential and commercial uses. Impacts from future development will be inevitable and may include declines in local surface and ground water quantity and quality, changes in historic water flow patterns, an increase in local traffic (automobile and boat), and the introduction of exotic species. It is important that the Division and the Department of Environmental Protection continue active involvement in local land use planning for this area in the future. It is also important for the Division to maintain coordination with the Estero Bay Aquatic Preserve staff to ensure that all policies and actions for the Aquatic Preserve and Lovers Key State Park remain consistent.

## PROPERTY ANALYSIS

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

### Recreation Resource Elements

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

As previously discussed, the park includes approximately 445 upland acres spread over four islands: Lovers Key, Inner Key, Long Key and Black Island. Three of the islands are connected by bridges accessible to pedestrians and a park-operated tram. Lovers Key is the island with beach frontage. Black Island is the largest of the islands in land area and has been extensively altered by past dredge and fill activities. The island was altered to create uplands and canals for a housing development before state acquisition. The clearing of exotic vegetation on these long narrow uplands on Black Island has provided conditions suitable for an extensive multi-use trail network available for off-road bicycling and hiking.

A significant portion of park acreage includes open water between the islands that afford a variety of water-based recreational opportunities. The alteration of Black Island created over three miles of canals, covering approximately 55 acres, with access limited to hand powered paddlecraft and electric trolling motors (i.e. no internal combustion engines). Other water resources include tidal lagoons fringed with mangroves, Estero Bay and the Gulf of Mexico. With nearly 42,000 registered pleasure craft in Lee County, boating is an extremely popular activity in the waters surrounding the park (BEBR, University of Florida, 2002). While no boat docking facilities are provided, many visitors access park beaches by private boat. These resources also support canoeing/kayaking, fishing, swimming and other water related activities.

The park contains nearly 2.5 miles of shoreline on the Gulf of Mexico and Big Carlos Pass, which offer opportunities for swimming, sunning, picnicking and fishing. The Gulf beach has been eroding at a rapid rate, threatening the recreation resource as well as existing recreation facilities. The park has been added to the state’s critically eroded beaches list, and was renourished in 2004. The bays and inland canals have over 10 miles of additional shoreline, but access is limited due to the mangrove fringe.

Although the park is located in a highly developed coastal area, and has been disturbed in the past by dredge and fill activities and invaded by exotic plants, it does provide significant habitat for numerous species. Ospreys, bald eagles and a variety of shorebirds and wading birds are common and can be found feeding in the lagoons and beach area. Bottlenose dolphins and endangered West Indian manatees inhabit the nearshore waters and sea turtles nest on park beaches. The remnant maritime hammock on Black Island hosts several species of woodpeckers, hawks, owls and warblers and is important habitat for migratory birds. Small mammals, such as marsh rabbits, and raccoons may also be observed in their natural setting.

The park contains three known archaeological sites, including foundation remains of a late 19th/early 20th century structure and a midden. While these sites provide opportunities for cultural resource interpretation, additional research is needed to understand their significance.

It is the white sand beaches, sand dunes and mangrove lined backwaters that provide the pleasing visual qualities of this barrier island park. The diversity of the natural features, including Estero Bay, the inland canals, tidal lagoons and the Gulf of Mexico, provide for an abundance of outdoor recreation opportunities to be enjoyed by Florida residents and visitors.

## Assessment of Use

All legal boundaries, structures, facilities, roads and trails existing in the unit are delineated on the Base Map. Specific uses made of the unit are briefly described in the following sections.

### Past Uses

From the early 1900s until the late 1950s, Black Island supported a number of fish camps. In the 1960s and 1970s, there were plans to develop the islands into a residential resort community. The project would have included single-family homes, condominiums, resort accommodations and commercial development, but did not proceed beyond the creation of the inland canals and bridge construction on Black Island. A tropical plant nursery that featured Malayan coconut palms, sea grapes and mahogany was also maintained on the property. Lands east of Estero Blvd., all of Long Key and the southern half of Lovers Key were managed by Lee County as Carl E. Johnson Park until 1996.

### Recreational Uses

A variety of recreational activities are offered at Lovers Key including fishing, shelling, swimming, sunning, hiking, bicycling, picnicking, boating, canoeing/kayaking, birding and nature study. The park is also a popular spot for weddings.

### Other Uses

Currently, there are no other uses of the park property.

### 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 Lovers Key State Park all natural community types-beach dune, coastal strand, maritime

NORTH ENTERENCE
RESIDENCES
BIG CARLOS PASS
Inset 2
ESTERO BAY
PINIC SHELTERS
CR 865A
Black Island
Lovers Key
TRAIL HEAD
BLACK ISLAND TRAIL
RESTROOM
CONCESSION
BOAT RAMP
Inner Key
PLANT NURSERY
Long Key
ESTERO BLVD
Inset 1
GULF OF MEXICO
NEW PASS

LEGEND
- Park Boundary
- State Road
- Park Road Paved
- Park Road Unpaved
- Hiking/Biking Trail
- Boardwalk
- Overlook
- Walkway
- Shore Lines
- Stuctures
- Parking Lots
- Marine Structures

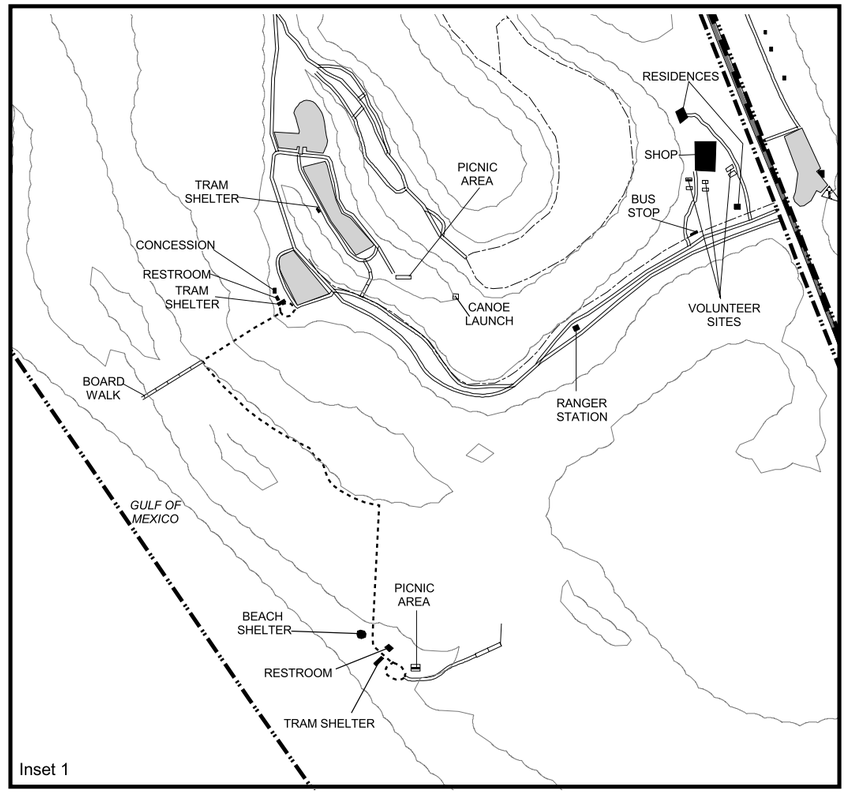
N

800 0 800 1600 Feet

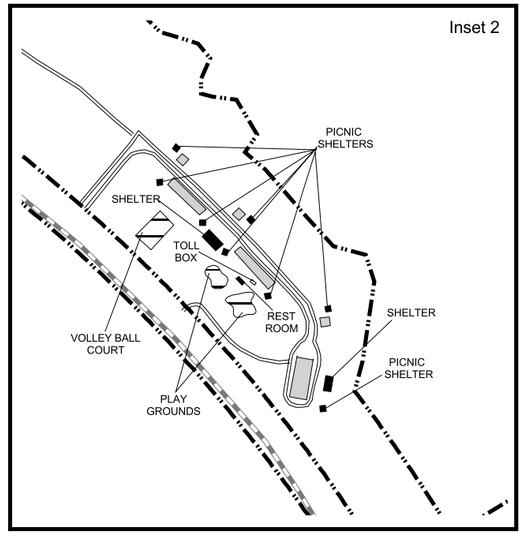
Prepared by:
Florida Department of Environmental Protection
Division of Recreation and Parks
Office of Park Planning

# LOVERS KEY STATE PARK

# BASE MAP



Inset 1



Inset 2

hammock, marine tidal swamp and marine unconsolidated substrate--have been designated as protected zones as delineated on the Conceptual Land Use Plan. Protected zones comprise approximately 93 percent of park lands.

In order to protect the natural resources and recreational experiences in the inland canals and tidal lagoons, these areas have been designated as an internal combustion engine exclusion zone. This zone extends from the inland side of Lovers Key to Estero Boulevard (State Road 865). In addition, an idle speed zone has been established by county ordinance along the Gulf shoreline of the park.

## Existing Facilities

**Recreation facilities.** Recreational facilities available at Lovers Key State Park include a picnic area with scattered tables and grills and canoe launch on Black Island, a large beach pavilion on the Gulf shore of Lovers Key at the final termination point of the tram road, and a picnic area and boat ramp on Estero Bay. The picnic area was constructed in partnership with Lee County and the City of Bonita Springs and opened in 2004. Two concessions, one on Estero Bay and one on Black Island, provide tours, kayaks and bicycles rentals, and sell a variety of refreshments, fishing and beach supplies and souvenirs to park visitors. A large interpretive kiosk is located at the primary tram stop near the Black Island concession. In addition, the western portion of the old Lee County bridge, which connected Lovers Key to Long Key, has been left to provide fishing and nature study opportunities. The Black Island Trail, a five mile shared-use trail, offers visitors a great opportunity for nature study and exploration of the more remote areas of the park. A paved bike path parallels the park drive from the park entrance to the main parking areas.

**Support facilities.** Support facilities at Lovers Key include a tram to transport visitors from two parking areas to the Gulf beach, waiting shelters and restrooms near the tram stops, a restroom near the boat ramp, ranger station, shop area and paved roadway. Two large parking areas on Black Island provide a total parking capacity for 437 vehicles. A small, unimproved parking area provides access to a pedestrian entrance at the Big Carlos bridge. A large grassed area north of the boat ramp parking lot is used for overflow parking and special events. Seven residence sites, two of which are available for employee-owned trailers, provide housing for Division staff and six RV sites are used to host park volunteers. The shop area contains a native plant nursery and several structures to meet the maintenance and operational needs of the park.

The following is a comprehensive listing of existing facilities at Lovers Key State Park:

**North Bay Side Use Area**
Small Picnic shelters (8)
Large picnic shelter (1)
Restroom
Playground and tot lot
Volleyball court
Paved parking (42 spaces)
Electronic toll gate

**South Bay Side Use Area**
Small picnic shelters (5)
Restroom
Boat ramp with floating dock

**South Bay Side Use Area**
Kiosk
Concession building
Stabilized parking (approx. 40 vehicles with trailers)
Special events area

**North Pedestrian Entrance**
Unpaved parking (approx. 30 vehicles)
Pedestrian bridge
Residences (3)

**Beach Access Facilities**
Tram road (.5 mile) and bridges (2)
Pedestrian bridge
Overlook/fishing pier
Beach pavilion
Restroom

**Shop Area**
Residences (2)
Large shop building
Storage buildings
Volunteer RV sites (6)
Native plant nursery

**Trails**
Black Island Trail (5 miles)
Trail rest shelters (10)
Paved bike trail

**Main Parking and Picnic Area**
Concession building
Parking (437 vehicles)
Tram stops (2)
Large kiosk
Scattered picnic tables (30)
Restroom
Pedestrian bridge
Canoe landing (no structure)

## CONCEPTUAL LAND USE PLAN

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

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

### Potential Uses and Proposed Facilities

Lovers Key State Park should continue as a leading provider of resource based recreation activities in the Lee Island Coast region. As private development of coastal areas continues in southwest Florida, the demand for recreation opportunities at Lovers Key is expected to increase. Existing recreational activities should be maintained. Recreation-related improvements are proposed to improve public access and circulation, enhance concession operations, picnicking and trail use, and provide greater interpretation of park resources. Support facility improvements focus on staff housing and sewage treatment needs.

