Florida Department of
Environmental Protection
Marjory Stoneman Douglas Building
3900 Commonwealth Boulevard
Tallahassee, Florida 32399-3000

Rick Scott
Governor

Jennifer Carroll
Lt. Governor

Herschel T. Vinyard Jr.
Secretary

April 23, 2012

Ms. Sine Murray
Office of Park Planning, Division of Recreation and Parks
Department of Environmental Protection
3900 Commonwealth Boulevard, MS # 525
Tallahassee, Fl 32399-3000

RE: Lignumvitae Key Botanical State Park – Lease # 2534

Dear Ms. Murray:

The Division of State Lands, Office of Environmental Services, acting as agent for the Board of Trustees of the Internal Improvement Trust Fund, hereby approves the Lignumvitae Key Botanical State Park land management plan. The next management plan update is due April 23, 2022.

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,

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

MSG/ci

Lignumvitae Key
Botanical State Park

APPROVED
Unit Management Plan

STATE OF FLORIDA
Department of Environmental Protection

Division of Recreation and Parks
April 23, 2012

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INTRODUCTION

Lignumvitae Key Botanical State Park is located in Monroe County (see Vicinity Map). Access to Lignumvitae Key is by boat since the island is not connected by U.S. Highway 1 (see Reference Map). Shell Key is a separate island from Lignumvitae Key, located about one mile east of Lignumvitae Key, and approximately one mile north of Upper Matecumbe Key. The Choate Tract is a separate parcel of land located on Upper Matecumbe Key. This parcel is located north of U.S. Highway 1 near Mile Marker 80. The Klopp Tract is a separate parcel of land located on Lower Matecumbe Key, included in the management responsibility of Lignumvitae Key Botanical State Park. This parcel is located at Mile Marker 77 and is south of Tiki Lane and bisected by the Tennis Club property . In addition, significant land and water resources existing near the park are depicted on the Vicinity Map.

Lignumvitae Key Botanical State Park was initially acquired on March 2, 1971 with funds from the Land Acquisition Trust Fund (LATF). Currently, the park comprises 10,818 acres. The Board of Trustees of the Internal Improvement Trust Fund (Trustees) holds fee simple title to the park. According to lease 2534, the Florida Department of Environmental Protection (DEP), Division of Recreation and Parks (DRP) manages Lignumvitae Key Botanical State Park for the purpose of preserving, developing, operating and maintaining the property for outdoor recreational, park, conservation and related purposes (see Addendum 1).

At Lignumvitae Key Botanical State Park, public outdoor recreation and conservation is the designated single use of the property. There are no legislative or executive directives that constrain the use of this property.

PURPOSE AND SIGNIFICANCE OF THE PARK

The State of Florida acquired the original boundary of Lignumvitae Key in 1971 through the Florida Land Acquisition Trust Fund. Land acquisition by the State of Florida continues through the present day, and the park boundary now extends to 10, 818 acres. The purpose of the acquisition was to preserve, for all time, a representative example of the natural and cultural history of the State of Florida, to protect, develop, operate and maintain the property for public outdoor recreation, conservation, historic and related purposes and to support the tourism industry of Florida.

Park Significance

- The park receives its namesake for the rare Florida tree, *lignum vita*, which means "wood of life." Wood from the tree is extremely durable and dense, and was utilized for critical ship components and other important industrial practices in the 18th and 19th centuries. The park is home to one of the few remaining significant populations of lignum vitae trees in South Florida.