**North Bay Side Use Area.** The Division, in a partnership with Lee County and the City of Bonita Springs, completed construction of a bayside park east of Estero Boulevard with


**LEGEND**

- PROPOSED NATURE TRAIL
- PROPOSED FACILITIES/IMPROVEMENTS
- PROPOSED DEVELOPMENT AREA
- PROTECTED ZONES
- STATE PARK BOUNDARY

**LOVERS KEY STATE PARK**

600 0 N 600 1200 Feet

Prepared By:
Florida Department of Environmental Protection
Divison of Recreation and Parks
Office of Park Planning

**CONCEPTUAL LAND USE PLAN**

covered picnic shelters, playground, volleyball court, restrooms and parking for 42 vehicles in late 2004. A boardwalk and fishing platform is recommended to be constructed to provide access to the bay waters as phase II of this project. The Division will manage this area as part of Lovers Key State Park.

**South Bay Side Use Area.** The existing picnic shelters are recommended to be replaced with one large pavilion and several small shelters to enhance use of the special events area. The concession facility in this area is also recommended for upgrading to improve concession services near the boat ramp.

The park boat ramp is a popular water access point. Without designated parking spaces, circulation in this area can be inefficient and unorganized during peak periods. It is recommended that this area be evaluated for management improvements to address parking and circulation during the current planning cycle. In addition, consideration will be given to implementing a system for collecting fees in what has become one of the busiest use areas of the park.

**North Pedestrian Entrance.** This pubic access point currently has no facilities other than an unimproved parking area, honor box fee collection station and a pedestrian bridge. The following improvements are recommended to facilitate visitor circulation and management in an increasingly popular entry point into the park.

The driveway for the road providing access to the north pedestrian entrance is located less than 350 feet from the end of the Big Carlos Pass bridge. Parking occurs within a poorly maintained, dirt lot at the base of the bridge. Both the drive and parking area are located within the right of way of State Road 865. In order to address traffic circulation and safety concerns, it is recommended that the Division approach the county for support in relocating the drive and improving parking.

Relocating the drive a short distance east, to align with the entrance to the Grande View Condominiums, would allow for the establishment of appropriate deceleration and turn lanes. Improving the parking area by expanding capacity (up to 40 spaces), designating spaces and stabilizing the parking surface will allow efficient use of the space, reduce erosion and facilitate ingress and egress. The existing footprint should be maintained as much as possible, with the majority of disturbance kept to existing ruderal areas within the right-of-way.

A small ticket booth and restroom are also proposed at the entrance to facilitate collection of fees and handle waste management in this area.

**Beach Access Facilities.** The Gulf beach has experienced severe erosion, which has impacted beach recreation, damaged structures and created conditions in which Lovers Key is threatened with perpetual breach from storm events. The Estero Island and Lovers Key Beach Renourishment Project placed approximately 586,000 cubic yards of sand on over one mile of beach at the park in the summer of 2004. Future maintenance of the beach shoreline will afford some protection to existing facilities on the Gulf shoreline. However, an alternative site has been identified on Inner Key for the relocation of the existing restroom facility if future shoreline dynamics threaten the functioning of this system. In addition, the following improvements are needed to address public access upon completion of the renourishment project. The tram turnaround needs to be re-established and boardwalks and ramps replaced to facilitate access to the existing large pavilion and restroom. Additional beach boardwalks are proposed to facilitate

beach access and protect dunes from foot traffic.

Recent storm events severely damaged the mid-island pedestrian bridge on Lovers Key. The Division plans to repair this facility to maintain pedestrian access and spread visitor access along the Gulf shoreline. It is recommended that a universally accessible viewing platform eventually be added at the end of the bridge.

**Trails.** A short nature trail is proposed on Inner Key to interpret the land restoration process at the park. The proposed area has been intensively targeted for exotic removal and replanting of native species. The trail provides an opportunity for visitors to experience the gradual recovery of a natural community over time.

The following facilities are proposed to enhance use of the Black Island Trail. An observation platform is recommended on a dredge spoil mound on the south end of Black Island linked to the shared-use trail. This facility should be constructed of sufficient height to provide panoramic views of all of the natural communities of the park from the Gulf side to Estero Bay. A small picnic/rest area is proposed at the site of an old burn pile roughly midway along the trail. Two small picnic shelters and a composting restroom are recommended to support use of this site.

To improve the canoe trail network and for potential natural resource benefits, it is recommended that the inland canals be opened to Estero Bay. The opening of the inland canals would allow visitors to launch canoes and kayaks from Black Island and traverse the inland canals, the tidal lagoon and reach the Gulf. The cuts would also increase the tidal flushing of the inland canals and improve water quality within them. Access to the inland canals for the West Indian manatee as a resting and feeding site may be an additional benefit, since the area is protected from boats using internal combustion engines. Large culverts or bridges would be needed over the cuts so that the trail network is not interrupted and service vehicles can access the interior of the island. Division staff will coordinate further analysis of this concept with staff from the Estero Bay Aquatic Preserve, Bureau of Beaches and Coastal Systems and other appropriate regulatory agencies. Analysis will include collection of water quality data and hydrographic studies prior to initiating the permit application process. The Division will coordinate the acquisition of funding for these special studies with other DEP offices, and Federal and local resource protection agencies. As stated elsewhere in this plan, the Division's management plan in no way circumvents the normal permitting review process. Federal, state and local permit and regulatory requirements would have to be met by the final design of this project.

**Main Parking and Picnic Area.** Parking for beach access, picnicking, trail and canoe/kayak use is located in one central area on Black Island. Parking area 1 is located nearest the main tram stop, concession and restroom. It is relatively small and quickly fills to capacity. Parking area 2 is located a short distance east, on a peninsula of land surrounded by manmade canals, the tip of which is the location of the main picnic area. Parking area 3 is the northern most location and primarily serves the trailhead for the Black Island Trail. The pedestrian bridge connecting parking areas 1 and 2 provides convenient access for visitors able to park near the southern end of the peninsula. However, visitors unable to find space in parking area 1 or close to the bridge have difficulty transporting their supplies and navigating traffic along the park drive enroute to the main tram stop. Operating a tram that services outlying parking areas has presented operational problems at the park and is not considered a long-term solution. In addition, existing parking capacity is considered insufficient to meet the growing demand for visitor access in this area. To address these issues, the feasibility of filling a portion of the canal between parking areas 1 and 2 will be investigated. Fill would provide the needed land base to expand parking for

an additional 65 vehicles, decrease distances pedestrians would have to walk to the main tram stop, and allow enhancements to increase the safety and efficiency of pedestrian circulation. The additional land would also provide greater flexibility in the siting of a visitor center without crowding existing facilities and in making proposed picnic area improvements (see below). Remaining open space will be landscaped with native plants to improve the aesthetics of the area. Additional site planning involving the Office of Park Planning, Bureau of Natural and Cultural Resources, Bureau of Design and Recreation Services, park and District staff will be necessary to address all aspects of this project and should occur once the feasibility of filling the canal is determined.

If filling this area is not feasible, then a vehicular bridge is recommended to connect existing parking areas. Methods to improve pedestrian circulation should be considered as part of this alternative, such as separate walkways, marked crosswalks and signage. To provide additional capacity, consideration will be given to removing through traffic from the section of park drive north of parking area 1 and using the roadbed for parking once a bridge is built.

One large and two small picnic shelters are recommended to be added to the picnic area adjacent to parking area 2. With the expansion of picnic facilities in this area, vehicular access to the existing canoe/kayak launch will need to be reexamined to avoid user conflicts. It is recommended that vehicles be excluded from the picnic area as facilities are developed and a loading zone established for use by both picnickers and paddlers.

A visitor center is recommended in a location convenient to existing parking areas that will serve as the primary visitor orientation and education point. Interactive exhibits will educate visitors about the resources of the park and Estero Bay, promote an understanding of resource management and foster an appreciation for public lands, environmental stewardship and responsible use. A meeting room with audio/visual capability will accommodate school groups and others for educational talks and presentations. Additional office space should also be incorporated into the design of this facility.

The existing concession building was recently renovated and now provides more space for a gift shop, rental inventory and offices for the park visitor service provider. The existing canoe/kayak launch area for concession rentals is recommended to be relocated closer to the concession building to avoid conflicts between visitors and the tram. The proposed location is along the mangrove shoreline and may require a boardwalk and landing facility to minimize resource impacts.

**Support Facilities.** Expanded sewage treatment capacity will need to be considered as part of the proposed improvements in the main parking and picnic area. It is recommended that the park shift from its current composting system and connect to central sewer lines. A potential routing is north from parking area 1 along the existing service road to the Big Carlos Pass Bridge.

### Facilities Development

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

**North Bay Side Use Area**
Boardwalk and fishing platform

**South Bay Side Use Area**
Large picnic shelter
Small picnic shelters (up to 4)
Upgrade concession
Evaluate circulation and fee collection

**North Pedestrian Entrance**
Ticket booth
Small restroom

**Beach Access Facilities**
Stabilized tram turnaround
Boardwalks and dune crossovers
Viewing platform

**Trails**
Inner Key Nature Trail (.5 miles)
Black Island observation platform
Small picnic shelters (2)
Composting restroom (2)
Bridges and canal cuts (2)
Primitive campsites (4)

**Main Parking and Picnic Area**
Fill canal and landscape or
Vehicular bridge
Additional parking (65 spaces)
Large picnic shelter
Small picnic shelters (2)
Visitor center
Relocate concession canoe/kayak launch

**Support Facilities**
Connect to central sewer

## Existing Use and Optimum Carrying Capacity

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

The optimum carrying capacity for this park is a preliminary estimate of the number of users the unit could accommodate after the current conceptual development program has been implemented. When developed, the proposed new facilities would approximately increase the unit's carrying capacity as shown in Table 1.

## Optimum Boundary

The optimum boundary map reflects lands identified for direct management by the Division as part of the park. These parcels may include public as well as privately owned lands that improve the continuity of existing park lands, provide additional natural and cultural resource protection, and/or allow for future expansion of recreational activities. As additional needs are identified through park use, development, research, and as adjacent land uses change on private properties, modification of the unit's optimum boundary may occur for the enhancement of natural and cultural resources, recreational values and management efficiency.

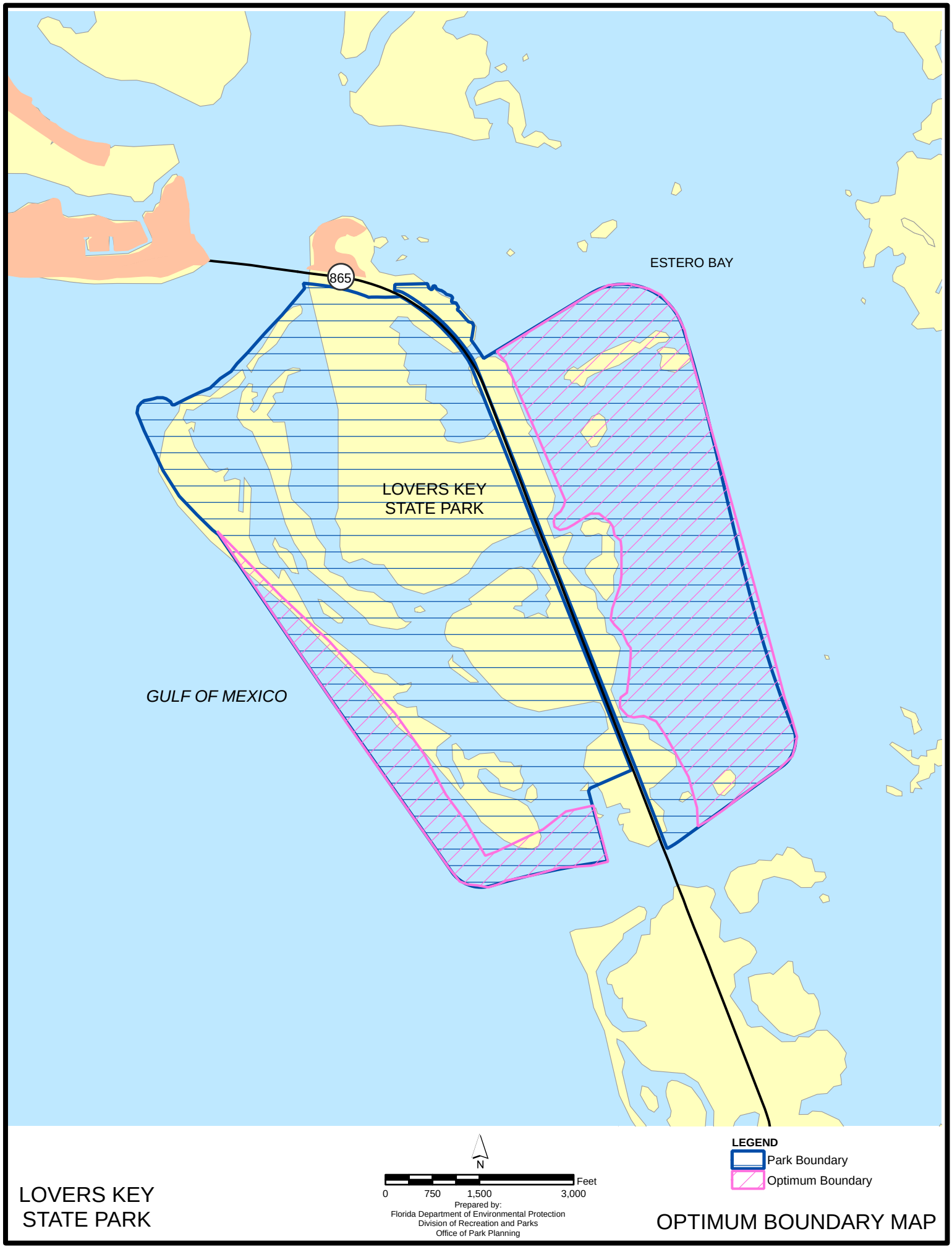
Identification of lands on the optimum boundary map is solely for planning purposes and not for regulatory purposes. A property’s identification on the optimum boundary map is not for

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

| | Existing Capacity | | Proposed Additional Capacity | | Estimated Optimum Capacity | |
|---|---|---|---|---|---|---|
| **Activity/Facility** | **One Time** | **Daily** | **One Time** | **Daily** | **One Time** | **Daily** |
| **Trails** | | | | | | |
| Shared Use | 50 | 200 | 0 | 0 | 50 | 200 |
| Nature | | | 20 | 80 | 20 | 80 |
| **Picnicking** | 120 | 240 | 56 | 112 | 176 | 352 |
| **Beach Use** | | | | | | |
| Big Carlos Pass | 132 | 264 | 0 | 0 | 132 | 264 |
| Gulf Beach | 1,160 | 2,320 | 0 | 0 | 1,160 | 2,320 |
| **Visitor Center** | 0 | 0 | 150 | 600 | 150 | 600 |
| **Bay Side Park** | 144 | 288 | 0 | 0 | 144 | 288 |
| **Boating** | | | | | | |
| Canoeing/kayaking | 140 | 280 | 0 | 0 | 140 | 280 |
| Unlimited power | 200 | 200 | 0 | 0 | 200 | 200 |
| **TOTAL** | **1,946** | **3,792** | **226** | **792** | **2,172** | **4,584** |

use by any party or other government body to reduce or restrict the lawful right of private landowners. Identification on the map does not empower or require any government entity to impose additional or more restrictive environmental land use or zoning regulations. Identification is not to be used as the basis for permit denial or the imposition of permit conditions.

The Division is pursuing adjustments to the park boundary in areas leased from Lee County and the Board of Trustees to consolidate management responsibility. Currently, the park boundary includes a portion of waters in Estero Bay and the Gulf and the northern tip of Big Hickory Island. The Division is interested in establishing a consistent boundary that is closer to its land base on Black Island, Long Key and Lovers Key. At this time, no lands are considered surplus to the needs of the park.




LOVERS KEY
STATE PARK

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

OPTIMUM BOUNDARY MAP

# Addendum 1—Acquisition History

## Purpose of Acquisition

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

## Sequence of Acquisition

On May 25, 1983, the Trustees obtained title to the property constituting the initial area of Lovers Key State Park. The purchase was funded with Save Our Coast Bonds (SOC). Since the initial purchase, the Trustees and the Division of Recreation and Parks (Division) have acquired several parcels through purchases under the SOC program, donation and lease and added them to Lovers Key State Park.

## Lease Agreements

On March 8, 1984, The Trustees leased Lovers Key State Park to the Division under Lease No. 3340. This lease is a fifty-year lease and will expire on March 7, 2034. On January 29, 1996, the Division leased additional property from Lee County under Lease No. C960134. This county lease, which is also for fifty years, will expire on January 2, 2046.

According to Lease No. 3340 and Lease No. C960134, the Division manages Lovers Key State Park only for the conservation and protection of natural and cultural resources of the park and to use the property for resource-based public outdoor recreation compatible with the conservation and protection of the resources.

## Title Interest

The Trustees and Lee County hold fee simple title to Lovers Key State Park.

## Special Conditions On Use

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

## Outstanding Reservations

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

| | |
|---|---|
| Instrument: | Memorandum of Understanding ("MOU") |
| Instrument Holder: | DRP |
| Beginning Date: | June 25, 2001 |
| Ending Date: | |
| Outstanding Rights, Uses, Etc.: | The MOU allows Lee County to construct, install, operate, inspect, alter, improve maintain, and rebuild an atmospheric deposition monitoring station for research and scientific purposes. |

| | |
|---|---|
| Instrument: | Lease Agreement |
| Instrument Holder: | Lee County |
| Beginning Date: | January 29, 1996 |
| Ending Date: | January 2, 2046 |
| Outstanding Rights, Uses, Etc.: | If the property were not used for purposes stated in the lease agreement, it would revert to Lee County. |

| | |
|---|---|
| Instrument: | Easement No. 28476 |
| Instrument Holder: | Trustees |
| Beginning Date: | May 22, 1991 |
| Ending Date: | For a period coterminous with the term of Lease No. 3340 |
| Outstanding Rights, Uses, Etc.: | The easement allows the Florida Power and Light Company to construct, operate and maintain an electrical distribution system over, across, and under lands within the Lovers Key State Park. |

| | |
|---|---|
| Instrument: | Statutory Warranty Deed |
| Instrument Holder: | R. Floyd Luckey, Jr., Rac, Inc. |
| Beginning Date: | August 9, 1984 |
| Ending Date: | No specific date is given. |
| Outstanding Rights, Uses, Etc.: | The deed is subject to a utility easement between Sengra Development Corporation and Lovers Key Corporation recorded in O.R. 745, page 457. |

| | |
|---|---|
| Instrument: | Sovereignty Submerged Land Easement |
| Instrument Holder: | Trustees |
| Beginning Date: | March 20, 1984 |
| Ending Date: | For a period of 30 years. |
| Outstanding Rights, Uses, etc.: | The easement allows the Florida Power and Light Company to install one sub-aqueous electrical utility cable in Estero Bay. |

| | |
|---|---|
| Instrument: | Special Warranty Deed |
| Instrument Holder: | Black Island Partnership |
| Beginning Date: | December 18, 1983 |
| Ending Date: | No specific date is given. |
| Outstanding Rights, Uses, Etc.: | The deed is subject to a certain right-of-way of State Road No. 865-A and a utility easement as recorded in O.R. 745, page 457, Lee County. |

| | |
|---|---|
| Instrument: | Special Warranty Deed |
| Instrument Holder: | R. Floyd Luckey, Jr., Rac, Inc. |
| Beginning Date: | August 18, 1983 |
| Ending Date: | No specific date is given. |
| Outstanding Rights, Uses, Etc.: | The deed is subject to a utility easement between Sengra Development Corporation and Lovers Key Corporation recorded in O.R. 745, page 457, Lee County. |

| | |
|---|---|
| Instrument: | Indenture |
| Instrument Holder: | Lovers Key Corporation |
| Beginning Date: | May 25, 1983 |
| Ending Date: | Forever |
| Outstanding Rights, Uses, Etc.: | The indenture has a provision for the owners of Black Island to connect and use any roadways on Lovers Key or construct roadway upon the portion of Lovers Key owned by them. |

The Honorable John Albion
Lee County Board of County Commissioners
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The Honorable Jay Arend, Mayor
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Ron Edenfield, Chairman
Lee County Soil and Water Conservation District
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Joe Bozzo, District Biologist
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Ray Murphy, President
Friends of Lovers Key
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Fort Myers Beach, Florida 33931

Elizabeth Marwick, General Manager
Lovers Key Beach Club & Resort
8771 Estero Blvd
Fort Myers Beach, Florida 33931

David W. and Marjorie F. Ward,
President and Vice President
Citizens Association of Bonita Beach
4321 Mariner Road
Bonita Springs, Florida 34134

The Advisory Group appointed to review the proposed land management plan for Lovers Key State Park met at the Bonita Springs Community Hall on December 17, 2004.

The Honorable John E. Albion, John Yarborough, Roland Ottolini, Roy Edenfield, Nicole Ryan and Vince McGrath did not attend. All other appointed Advisory Group members were present. Steve Boutelle and Roger Clark represented Lee County, and Matt Bixler represented The Conservancy of Southwest Florida. Gary Price (City of Bonita Springs) also attended the meeting. Attending staff included Annette Nielsen, Paul Rice and Michael Kinnison.

## Summary of Advisory Group Comments

**Mayor Arend** (City of Bonita Springs) expressed his support for the plan, particularly proposed recreational improvements. He indicated that the city is interested in providing a fishing pier on Estero Bay and emphasized the need to coordinate this concept with the park.

**Ray Murphy** (Friends of Lovers Key, Inc.) agreed with Mayor Arend that the plan is appropriate. He specifically expressed support for the observation tower and fishing pier concepts and was supportive of filling a portion of the canal system to provide additional parking.

**Steve Boutelle** (Lee County) noted that baseline data was needed before proceeding with the canal cuts. He discussed the need to consider both water quality and thermal impacts, as the canals may serve as a thermal refuge for manatees. He suggested including the Estero Boulevard causeway and potential impacts to the connection with Big Carlos Pass in any analysis of potential improvements to water flow between the Gulf and Estero Bay. He added that there may also be impacts to local fish populations and recommended identifying all these issues within the research needs section of the plan. He was supportive of the concept of moving the park's waste treatment system to central sewer. He asked if areas identified for release to the county were within the boundaries of the aquatic preserve. Michael Kinnison indicated that he would have to research the issue. Mr. Boutelle noted that natural community boundaries have shifted from hurricane impacts and that over wash areas would be important for shorebird nesting. He indicated that the county could provide updated aerial photos to improve plan maps. He asked if crocodiles had ever been reported at the park. Joe Bozzo responded that they have been documented in the Bonita area. Paul Rice added that no sightings had been reported at the park. Mr. Boutelle asked for clarification on the park's policy regarding the use of motorized watercraft in interior waterways. Mr. Rice explained that the Division has management authority to regulate boating use within park waters and is in the process of obtaining Fish and Wildlife Conservation Commission permits and standard signage for an internal combustion engine exclusion zone covering the inland canals and tidal lagoons. Mr. Boutelle asked for clarification on boating access and the payment of fees at the park. Mr. Rice responded that in addition to the park entrance station, a pay station is located at Big Carlos Pass, and that permits are issued to commercial vendors that bring visitors to the park. Mr. Boutelle discussed the importance of maintaining boating and shoreline access in Lee County and expressed support for proposed parking and access improvements. He asked why the carrying capacity figures did not reflect an increase given proposed parking expansion. Mr. Kinnison explained that the numbers reflect the capacity of the beach shoreline to accommodate visitors, which remains the same. Mr. Rice added that proposed parking improvements at the north pedestrian entrance are needed to address storm water public safety for ingress and egress. Mr. Boutelle closed by discussing the appeal of

Lovers Key as a natural oasis in an urban area and the need to maintain a balance between recreation and resource protection.