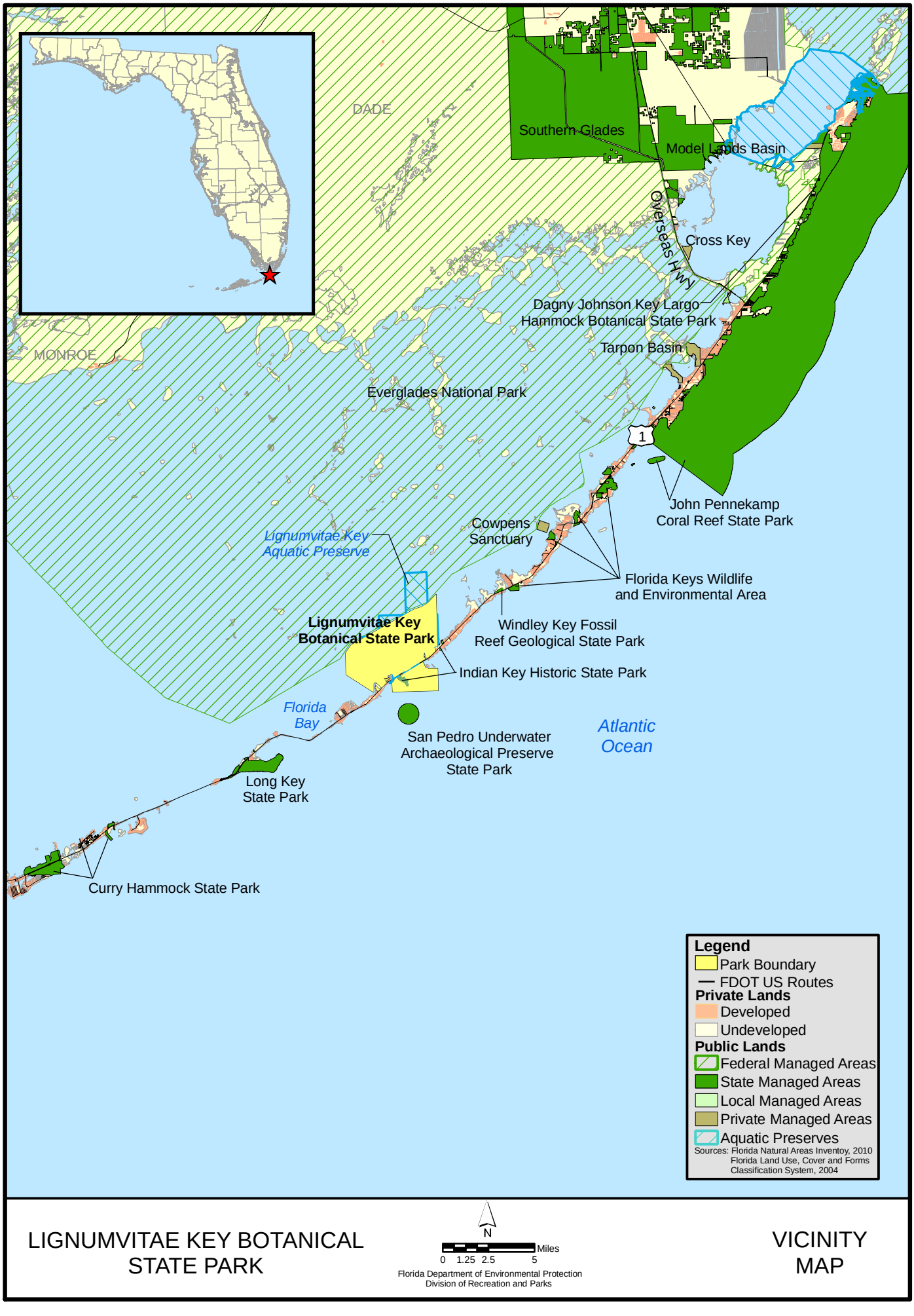
- The park is the first botanical site in the Florida State Park system and home to one of the last old growth tropical hammocks in the state of Florida. The hammock is home to nine different national champion tree species.
- Lignumvitae Key was not mapped until 1743, has had minimal development and impact to the natural resources and has only one ranger residence.
- The park boundary encompasses over 10,000 acres of submerged land surrounding Lignumvitae Key, providing seagrass and hard bottom habitat for imperiled animal species, including the West Indian manatee, sea turtles and three species of imperiled coral.
- The island was used by the Calusa Indians, with evidence of burial sites. In 1919, the island was purchased by William J. Matheson, who established the Homestead on the island that has been home to multiple generations of caretakers of the island, and is listed on the National Historic Register.
- The park provides valuable interpretive, educational and outdoor recreational opportunities to Florida's residents and visitors through public access facilities and programs of the botanical state park.

Lignumvitae Key Botanical State Park is classified as a special feature site in DRP's unit classification system. A "special feature" is a discrete and well-defined object or condition that attracts public interest and provides recreational enjoyment through visitation, observation and study. A state special feature site is an area which contains such a feature, and which is set aside for controlled public enjoyment. Special feature sites for the most part are either historical or archaeological by type, but they may also have a geological, botanical, zoological or other basis. State special feature sites must be of unusual or exceptional character, or have statewide or broad regional significance.

In the management of a special feature site, primary emphasis is placed on protection and maintenance of the special feature for long-term public enjoyment. Permitted uses are almost exclusively passive in nature and program emphasis is on interpretation of the special feature. Development at special feature sites is focused on protection and maintenance of the site, public access, safety and the convenience of the user.