**Heather Stafford** (Estero Bay Aquatic Preserve) asked what type of expansion was planned for concession services at the park. Mr. Rice explained that the new concession building on Black Island allowed for a separation of services and a gift shop. He added that the park's visitor service provider was providing wedding services on the beach, and would be opening another concession on Estero Bay adjacent to the boat ramp that will offer supplies and ecotours. Ms. Stafford asked about the location of proposed canal cuts. Mr. Kinnison responded that additional study was needed before identifying appropriate locations. Ms. Stafford suggesting clarify text reference to dredging activities in Goal 7. She asked how the Division determines the appropriate number of residences at a park. Mr. Rice explained that a decision on numbers of residences needed is often based on after hour needs of a park. Ms. Stafford expressed support for connecting park facilities to central sewer and restricting use of motorized watercraft in park waters. She agreed with the need to conduct an archaeological reconnaissance survey of the park and encouraged the use of photopoints for cultural resource monitoring. She indicated a willingness to work with the park to improve water flow between the Gulf and Estero Bay. Ms. Stafford asked when the park was scheduled to have a Land Management Review. Mr. Kinnison indicated he would consult with the Division of State Lands on that issue (DSL does not have Lovers Key scheduled for an LMR in the near future.). Ms. Stafford asked if there were any restrictions on private boats accessing the park shoreline and for clarification regarding the number of commercial vendors permitted to transport people to the park. Mr. Rice explained that boats are not allowed to beach on the shoreline but must anchor offshore and that there were two non-exclusive use permits issued to commercial tour operators. He added that the park's visitor service provider would also be working with local hotels to bring visitors to the park. Ms. Stafford requested to be involved with the planning of a fishing pier on Estero Bay. She asked for an explanation regarding proposed expansion of parking and capacity. Mr. Rice explained that existing parking capacity is insufficient at times as facilities have been developed, and the current configuration creates circulation problems. Ms. Stafford asked about the number of dune crossovers planned at the park. Mr. Rice explained that four pedestrian access points, either on-grade or boardwalked, were planned. Mr. Boutelle discussed plans for dune formation and replanting of beach dune vegetation as part of the final phase of the renourishment project. Ms. Stafford recommended keeping the current park boundary in place if it is determined that county lands identified for release were not within the aquatic preserve boundary. She asked which proposed improvements were considered priorities. Mr. Rice responded that reestablishing beach access facilities were the top priority. Ms. Stafford closed by stating that she was opposed to expanding docking space at the boat ramp on Estero Bay. Gary Price recommended giving thought to improving the boat trailer parking area so that it functioned more efficiently.

**Elizabeth Marwick** (Lovers Key Beach Club and Resort) noted that the park is great asset to the tourism industry. Keep as natural as possible. She supported proposed improvements, particularly canal cuts and fishing pier on Estero Bay, and urged staff to keep the park as natural as possible. She also affirmed the problems posed by nuisance raccoons and supports park efforts to control them.

**Frank Greico** (Southwest Florida Paddling Club) stated that he makes 3-4 trips a year to the park. He indicated that paddlers prefer a natural surface to launch from and recommended designating a small area of the shoreline near the boat ramp for this purpose. Mr. Rice explained

that a natural surface launch was located on Black Island. Roger Clark discussed other shoreline access points in the vicinity. Mr. Greico asked for additional explanation on how the proposed canal cuts would facilitate paddling access. Mr. Rice explained that it is not currently possible to access the intertidal areas of the park from the canals.

**Joe Bozzo** (Fish and Wildlife Conservation Commission) asked how the plan animal lists were generated, and was surprised to see crested caracara listed. Ms. Nielsen explained that lists are compiled based on field observations and FNAI data. Mr. Bozzo asked if the park was being considered as a stop on the Great Florida Birding Trail. He noted that the creation of maritime hammock would help increase bird diversity. Mr. Rice confirmed that the park was going to be included as a site on the South Florida Section of the Great Florida Birding Trail.

**Roger Clark** (Lee County) indicated that the bird list seems deficient for neo-tropical migrants and offered to contact the local Audubon chapter for a list for the park. He asked what the plans were for creating maritime hammock. Mr. Rice explained that the first step was to remove exotics. A native plant nursery will support the project and broadcast seeding will be used to start growth of the community. Mr. Clark suggested using the hammock at Big Carlos Pass as a model for species and canopy distribution. He recommended expanding the discussion of history of the park and including reference to the system of offshore buoys that mark an idle speed zone within 500 feet of the Gulf shoreline. He indicated that the speed zone was established by Lee County ordinance. He discussed the need to resolve management of the north end of Big Hickory Island and suggested an alternative site for primitive canoe camping on the island. He asked if the concept of a marine lab was still being considered on land bordering Estero Bay. Mr. Kinnison clarified that the marine lab concept was not included in the current draft of the management plan.

**Margaret Ward** (Citizens Association of Bonita Beach) stated that she thought staff had produced a wonderful plan. She discussed her long involvement with the property and how the removal of exotics and public access have improved over time and commended park staff on their management of the property. She closed by expressing interest in the county providing improved public access to Big Hickory Island.

**Steve Boutelle** closed by recommending the addition of an objective related to physical monitoring of the beach during the next planning cycle.

**Staff Recommendations.** Staff recommends approval of the proposed management plan for Lovers Key State Park as presented with the following comments and revisions.

**Improved Connection between Gulf and Estero Bay.** Specify need for baseline data and information related to hydrological, water quality, manatees and fishery species impacts from proposed canal cuts in the Research Needs section of the plan.

**Resource Management.** An objective will be added related to monitoring physical changes to the Gulf beach.

**Park Boundary.** The Division of State Lands and DEP Office of General Council have confirmed that submerged lands in Estero Bay leased to the Division of Recreation and Parks by Lee County are state sovereign submerged lands and therefore within the boundary of the Estero Bay Aquatic Preserve. These lands were dedicated to Lee County with ownership remaining with the Board of Trustees of the Internal Improvement Trust Fund. With this finding, staff recommends pursuing release of those lands identified on the Area Release Map.

**Boating Access.** It is recommended that the boat ramp area be evaluated for management improvements to address parking and circulation during this planning cycle. Consideration will also be given to implementing a system for collecting fees in this area.

Given the existence of other canoe/kayak launch locations in the area, including a natural surface launch at Black Island in the park, a separate launch site at the boat ramp is not recommended.

**History.** An expanded discussion of the history of the park will be provided in the cultural resources section to provide some context for the resource description and assessment that follows.

**Land Use.** The idle speed zone within 500 feet of the Gulf shoreline will be identified in the Land Use Component.

The proposed primitive canoe/kayak campsite will be eliminated. The Division supports Lee County designating a more appropriate site on Big Hickory Island.

**Residences.** Residence needs have been reevaluated for the park. The existing five staff residences are considered sufficient for the term of this plan. The proposed addition of two more residences will be removed from the current draft plan and resident housing needs reevaluated during the next planning cycle.

**Editorial Revisions.** Issues identified by the Advisory Group related to text, mapping and Addenda irregularities would be addressed.

# Addendum 2—References Cited

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# Addendum 3—Soils Descriptions

**2 - Canaveral fine sand. -** This is a nearly level, moderately well drained and somewhat poorly drained soil on low ridges. Slopes are smooth to slightly convex and range from 0 to 2 percent.

Typically, the surface layer is black and dark gray fine sand mixed with shell fragments and is about 15 inches thick. The underlying layers are light brownish gray and light gray fine sand mixed with shell fragments to a depth of 80 inches or more.

Included with this soil are small areas of Captiva and Kesson soils. Included soils generally make up less than 10 percent of any mapped areas.

In most years, under natural conditions, this soil has a water table depth of 18 to 40 inches for 2 to 6 months. The water table recedes to a depth of more than 40 inches during February through July. The available water capacity is very low. Natural fertility is low. Permeability is very rapid.

Natural vegetation consists of cabbage palm, seagrape, wild coffee, an understory of vines and weeds.

**22 - Beaches. -** Beaches consist of narrow strips of nearly level, mixed sand and shell fragments along the Gulf of Mexico. These areas are covered with saltwater at daily high tides. The areas are subject to movement by the wind and tide and are bare of vegetation in most places. The only vegetation is salt-tolerant plants. Beaches are geographically associated with Canaveral soils.

Beaches are used intensively for recreation during the entire year. Homes, condominiums, beach cottages, and motels have been built on the fringes of beaches in many places.

**23 - Wulfert Muck. -** This is a nearly level, very poorly drained soil in broad tidal swamps. Slopes are smooth and range from 0 to 1 percent.

Typically, the surface layer is muck that is dark reddish brown to a depth of 12 inches and dark brown to a depth of 36 inches. Beneath the muck is gray fine sand with light gray streaks and about 10 percent shell fragments.

Included with this soil in mapping, and making up about 15 percent of the mapping unit, are small areas of Kesson soils and soils similar to Wulfert soils, but with limestone at a depth of 20 to 40 inches.

The water table fluctuates with the tide. Areas are subject to tidal flooding. The available water capacity is high in the organic horizons and low in the horizons below. Natural fertility is medium. Permeability is rapid.

Natural vegetation consists of American mangrove (red mangrove), black mangrove, and needlegrass.

**24 - Kesson fine sand. -** This is a nearly level, very poorly drained soil in broad tidal swamps. Areas are subject to tidal flooding. Slopes are smooth and range from 0 to 1 percent.

Typically, the surface layer is about 6 inches of sand that contains shell fragments. The underlying layers are fine sand that contain shell fragments, and they extend to a depth of 80 inches or more. The upper 4 inches is pale brown, the next 3 inches is light brown, the next 25 inches is light gray with dark gray streaks, and the lower 42 inches is white.

Included with this soil in mapping are areas of Captiva and Wulfert soils and soils that have organic surface layers. Also included are soils that have loamy material throughout. Included soils make up about 10 to 15 percent of any mapped area.

The water table fluctuates with the tide. The available water capacity is low. Natural fertility is low. Permeability is moderately rapid or rapid.

Natural vegetation consists of black mangrove, batis, oxeye daisy, and American mangrove (red mangrove).

**48 - St. Augustine sand. -** This is a nearly level, somewhat poorly drained soil that was formed by earthmoving operations. Most areas are former sloughs or depressions or other low areas that have been filled with sandy material. Slopes are smooth to slightly convex and range from 0 to 2 percent.

This soil has no definite horizonation because of mixing during reworking of the fill material. Typically, the upper 30 inches consists of mixed very dark grayish brown, very dark gray, dark gray and gray sand with a few lenses of silt loam; it is about 20 percent multicolored shell fragments less than 3 inches in diameter. Below this, to a depth of 80 inches or more, there is undisturbed fine sand. The upper 10 inches is dark grayish brown with about 15 percent multicolored shell fragments. The lower 40 inches is light gray with about 15 percent multicolored shell fragments.

Included with this soil are areas where the fill material is underlain by organic soils and other areas where the fill material is less than 20 inches thick. Also included are areas that contain lenses or pockets of organic material throughout the fill. In addition, there are small scattered areas where the fill material is more than 35 percent shells or shell fragments.

The depth to the water table varies with the amount of fill material and the extent of artificial drainage. However, in most years, the water table is 24 to 36 inches below the surface of the fill material for 2 to 4 months. It is below a depth of 60 inches during extended dry periods.

The available water capacity is low. Permeability is estimated to be rapid. Natural fertility is low.

Most of the vegetation has been removed. The present vegetation consists of cabbage palm and various scattered weeds.

# Addendum 4—Plant And Animal List

**Lovers Key State Park**

**Plants**

| Common Name | *Scientific Name* | Primary Habitat Codes (for designated species) |
|---|---|---|
| | | |
| | | |
| | **PTERIDOPHYTES** | |
| | | |
| Golden polypoidy | *Phlebodium aureum* | |
| | | |
| | **GYMNOSPERMS** | |
| | | |
| Australian-pine * | *Casuarina equisetifolia* | |
| | | |
| | **MONOCOTS** | |
| | | |
| False sisal | *Agave decipens* | |
| Sisal hemp * | *Agave sisalana* | |
| Bushy bluestem | *Andropogon glomeratus* | |
| Pitted bluestem * | *Bothriochloa pertusa* | |
| Coast sandspur | *Cenchrus spinifex* | |
| Common dayflower | *Commelina diffusa* | |
| Bermuda grass * | *Cynodon dactylon* | |
| Alabama swamp flatsedge | *Cyperus ligularis* | |
| Manyspike flatsedge | *Cyperus polystachos* | |
| Crowfootgrass * | *Dactyloctenium aegyptium* | |
| Crabgrass | *Digitaria sp.* | |
| Saltgrass | *Distichlis spicata* | |
| Pinewoods fingergrass | *Eustachys petraea* | |
| Hurricanegrass * | *Fimbristylis cymosa* | |
| Shoalgrass | *Halodule wrightii* | |
| Seagrass | *Halophila* sp. | |
| Mangrove spiderlily | *Hymenocallis latifolia* | |
| Hairgrass | *Muhlenbergia capillaris* | |
| Beach panicgrass | *Panicum amarum* | |
| Bahiagrass * | *Paspalum notatum* | |
| Vaseygrass * | *Paspalum urvellei* | |
| Seashore paspalum | *Paspalum vaginatum* | |
| Red natal grass * | *Rhynchelytrum repens* | |
| Widgeongrass | *Ruppia maritima* | |
| Cabbage palm | *Sabal palmetto* | |
| False bluestem | *Schizachyrium sanguineum* | |
| Knotroot foxtail | *Setaria parviflora* | |
| Coastal foxtail | *Setaria corrugata* | |
| Coral foxtail | *Setaria macrosperma* | |
| Earleaf greenbrier | *Smilax auriculata* | |
| Smutgrass * | *Sporobolus indicus* | |
| Seashore dropseed | *Sporobolus virginicus* | |
| Turtlegrass | *Thalassia testudinum* | |

*** Non-native Species**

**Lovers Key State Park**

**Plants**

| Common Name | *Scientific Name* | Primary Habitat Codes (for designated species) |
|---|---|---|
| | | |
| Small ball-moss | *Tillandsia recurvata* | |
| Spanish moss | *Tillandsia usneoides* | |
| Sea oats | *Uniola paniculata* | |
| Spanish dagger | *Yucca aloifolia* | |
| | | |
| | **DICOTS** | |
| | | |
| Earleaf acacia * | *Acacia auriculiformis* | |
| Yellow chaff-flower | *Alternanthera flavescens* | |
| Amaranth | *Amaranthus sp.* | |
| Ragweed | *Ambrosia artemisifolia* | |
| Black mangrove | *Avicennia germinans* | |
| Saltbush | *Baccharis halimifolia* | |
| Saltwort | *Batis maritima* | |
| Beggarticks | *Bidens alba var. radiata* | |
| Bushy seaside oxeye | *Borrichia frutescens* | |
| American bluehearts | *Buchnera americana* | |
| Gumbo limbo | *Bursera simaruba* | |
| Gray nicker bean | *Caesalpinia bonduc* | |
| Seaside bean | *Canavalia rosea* | |
| Lovevine | *Cassytha filiformis* | |
| Madagascar periwinkle * | *Catharanthus roseus* | |
| Limestone sandmat | *Chamaesyce blodgettii* | |
| Coastal beach sandmat | *Chamaesyce mesembrianthemifolia* | |
| Snowberry | *Chiococca alba* | |
| Seagrape | *Coccoloba uvifera* | |
| Coconut palm * | *Cocos nucifera* | |
| Latherleaf* | *Colubrina asiatica* | |
| Buttonwood | *Conocarpus erectus* | |
| Coinvine | *Dalbergia ecastophyllum* | |
| Golden beach creeper | *Ernodea littoralis* | |
| Eucalyptus * | *Eucalyptus sp.* | |
| White stopper; skunkbush | *Eugenia axillaris* | |
| Yankeeweed | *Eupatorium compositifolium* | |
| Strangler fig | *Ficus aurea* | |
| Indian laurel; Cuban laurel * | *Ficus microcarpa* | |
| Narrowleaf yellowtops | *Flaveria linearis* | |
| Florida swamp privet | *Forestiera segregata* | |
| Milkpea | *Galactia sp.* | |
| Southern beeblossum | *Gaura angustifolia* | |
| Diamond flowers | *Hedyotis nigricans* | |
| Scorpiontail | *Heliotropium angiospermum* | |
| Seaside heliotrope | *Heliotropium curassavicum* | |

*** Non-native Species**

**Lovers Key State Park**

**Plants**

| Common Name | *Scientific Name* | Primary Habitat Codes (for designated species) |
|---|---|---|
| | | |
| Pineland heliotrope | *Heliotropium polyphyllum* | |
| Camphorweed | *Heterotheca subaxillaris* | |
| Railroad vine | *Ipomoea pes-caprae subsp. Brasiliensis* | |
| Morning glory | *Ipomoea sp.* | |
| Juba's bush | *Iresine diffusa* | |
| Big leaf marsh elder | *Iva frutescens* | |
| Beach-elder; seacoast marsh elder | *Iva imbricata* | |
| Shrub verbena * | *Lantana camara* | |
| Buttonsage | *Lantana involucrata* | |
| White mangrove | *Laguncularia racemosa* | |
| White leadtree * | *Leucanea leucocephala* | |
| Virginia pepperweed | *Lepidium virginianum* | |
| Melaleuca * | *Melaleuca quinquenervia* | |
| Balsam-pear * | *Mormodica charantia* | |
| Erect prickly-pear cactus | *Opuntia stricta* | 1 |
| Virginia creeper | *Parthenociccus quinquefolia* | |
| West Indian pennisetum * | *Pennisetum setosum* | |
| Turkey tangle fogfruit | *Phyla nodiflora* | |
| Drummond's leafflower | *Phyllanthus abnormis* | |
| Starry-hair ground-cherry | *Physalis walteri* | |
| American pokeberry | *Phytolacca americana* | |
| Jamaican dogwood | *Piscidia piscipula* | |
| Cat's claw | *Pithecellobium unguis-cati* | |
| Sweetscent | *Pluchea odorata* | |
| Painted leaf | *Poinsettia cyathophora* | |
| Purslane | *Portulaca oleracea* | |
| Pink purslane | *Portulaca pilosa* | |
| Wild coffee | *Psychotria nervosa* | |
| White indigoberry | *Randia aculeata* | |
| Myrsine | *Rapanea punctata* | |
| Rubbervine; mangrovevine | *Rhabdadenia biflora* | |
| Red mangrove | *Rhizophora mangle* | |
| Inkberry | *Scaevola plumieri* | 1 |
| Beach naupaka * | *Scaevola sericea* | |
| Brazilian pepper * | *Schinus terebinthifolius* | |
| Sweet broom | *Scoparia dulcis* | |
| Privet wild sensitive plant | *Senna ligustrina* | |
| Shoreline sea-purslane | *Sesuvium portulacastrum* | |
| Common wireweed | *Sida acuta* | |
| Indian hemp | *Sida rhombifolia* | |
| Saffron-plum | *Sideroxylon celastrinum* | |
| Yellow necklacepod | *Sophora tomentosa* | |
| False buttonweed | *Spermacoce sp.* | |

*** Non-native Species**

| **Common Name** | ***Scientific Name*** | **Primary Habitat Codes (for designated species)** |
|---|---|---|
| | | |
| Sea blite | *Suaeda linearis* | |
| Bay-cedar | *Suriana maritima* | 1 |
| Sea hibiscus; mahoe * | *Taliparitti tiliaceum* | |
| Portia tree * | *Thespesia populnea* | |
| Poison ivy | *Toxicodendron radicans* | |
| Jamaican feverplant * | *Tribulus cistoides* | |
| Forked bluecurls | *Tricostema dichotomum* | |
| Frostweed; white crownbeard | *Verbesina virginica* | |
| Muscadine; fox grape | *Vitis rotundifolia* | |
| Wedelia; creeping oxeye * | *Sphagneticola trilobata* | |
| Wild lime; lime prickly ash | *Zanthoxylum fagara* | |

*** Non-native Species**

| Common Name | *Scientific Name* | Primary Habitat Codes (for all species) |
|---|---|---|
| | | |
| | **FISH** | |
| | | |
| Nurse shark | *Ginglymostoma cirratum* | 77 |
| Bull shark | *Carcharhinus leucas* | 77 |
| Blacktip shark | *Carcharhinus limbatus* | 77 |
| Sandbar shark | *Carcharhinus plumbeus* | 77 |
| Bonnethead shark | *Sphyrna tiburo* | 77 |
| Southern stingray | *Dasyatis americana* | 77 |
| Spotted eagle ray | *Aetobatis narinari* | 77 |
| Ladyfish | *Elops saurus* | 77 |
| Tarpon | *Megalops atlanticus* | 77 |
| Trumpetfish | *Aulostomus maculatus* | 77 |
| Common snook | *Centropomus undecimalis* | 77 |
| Gag grouper | *Mycteroperca microlepis* | 77 |
| Cobia | *Rachycentron canadum* | 77 |
| Blue runner | *Caranx crysos* | 77 |
| Crevalle jack | *Caranx hippos* | 77 |
| Florida pompano | *Trachinotus carolinus* | 77 |
| Gray snapper | *Lutjanus griseus* | 77 |
| White grunt | *Haemulon plumieri* | 77 |
| Pinfish | *Lagodon rhomboides* | 77 |
| Sheepshead | *Archosargus probatocephalus* | 77 |
| Spotted seatrout | *Cynoscion nebulosus* | 77 |
| Black drum | *Pogonias cromis* | 77 |
| Red drum | *Sciaenops ocellatus* | 77 |
| Striped mullet | *Mugil cephalus* | 77 |
| Spanish mackerel | *Scomberomorus maculatus* | 77 |
| Gulf flounder | *Paralichthys albigutta* | 77 |
| Puffer | *Sphoeroides nephelus* | 77 |
| | | |
| | **AMPHIBIANS** | |
| | | |
| Cuban treefrog* | *Osteopilus septentrionalis* | 81, 82 |
| | | |
| | **REPTILES** | |
| | | |
| American alligator | *Alligator mississippiensis* | 81, 81 |
| Florida box turtle | *Terrapene carolina bauri* | 7 |
| Gopher tortoise | *Gopherus polyphemus* | 81 |
| Atlantic loggerhead | *Caretta caretta* | 77, 1 |
| Green anole | *Anolis carolinensis carolinensis* | 81 |
| Cuban brown anole* | *Anolis sagrei sagrei* | MTC |
| Southern black racer | *Coluber constrictor priapus* | 81 |

*** Non-native Species**

| **Common Name** | ***Scientific Name*** | **Primary Habitat Codes (for all species)** |
|---|---|---|
| | | |
| Southern ringneck snake | *Diadophis punctatus* | 81 |
| Corn snake | *Elaphe guttata guttata* | 81 |
| Yellow rat snake | *Elaphe obsoleta quadrivittata* | 81 |
| Eastern coachwhip | *Masticophis flagellum* | 81 |
| Florida cottonmouth | *Agkistrodon piscivorus conanti* | 81 |
| | | |
| | **BIRDS** | |
| | | |
| Eastern brown pelican | *Pelecanus occidentalis carolinensis* | OF |
| Double-crested cormorant | *Phalacrocorax auritus* | OF |
| Magnificent frigatebird | *Fregata magnificens* | OF |
| Great blue heron | *Ardea herodias* | 77 |
| Green heron | *Butorides virescens* | 76 |
| Cattle egret* | *Bubulus ibis* | 81 |
| Little blue heron | *Egretta caerulea* | 77 |
| Reddish egret | *Egretta rufescens* | 77 |
| Great egret | *Ardea alba* | 77 |
| Snowy egret | *Egretta thula* | 77 |
| Tricolored heron | *Egretta tricolor* | 77 |
| Black-crowned night heron | *Nycticorax nycticorax* | 76 |
| Yellow-crowned night heron | *Nycticorax violaceus* | 76 |
| White ibis | *Eudocimus albus* | 76 |
| Roseate spoonbill | *Ajaia ajaja* | 77 |
| Red-breasted merganser | *Mergus serrator* | 77 |
| Black vulture | *Coragyps atratus* | OF |
| Turkey vulture | *Cathartes aura* | OF |
| Swallow-tailed kite | *Elanoides forficatus* | OF |
| Red-tailed hawk | *Buteo jamaicensis* | 81 |
| Red-shouldered hawk | *Buteo lineatus* | 81 |
| Southern bald eagle | *Haliaeetus leucocephalus* | 81, OF |
| Osprey | *Pandion haliaetus* | 81 |
| Crested caracara | *Caracara cheriway* | 81 |
| Peregrine falcon | *Falco peregrinus tundrius* | 81, OF |
| Merlin | *Falco columbarius* | OF |
| American kestrel | *Falco sparverius* | 7 |
| Snowy plover | *Charadrius alexandrinus* | 77 |
| Wilson's plover | *Charadrius wilsonia* | 77 |
| Black-bellied plover | *Pluvialis squatarola* | 77 |
| Ruddy turnstone | *Arenaria interpres* | 77 |
| Whimbrel | *Numenius phaeopus* | 77 |
| Willet | *Catoptrophorus semipalmatus* | 77 |
| Laughing gull | *Larus atricilla* | 1 |
| Common tern | *Sterna hirundo* | 77 |

*** Non-native Species**

| **Common Name** | ***Scientific Name*** | **Primary Habitat Codes (for all species)** |
|---|---|---|
| | | |
| Least tern | *Sterna antillarum* | OF |
| Royal tern | *Sterna maxima* | 77 |
| Mourning dove | *Zenaida macroura* | 81 |
| Common ground-dove | *Columbina passerina* | 81 |
| Great horned owl | *Bubo virginianus* | 81 |
| Belted kingfisher | *Ceryle alcyon* | 76 |
| Pileated woodpecker | *Dryocopus pileatus* | 76 |
| Red-bellied woodpecker | *Melanerpes carolinus* | 81 |
| Yellow-bellied sapsucker | *Sphyrapicus varius* | 7 |
| Fish crow | *Corvus ossifragus* | 81 |
| Northern mockingbird | *Mimus polyglottos* | 81 |
| Red-winged blackbird | *Agelaius phoeniceus* | 1 |
| Northern cardinal | *Cardinalis cardinalis* | 81 |
| | | |
| | **MAMMALS** | |
| | | |
| Nine-banded armadillo* | *Dasypus novemcinctus* | 81 |
| Eastern cottontail | *Sylvilagus floridanus* | 81 |
| Marsh rabbit | *Sylvilagus palustris* | 81 |
| Gray squirrel | *Sciurus carolinensis* | 81, 82 |
| Raccoon | *Procyon lotor* | 1, 81 |
| River otter | *Lutra canadensis* | 81 |
| West Indian manatee | *Trichechus manatus* | 81 |
| Atlantic bottle-nosed dolphin | *Tursiops truncatus* | 77 |

*** Non-native Species**

**Terrestrial**

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

**Palustrine**

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

**Lacustrine**

**43** Clastic Upland Lake
**44** Coastal Dune Lake
**45** Coastal Rockland Lake

**Lacustrine**

**46** Flatwood/Prairie Lake
**47** Marsh Lake
**48** River Floodplain Lake
**49** Sandhill Upland Lake
**50** Sinkhole Lake
**51** Swamp Lake

**Riverine**

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

**Estuarine**

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

**Marine**

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

**Subterranean**

**79** Aquatic Cave
**80** Terrestral Cave

**Miscellaneous**

**81** Ruderal
**82** Developed

**MTC** Many Types Of Communities

**OF** Overflying

# Addendum 5—Designated Species List

**Lovers Key State Park**

**Designated Species**

**Plants**

| **Common Name/** *Scientific Name* | **Designated Species Status** FDA | USFWS | FNAI |
|---|---|---|---|
| Shell mound prickly pear cactus *Opuntia stricta* | T | | |
| Inkberry *Scaveola plumieri* | T | | |

**Lovers Key State Park**

**Designated Species**

**Plants**

| Common Name/ *Scientific Name* | Designated Species Status | | |
|---|---|---|---|
| | FDA | USFWS | FNAI |

**Lovers Key State Park**

**Designated Species**

**Animals**

| **Common Name/** *Scientific Name* | **Designated Species Status** FFWCC | USFWS | FNAI |
|---|---|---|---|
| **REPTILES** | | | |
| American alligator *Alligator mississippiensis* | LS | LT(S/A) | G5, S4 |
| Gopher tortoise *Gopherus polyphemus* | LS | | G3, S3 |
| Atlantic loggerhead *Caretta caretta* | LT | LT | G3, S3 |
| **BIRDS** | | | |
| Eastern brown pelican *Pelecanus occidentalis* | LS | | G4, S3 |
| Magnificent frigatebird *Fregata magnificens* | | | G5, S1 |
| Little blue heron *Egretta caerulea* | LS | | G5, S4 |
| Reddish egret *Egretta rufescens* | LS | | G4, S2 |
| Great egret *Ardea alba* | | | G5, S4 |
| Snowy egret *Egretta thula* | LS | | G5, S3 |
| Tricolored heron *Egretta tricolor* | LS | | G5, S4 |
| Black-crowned night heron *Nycticorax nycticorax* | | | G5, S3 |
| Yellow-crowned night heron *Nycticorax violaceus* | | | G5, S3 |
| White ibis *Eudocimus albus* | LS | | G5, S4 |
| Roseate spoonbill *Ajaia ajaja* | LS | | G5, S2 |
| Southern bald eagle *Haliaeetus leucocephalus* | LT | LT | G4, S3 |
| Ospery *Pandion haliaetus* | | | G5, S3S4 |
| Crested caracara *Caracara cheriway* | LT | LT | G5, S2 |
| Peregrine falcon *Falco peregrinus* | LE | | G4, S2 |

**Lovers Key State Park**

**Designated Species**

**Animals**

| **Common Name/** *Scientific Name* | **Designated Species Status** FFWCC | USFWS | FNAI |
|---|---|---|---|
| Snowy plover *Charadrius alexandrinus* | LT | | G4, S1 |
| Least tern *Sterna antillarum* | LT | | G5, S3 |
| Royal tern *Sterna maxima* | | | G5, S3 |
| **MAMMALS** | | | |
| West Indian manatee *Trichechus manatus* | LE | LE | G2, S2 |

## Rank Explanations-For FNAI Global Rank, FNAI State Rank, Federal Status, And State Status

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

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

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

### FNAI GLOBAL RANK DEFINITIONS

| | | |
|---|---|---|
| G1 | = | Critically imperiled globally because of extreme rarity (5 or fewer occurrences or less than 1000 individuals) or because of extreme vulnerability to extinction due to some natural or man-made factor. |
| G2 | = | Imperiled globally because of rarity (6 to 20 occurrences or less than 3000 individuals) or because of vulnerability to extinction due to some natural or man-made factor. |
| G3 | = | Either very rare and local throughout its range (21-100 occurrences or less than 10,000 individuals) or found locally in a restricted range or vulnerable to extinction of other factors. |
| G4 | = | apparently secure globally (may be rare in parts of range) |
| G5 | = | demonstrably secure globally |
| GH | = | of historical occurrence throughout its range, may be rediscovered (e.g., ivory-billed woodpecker) |
| GX | = | believed to be extinct throughout range |
| GXC | = | extirpated from the wild but still known from captivity or cultivation |
| G#? | = | tentative rank (e.g.,G2?) |
| G#G# | = | range of rank; insufficient data to assign specific global rank (e.g., G2G3) |
| G#T# | = | rank of a taxonomic subgroup such as a subspecies or variety; the G portion of the rank refers to the entire species and the T portion refers to the specific subgroup; numbers have same definition as above (e.g., G3T1) |
| G#Q | = | rank of questionable species - ranked as species but questionable whether it is species or subspecies; numbers have same definition as above (e.g., G2Q) |
| G#T#Q | = | same as above, but validity as subspecies or variety is questioned. |
| GU | = | due to lack of information, no rank or range can be assigned (e.g., GUT2). |
| G? | = | not yet ranked (temporary) |
| S1 | = | Critically imperiled in Florida because of extreme rarity (5 or fewer occurrences or less than 1000 individuals) or because of extreme vulnerability to extinction due to some natural or man-made factor. |
| S2 | = | Imperiled in Florida because of rarity (6 to 20 occurrences or less than 3000 individuals) or because of vulnerability to extinction due to some natural or man-made factor. |
| S3 | = | Either very rare and local throughout its range (21-100 occurrences or less than 10,000 individuals) or found locally in a restricted range or vulnerable to extinction of other factors. |
| S4 | = | apparently secure in Florida (may be rare in parts of range) |
| S5 | = | demonstrably secure in Florida |
| SH | = | of historical occurrence throughout its range, may be rediscovered (e.g., ivory-billed woodpecker) |
| SX | = | believed to be extinct throughout range |
| SA | = | accidental in Florida, i.e., not part of the established biota |
| SE | = | an exotic species established in Florida may be native elsewhere in North America |
| SN | = | regularly occurring, but widely and unreliably distributed; sites for conservation hard to determine |
| SU | = | due to lack of information, no rank or range can be assigned (e.g., SUT2). |
| S? | = | not yet ranked (temporary) |

## LEGAL STATUS

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

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

LE = Listed as Endangered Species in the List of Endangered and Threatened Wildlife and Plants under the provisions of the Endangered Species Act. Defined as any species that is in danger of extinction throughout all or a significant portion of its range.

PE = Proposed for addition to the List of Endangered and Threatened Wildlife and Plants as Endangered Species.

LT = Listed as Threatened Species. Defined as any species that is likely to become an endangered species within the near future throughout all or a significant portion of its range.

PT = Proposed for listing as Threatened Species.

C = Candidate Species for addition to the list of Endangered and Threatened Wildlife and Plants. Defined as those species for which the USFWS currently has on file sufficient information on biological vulnerability and threats to support proposing to list the species as endangered or threatened.

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

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

**STATE**

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

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

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

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

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

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

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

# Addendum 6—Priority Schedule And Cost Estimates

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

## Resource Management

### Exotic Plant Removal (for next ten years)

**Estimated Cost:** $3500/acre for clearing manually and with herbicides and grubbing with tractors, includes selective clearing with chainsaws, etc. for 20 acres of land heavily infested with Brazilian pepper and 20 acres of Australian pine, and 5 acres of other woody exotic plants like earpod acacia and leadtree (includes $9,800 for herbicide, mostly Garlon 4).

Subtotal: $157,500 for 10 years

Maintenance of the areas recently treated will need to be done minimally once every five years at $1000.00 per acre for 300 acres of land. This will be done with a mix of contracting out areas with higher concentrations of re-growth and staff/volunteers treating areas that are considerately further along in the maintenance process.

Subtotal: $600,000 for 10 years.

**TOTAL Estimated Ten-year Cost: $757,500.00**

### Other Management Activities

In the introduction to the plan, the following other goals are listed:

- Protect shorebird nesting and wintering areas and sea turtle nesting areas from human disturbances and human-related impacts.
- Restore mangrove community and beach dune community after beach re-nourishment is completed (expected to take place winter of 2003).
- Create maritime hammock community.
- Expand the labor pool available to address park resource management needs, especially plant exotic eradication and maritime hammock creation.
- Seek local and regional coordination both in beach re-nourishment and maintenance dredging activities to insure compatibility with the agency's responsibilities for resource protection and the provision of resource-based outdoor recreation.

*** Categories of the uniform cost accounting system not reflected in this addendum, have no schedule or cost associated with them.**

The exotic removal goal requires considerable equipment and supply expenditures in addition to labor.

In accomplishment of the other goals, the major necessary resource component is that of labor. As stated in the introduction to the plan, under the specific objectives for these goals, the intention is to utilize labor pools derived from volunteers, Department of Corrections, and park staff.

*** Categories of the uniform cost accounting system not reflected in this addendum, have no schedule or cost associated with them.**

| Capital Improvements | |
|---|---|
| | |
| **Development Area or Facilities** | **Estimated Cost** |
| | |
| Beach Access Facilities | $163,125.00 |
| Main Parking And Picnic Area | $870,312.50 |
| North Bay Side Use Area | $62,500.00 |
| North Pedestrian Entrance | $36,250.00 |
| South Bay Side Use Area | $187,500.00 |
| Support Facilities | $115,300.00 |
| Trails | $246,600.00 |
| | |
| | |
| **Total w/contingency** | **$2,017,905.00** |
| | |

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

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

**Addendum 7—Additional Information**

**FNAI Descriptions**

**DHR Cultural Management Statement**

## Descriptions Of Natural Communities Developed By FNAI

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

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

The levels of the hierarchy are:

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

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

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



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

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

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

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

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

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

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

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

**Coastal Grassland** - coastal flatland with sand substrate; xeric-mesic; subtropical or temperate;

occasional fire; grasses, herbs, and shrubs with or without slash pine and/or cabbage palm.

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

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

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

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

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

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

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

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

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

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

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

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

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

**Rockland Hammock** - flatland with limestone substrate; mesic; subtropical; rare or no fire; mixed tropical hardwoods, often with live oak.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

**Seepage Slope** - wetland on or at base of slope with organic/sand substrate; maintained by downslope seepage, usually saturated but rarely inundated; subtropical or temperate; frequent or occasional fire; sphagnum moss, mixed grasses and herbs or mixed hydrophytic shrubs.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

**Marsh lake** - generally shallow, open water area within wide expanses of freshwater marsh; still water

or flow-through; peat, sand or clay substrate; occurs in most physiographic regions; variable water chemistry, but characteristically highly colored, acidic, soft water with moderate mineral content (sodium, chloride, sulfate); oligo-mesotrophic to eutrophic.

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

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

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

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

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

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

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

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

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

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

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

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

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**MARINE/ESTUARINE** (The distinction between the Marine and Estuarine Natural Communities is often subtle, and the natural communities types found under these two community categories have the same

descriptions. For these reasons they have been grouped together.) - Subtidal, intertidal and supratidal zones of the sea, landward to the point at which seawater becomes significantly diluted with freshwater inflow from the land.

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

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

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

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

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

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

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

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

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

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

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

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

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

**Physiography**

**Upland -** high area in region with significant topographic relief; generally undulating
**Lowland** - low area in region with or without significant topographic relief; generally flat to gently sloping
**Flatland** - generally level area in region without significant topographic relief; flat to gently sloping
**Basin** - large, relatively level lowland with slopes confined to the perimeter or isolated interior locations
**Depression** - small depression with sloping sides, deepest in center and progressively shallower towards the perimeter
**Floodplain** - lowland adjacent to a stream; topography influenced by recent fluvial processes
**Bottomland** - lowland not on active floodplain; sand/clay/organic substrate

**Hydrology**

**occasionally inundated** - surface water present only after heavy rains and/or during flood stages
**seasonally inundated** - surface water present during wet season and flood periods
**usually inundated** - surface water present except during droughts

**Climatic Affinity of the Flora**

**tropical** - community generally occurs in practically frost-free areas
**subtropical** - community generally occurs in areas that experience occasional frost, but where freezing temperatures are not frequent enough to cause true winter dormancy
**temperate** - community generally occurs in areas that freeze often enough that vegetation goes into winter dormancy

**Fire**

**annual fire** - burns about every 1-2 years
**frequent fire** - burns about every 3-7 years
**occasional fire** - burns about every 8-25 years
**rare fire** - burns about every 26-100 years
**no fire** - community develops only when site goes more than 100 years without burning

## LATIN NAMES OF PLANTS MENTIONED IN NATURAL COMMUNITY DESCRIPTIONS

anise - *Illicium floridanum*
bays:
  swamp bay -*Persea palustris*
  gordonia -*Gordonia lasianthus*
  sweetbay -*Magnolia virgiana*
beakrush - *Rhynchospora* spp.
beech - *Fagus grandifolia*
blackgum - *Nyssa biflora*
blue palmetto - *Sabal minor*
bluestem - *Andropogon* spp.
buttonbush - *Cephalanthus occidentalis*
cabbage palm - *Sabal palmetto*
cacti - *Opuntia* and *Harrisia* spp.,
  predominantly *stricta* and *pentagonus*
cane - *Arundinaria gigantea* or *A. tecta*
cattail - *Typha* spp.
cedars:
  red cedar - *Juniperus silicicola*
  white cedar - *Chamaecyparis thyoides* or *C. henryi*
cladonia - *Cladonia* spp.
cypress - *Taxodium distichum*
dahoon holly - *Ilex cassine*
diamondleaf oak - *Quercus laurifolia*
fire flag - *Thalia geniculata*
Florida maple - *Acer barbatum*
gallberry - *Ilex glabra*
gums:
  tupelo - *Nyssa aquatica*
  blackgum - *Nyssa biflora*
  Ogeechee gum - *Nyssa ogeche*
hackberry - *Celtis laevigata*
hornbeam - *Carpinus caroliniana*
laurel oak - *Quercus hemisphaerica*
live oak - *Quercus virginiana*
loblolly pine - *Pinus taeda*
longleaf pine - *Pinus palustris*
magnolia - *Magnolia grandiflora*
maidencane - *Panicum hemitomon*
needle palm - *Rhapidophyllum hystrix*
overcup oak - *Quercus lyrata*
pickerel weed - *Pontederia cordata* or *P. lanceolata*
pignut hickory - *Carya glabra*
pop ash - *Fraxinus caroliniana*
pond apple - *Annona glabra*
pond pine - *Pinus serotina*
pyramid magnolia - *Magnolia pyramidata*
railroad vine - *Ipomoea pes-caprae*
red cedar - *Juniperus silicicola*
red maple - *Acer rubrum*
red oak - *Quercus falcata*
rosemary - *Ceratiola ericoides*
sagittaria - *Sagittaria lancifolia*
sand pine - *Pinus clausa*
saw palmetto - *Serenoa repens*
sawgrass - *Cladium jamaicensis*
scrub oaks - *Quercus geminata, Q. chapmanii, Q. myrtifolia,Q. inopina*
sea oats - *Uniola paniculata*
seagrape - *Coccoloba uvifera*
shortleaf pine - *Pinus echinata*
Shumard oak - *Quercus shumardii*
slash pine - *Pinus elliottii*
sphagnum moss - *Sphagnum* spp.
spikerush - *Eleocharis* spp.
spruce pine - *Pinus glabra*
St. John's wort - *Hypericum* spp.
swamp chestnut oak - *Quercus prinus*
sweetgum - *Liquidambar styraciflua*
titi - *Cyrilla racemiflora*, and *Cliftonia monophylla*
tuliptree - *Liriodendron tulipfera*
tupelo - *Nyssa aquatica*
turkey oak - *Quercus laevis*
water oak - *Quercus nigra*
waterlily - *Nymphaea odorata*
white cedar - *Chamaecyparis thyoides*
white oak - *Quercus alba*
willow - *Salix caroliniana*
yucca - *Yucca aloifolia*

## A. GENERAL DISCUSSION

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

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

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

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

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

## B. STATUTORY AUTHORITY

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

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

**1.** Provide leadership in the preservation of the state's historic resources; [and]

**2.** Administer state-owned or state-controlled historic resources in a spirit of stewardship and trusteeship;...

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

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

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

**1.** Each state agency of the executive branch having direct or indirect jurisdiction over a proposed state or state-assisted undertaking shall, in accordance with state policy and prior to the approval of expenditure of any state funds on the undertaking, consider the effect of the undertaking on any historic property that is included in, or eligible for inclusion in, the National Register of Historic Places. Each such agency shall afford the division a reasonable opportunity to comment with regard to such an undertaking.
**2.** Each state agency of the executive branch shall initiate measures in consultation with the division to assure that where, as a result of state action or assistance carried out by such agency, a historic property is to be demolished or substantially altered in a way that adversely affects the character, form, integrity, or other qualities that contribute to [the] historical, architectural, or archaeological value of the property, timely steps are taken to determine that no feasible and prudent alternative to the proposed demolition or alteration exists, and, where no such alternative is determined to exist, to assure that timely steps are taken either to avoid or mitigate the adverse effects, or to undertake an appropriate archaeological salvage excavation or other recovery action to document the property as it existed prior to demolition or alteration.
**3.** In consultation with the division [of Historical Resources], each state agency of the executive branch shall establish a program to locate, inventory, and evaluate all historic properties under the agency's ownership or control that appear to qualify for the National Register. Each such agency shall exercise caution to assure that any such historic property is not inadvertently transferred, sold, demolished, substantially altered, or allowed to deteriorate significantly.
**4.** Each state agency of the executive branch shall assume responsibility for the preservation of historic

resources that are owned or controlled by such agency. Prior to acquiring, constructing, or leasing buildings for the purpose of carrying out agency responsibilities, the agency shall use, to the maximum extent feasible, historic properties available to the agency. Each agency shall undertake, consistent with preservation of such properties, the mission of the agency, and the professional standards established pursuant to paragraph (3)(k), any preservation actions necessary to carry out the intent of this paragraph.

**5.** Each state agency of the executive branch, in seeking to acquire additional space through new construction or lease, shall give preference to the acquisition or use of historic properties when such acquisition or use is determined to be feasible and prudent compared with available alternatives. The acquisition or use of historic properties is considered feasible and prudent if the cost of purchase or lease, the cost of rehabilitation, remodeling, or altering the building to meet compliance standards and the agency's needs, and the projected costs of maintaining the building and providing utilities and other services is less than or equal to the same costs for available alternatives. The agency shall request the division to assist in determining if the acquisition or use of a historic property is feasible and prudent. Within 60 days after making a determination that additional space is needed, the agency shall request the division to assist in identifying buildings within the appropriate geographic area that are historic properties suitable for acquisition or lease by the agency, whether or not such properties are in need of repair, alteration, or addition.

**6.** Consistent with the agency's mission and authority, all state agencies of the executive branch shall carry out agency programs and projects, including those under which any state assistance is provided, in a manner which is generally sensitive to the preservation of historic properties and shall give consideration to programs and projects which will further the purposes of this section.

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

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

## C. MANAGEMENT POLICY

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

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

It should be noted that while many archaeological and historical sites are already recorded within state--owned or controlled--lands, the majority of the uplands areas and nearly all of the inundated areas have not been surveyed to locate and assess the significance of such resources. The known sites are, thus,

only an incomplete sample of the actual resources - i.e., the number, density, distribution, age, character and condition of archaeological and historic sites - on these tracts. Unfortunately, the lack of specific knowledge of the actual resources prevents formulation of any sort of detailed management or use plan involving decisions about the relative historic value of individual sites. For this reason, a generalized policy of conservation is recommended until the resources have been better addressed.

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

**1.** State land managers shall coordinate all planned activities involving known archaeological or historic sites or potential site areas closely with the Division of Historical Resources in order to prevent any kind of disturbance to significant archaeological or historic sites that may exist on the tract. Under 267.061(1)(b), F.S., the Division of Historical Resources is vested with title to archaeological and historic resources abandoned on state lands and is responsible for administration and protection of such resources. The Division will cooperate with the land manager in the management of these resources. Furthermore, provisions of 267.061(2) and 267.13, F.S., combined with those in 267.061(3) and 253.034(4), F.S., require that other managing (or permitting) agencies coordinate their plans with the Division of Historical Resources at a sufficiently early stage to preclude inadvertent damage or destruction to known or potentially occurring, presently unknown archaeological and historic sites. The provisions pertaining to human burial sites must also be followed by state land managers when such remains are known or suspected to be present (see 872.02 and 872.05, F.S., and 1A-44, F.A.C.)

**2.** Since the actual resources are so poorly known, the potential impact of the managing agency's activities on historic archaeological sites may not be immediately apparent. Special field survey for such sites may be required to identify the potential endangerment as a result of particular management or permitting activities. The Division may perform surveys, as its resources permit, to aid the planning of other state agencies in their management activities, but outside archaeological consultants may have to be retained by the managing agency. This would be especially necessary in the cases of activities contemplating ground disturbance over large areas and unexpected occurrences. It should be noted, however, that in most instances Division staff's knowledge of known and expected site distribution is such that actual field surveys may not be necessary, and the project may be reviewed by submitting a project location map (preferably a 7.5 minute U.S.G.S. Quadrangle map or portion thereof) and project descriptive data, including detailed construction plans. To avoid delays, Division staff should be contacted to discuss specific project documentation review needs.

**3.** In the case of known significant sites, which may be affected by proposed project activities, the managing agency will generally be expected to alter proposed management or development plans, as necessary, or else make special provisions to minimize or mitigate damage to such sites.

**4.** If in the course of management activities, or as a result of development or the permitting of dredge activities (see 403.918(2)(6)a, F.S.), it is determined that valuable historic or archaeological sites will be damaged or destroyed, the Division reserves the right, pursuant to 267.061(1)(b), F.S., to require salvage measures to mitigate the destructive impact of such activities to such sites. Such salvage measures would be accomplished before the Division would grant permission for destruction of the affected site areas. The funding needed to implement salvage measures would be the responsibility of the managing agency planning the site destructive activity. Mitigation of historic structures at a minimum involves the preparation of measured drawings and documentary photographs. Mitigation of archaeological resources involves the excavation, analysis and reporting of the project findings and must be planned to occur sufficiently in advance to avoid project construction delays. If these services are to be contracted by the state agency, the selected consultant will need to obtain an Archaeological Research Permit from the Division of Historical Resources, Bureau of Archaeological Research (see 267.12, F.S. and Rules 1A-32 and 1A-46 F.A.C.).

**5.** For the near future, excavation of non-endangered (i.e., sites not being lost to erosion or development) archaeological site is discouraged. There are many endangered sites in Florida (on

both private and public lands) in need of excavation because of the threat of development or other factors. Those within state-owned or controlled lands should be left undisturbed for the present - with particular attention devoted to preventing site looting by "treasure hunters". On the other hand, the archaeological and historic survey of these tracts is encouraged in order to build an inventory of the resources present, and to assess their scientific research potential and historic or architectural significance.

**6.** The cooperation of land managers in reporting sites to the Division that their field personnel may discover is encouraged. The Division will help inform field personnel from other resource managing agencies about the characteristics and appearance of sites. The Division has initiated a cultural resource management training program to help accomplish this. Upon request the Division will also provide to other agencies archaeological and historical summaries of the known and potentially occurring resources so that information may be incorporated into management plans and public awareness programs (See Management Implementation).

**7.** Any discovery of instances of looting or unauthorized destruction of sites must be reported to the agent for the Board of Trustees of the Internal Improvement Trust Fund and the Division so that appropriate action may be initiated. When human burial sites are involved, the provisions of 872.02 and 872.05, F. S. and Rule 1A-44, F.A.C., as applicable, must also be followed. Any state agent with law enforcement authority observing individuals or groups clearly and incontrovertibly vandalizing, looting or destroying archaeological or historic sites within state-owned or controlled lands without demonstrable permission from the Division will make arrests and detain those individuals or groups under the provisions of 267.13, 901.15, and 901.21, F.S., and related statutory authority pertaining to such illegal activities on state-owned or controlled lands. County Sheriffs' officers are urged to assist in efforts to stop and/or prevent site looting and destruction.

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

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

**1.** A property shall be used for its historic purpose or be placed in a new use that requires minimal change to the defining characteristics of the building and its site and environment.

**2.** The historic character of a property shall be retained and preserved. The removal of historic materials or alterations of features and spaces that characterize a property shall be avoided.

**3.** Each property shall be recognized as a physical record of its time, place and use. Changes that create a false sense of historical development, such as adding conjectural features or architectural elements from other buildings, shall not be undertaken.

**4.** Most properties change over time; those changes that have acquired historic significance in their own right shall be retained and preserved.

**5.** Distinctive features, finishes, and construction techniques or examples of craftsmanship that characterize a historic property shall be preserved.

**6.** Deteriorated historic features shall be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature shall match the old in design, color, texture, and other visual qualities and, where possible, materials. Replacement of missing features shall be substantiated by documentary, physical, or pictorial evidence.

**7.** Chemical or physical treatments, such as sandblasting, that cause damage to historic materials shall not be used. The surface cleaning of structures, if appropriate, shall be undertaken using the gentlest means possible.

**8.** Significant archaeological resources affected by a project shall be protected and preserved. If such resources must be disturbed, mitigation measures shall be undertaken.

**9.** New additions, exterior alterations, or related new construction shall not destroy materials that

characterize the property. The new work shall be differentiated from the old and shall be compatible with the massing, size, scale, and architectural features to protect the historic integrity of the property and its environment.

**10.** New additions and adjacent or related new construction shall be undertaken in such a manner that if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired. (see Secretary of the Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings [Revised 1990]).

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

## D. MANAGEMENT IMPLEMENTATION

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

**1.** All land managing agencies should contact the Division and send U.S.G.S. 7.5 minute quadrangle maps outlining the boundaries of their various properties.
**2.** The Division will in turn identify site locations on those maps and provide descriptions for known archaeological and historical sites to the managing agency.
**3.** Further, the Division may also identify on the maps areas of high archaeological and historic site location probability within the subject tract. These are only probability zones, and sites may be found outside of these areas. Therefore, actual ground inspections of project areas may still be necessary.
**4.** The Division will send archaeological field recording forms and historic structure field recording forms to representatives of the agency to facilitate the recording of information on such resources.
**5.** Land managers will update information on recorded sites and properties.
**6.** Land managers will supply the Division with new information as it becomes available on previously unrecorded sites that their staff locate. The following details the kind of information the Division wishes to obtain for any new sites or structures that the land managers may report:

### A. Historic Sites

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

### B. Archaeological Sites

**(1)** Site location (written narrative and mapped location).
**(2)** Cultural affiliation and period.
**(3)** Site type (midden, burial mound, artifact scatter, building rubble, etc.).

**(4)** Threats to site (deterioration, vandalism, etc.).
**(5)** Site size (acreage, square meters, etc.).
**(6)** Artifacts observed on ground surface (pottery, bone, glass, etc.).
**(7)** Description of surrounding environment.

**7.** No land disturbing activities should be undertaken in areas of known archaeological or historic sites or areas of high site probability without prior review by the Division early in the project planning.

**8.** Ground disturbing activities may proceed elsewhere but land managers should stop disturbance in the immediate vicinity of artifact finds and notifies the Division if previously unknown archaeological or historic remains are uncovered. The provisions of Chapter 872, F.S., must be followed when human remains are encountered.

**9.** Excavation and collection of archaeological and historic sites on state lands without a permit from the Division are a violation of state law and shall be reported to a law enforcement officer. The use of metal detectors to search for historic artifacts shall be prohibited on state lands except when authorized in a 1A-32, F.A.C., research permit from the Division.

**10.** Interpretation and visitation which will increase public understanding and enjoyment of archaeological and historic sites without site destruction or vandalism is strongly encouraged.

**11.** Development of interpretive programs including trails, signage, kiosks, and exhibits is encouraged and should be coordinated with the Division.

**12.** Artifacts found or collected on state lands are by law the property of the Division. Land managers shall contact the Division whenever such material is found so that arrangements may be made for recording and conservation. This material, if taken to Tallahassee, can be returned for public display on a long term loan.

## E. ADMINISTERING AGENCY

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

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

**Contact Person:** **Susan M. Harp**
Historic Preservation Planner
Telephone (850) 245-6333
Suncom 205-6333
FAX (850) 245-6437

## MANAGEMENT REVIEW TEAM MEMBERS

| Agency Represented | Team member Appointed | Team member In attendance |
|---|---|---|
| | | |
| DOF | Bill Korn | Bill Korn |
| Florida Park Service | Andrea Bishop | Andrea Bishop |
| FWC | Steve Shattler | Steve Shattler |
| Private Land Manager( KSC) | Paul Dinger | Paul Dinger |
| Conservation Org. (TNC) | Ed Freeman | |
| DEP | Nick Gallant | Nick Gallant |
| County | Jim Green | Jim Green |
| Soil & Water | Jack Tanner | Jack Tanner |
| Observer (FNAI) | Carolyn Kindell | Carolyn Kindell |
| Observer (CAMA) | Heather Stafford | Heather Stafford |
| Observer (GNS) | Aaron Deslatte | Aaron Deslatte |

## PROCESS FOR IMPLEMENTING REGIONAL MANAGEMENT REVIEW TEAMS

### LEGISLATIVE INTENT AND GUIDANCE:

Chapter 259.036, F. S. was enacted in 1997 to determine whether conservation, preservation, and recreation lands owned by the state Board of Trustees of the Internal Improvement Trust Fund (Board) are being managed properly. It directs the Department of Environmental Protection (DEP) to establish land management review teams to evaluate the extent to which the existing management plan provides sufficient protection to threatened or endangered species, unique or important natural or physical features, geological or hydrological functions, and archaeological features. The teams also evaluate the extent to which the land is being managed for the purposes for which it was acquired and the degree to which actual management practices, including public access, are in compliance with the adopted management plan. If a land management plan has not been adopted, the review shall consider the extent to which the land is being managed for the purposes for which it was acquired and the degree to which actual management practices are in compliance with the management policy statement and management prospectus for that property. If the land management review team determines that reviewed lands are not being managed for the purposes for which they were acquired or in compliance with the adopted land management plan, management policy statement, or management prospectus, DEP shall provide the review findings to the Board, and the managing agency must report to the Board its reasons for managing the lands as it has. A report of the review team findings are given to the managing agency under review, the Acquisition and Restoration Council, and the Governor and Cabinet.

## REVIEW SITE

The management review of Lovers Key State Park consisting of 1,464 acres that are managed by the Division of Recreation and Parks (DRP). The team evaluated the extent to which current management actions are sufficient, whether the land is being managed for the purpose for which it was acquired, and whether actual management practices, including public access, are in compliance with the management plan. The management was approved by the Division of State Lands on May 6, 1999, and the management plan update is due on May 6, 2009.

## REVIEW TEAM DETERMINATION

**Is the land being managed for the purpose for which it was acquired?** All team members agreed Lovers Key State Park is being managed for the purpose for which it was acquired.

**Are actual management practices, including public access, in compliance with the**

**management plan?** All team members agreed that management practices, including public access, are in compliance with the management plan.

### Commendations to the Managing Agency

**1.** The team commends the manager and staff for their outstanding native plant nursery and replanting efforts at this park.
**2.** The team commends the manager and staff for their outstanding use of volunteers for resource management and facilities operation and upkeep.
**3.** The team commends the manager and staff for their aggressive and sustained efforts to remove invasive plants.
**4.** The team commends the manager and staff for their attention to detail and professional management of this park.

### Exceptional Management Actions

The following items received high scores on the review team checklist and indicate management actions exceeded expectations.

**Exceptional management actions**

- Excellent management of beach dunes, maritime hammock, marine tidal swamp, marine unconsolidated substrate, and coastal strand natural communities.
- Excellent protection and preservation of listed animals.
- Excellent survey and protection of cultural resources.
- Excellent restoration/creation of the coastal strand, maritime hammock and beach dune communities.
- Excellent control of non-native invasive and problem plants and animals.
- Excellent boundary surveys, signage, and gates and fencing.
- Excellent roads, parking, recreational opportunities, interpretive facilities and signs, and environmental outreach.
- Excellent management of waste disposal, buildings, equipment and staff.

### Recommendations and Checklist Findings

The management plan must include responses to the recommendations and checklist items that are identified below.

**Recommendations**

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

**1.** The team recommends that the DRP clearly identify and discuss in the management plan which areas are owned by the Trustees and which areas are leased from the County.

**Manager's Response:** Agree.

**2.** The team recommends that the DRP revisit the classification of communities now listed as ruderal at this park.

**Manager's Response:** The draft revision of the Unit Management Plan has addressed this recommendation. Ruderal acreage has been reduced.

### Checklist findings

The following items received low scores on the review team checklist which indicates that management actions, in the field, were insufficient (f) or the issue was not sufficiently addressed in the management plan (p). These items need to be further addressed in the management plan update.

**1.** Discussion in the management plan to address the accomplishments and issues of management needed to restore the coastal strand community. (P)

**Manager's Response:** This is addressed in the draft revision of the plan. Removal of extensive stands of Australian Pine trees has allowed recovery of coastal strand community. Maintenance-level exotic control is essential at sites that are recovering.

**2.** Discussion in the management plan of the need to obtain baseline data on the water quality in the canals. (f)

**Manager's Response:** This is discussed in the draft revision of the plan as a research need at the park.

**3.** Discussion in the management plan of the need to monitor surface water quality near Dog Beach. (p)(f)

**Manager's Response:** This area is now managed by Lee County.

**4.** Discussion in management plan of the need for improved sanitary facilities. (f)

**Manager's Response:** State Park land use plans are developed by professional planning staff through a public process and are approved by the Acquisition and Restoration Council. It is beyond the scope of the review team's responsibilities to plan facilities or development on state lands.