PURPOSE AND SCOPE OF THE PLAN

This plan serves as the basic statement of policy and direction for the management of Lignumvitae Key Botanical State Park as a unit of Florida's state park system. It identifies the goals, objectives, actions and criteria or standards that guide each aspect of park administration, and sets forth the specific measures that will be implemented to meet management objectives. The plan is intended to meet the requirements of Sections 253.034 and 259.032, Florida Statutes, Chapter 18-2, Florida Administrative Code, and is intended to be consistent with the State Lands Management Plan. Upon approval, this management plan will replace the December 2000 approved plan.



LIGNUMVITAE KEY BOTANICAL STATE PARK

N

0 1.25 2.5 5 Miles

Florida Department of Environmental Protection
Division of Recreation and Parks

VICINITY MAP

LIGNUMVITAE KEY BOTANICAL STATE PARK

N

0 1,250 2,500 5,000 Feet

Florida Department of Environmental Protection
Division of Recreation and Parks
Date of aerial: 2004

REFERENCE MAP

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

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

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

All development and resource alteration proposed in this plan is subject to the granting of appropriate permits, easements, licenses, and other required legal instruments. Approval of the management plan does not constitute an exemption from complying with the appropriate local, state or federal agencies. This plan is also intended to meet the requirements for beach and shore preservation, as defined in Chapter 161, Florida Statutes, and Chapters 62B-33, 62B-36 and 62R-49, Florida Administrative Code.

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

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

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

The Trustees has also granted management authority of certain sovereign submerged lands to DRP 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 standardized system-wide and are set by internal direction. These procedures are outlined in DRP's Operations Manual (OM) that covers such areas as personnel management, uniforms and personal appearance, training, signs, communications, fiscal procedures, interpretation, concessions, public use regulations, resource management, law enforcement, protection, safety and maintenance.

Park Management Goals

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

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

Management Coordination

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

The Florida Fish and Wildlife Conservation Commission (FFWCC), assists staff in the enforcement of state laws pertaining to wildlife, freshwater fish and other aquatic life existing within the park. The Florida Department of State (FDOS), Division of Historical Resources (DHR) assists staff to ensure protection of archaeological and historical sites. The DEP's Office of Coastal and Aquatic Managed Areas (CAMA) aids staff in aquatic preserves management programs. The DEP's Bureau of Beaches and Coastal Systems aids staff in planning and construction activities seaward of the Coastal Construction Line. In addition, the Bureau of Beaches and Coastal Systems aid the staff in the development of erosion control projects.

Public Participation

The DRP provided an opportunity for public input by conducting a public workshop and an Advisory Group Meeting to present the draft management plan to the public. These meetings were held on Wednesday, October 26, 2011 and Thursday, October 27, 2011, respectively. Meeting notices were published in the Florida Administrative Weekly, October 14, 2011 Volume 37, Issue 41, included on the Department Internet Calendar, posted in clear view at the park, and promoted locally. The purpose of the Advisory Group meeting is to provide the Advisory Group members an opportunity to discuss the draft management plan (see Addendum 2).

Other Designations

Lignumvitae Key Botanical State Park is within an Area of Critical State Concern as defined in Section 380.05, Florida Statutes.

All waters within the park have been designated as Outstanding Florida Waters, pursuant to Chapter 62-302, Florida Administrative Code. Surface waters in this park are also classified as Class III waters by the DEP. This park is within the Lignumvitae Key aquatic preserve as designated under the Florida Aquatic Preserve Act of 1975 (Section 258.35, Florida Statutes) and is within the Florida Keys National Marine Sanctuary.

RESOURCE MANAGEMENT COMPONENT

INTRODUCTION

The Florida Department of Environmental Protection (DEP), Division of Recreation and Parks (DRP) in accordance with Chapter 258, Florida Statutes, has implemented resource management programs for preserving for all time the representative examples of natural and cultural resources of statewide significance under its administration. This component of the unit plan describes the natural and cultural resources of the park and identifies the methods that will be used to manage them. Management measures expressed in this plan are consistent with the DEP's overall mission in ecosystem management. Cited references are contained in Addendum 3.

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

DRP's management goal for cultural resources is to preserve sites and objects that represent Florida's cultural periods, significant historic events or persons. This goal often entails active measures to stabilize, reconstruct or restore resources, or to rehabilitate them for appropriate public use.

Because park units are often components of larger ecosystems, their proper management can be affected by conditions and events that occur beyond park boundaries. Ecosystem management is implemented through a resource management evaluation program that assesses resource conditions, evaluates management activities and refines management actions, and reviews local comprehensive plans and development permit applications for park/ecosystem impacts.

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

Table 1: Management Zones

Management Zone	Acreage	Managed With Prescribed Fire
LVK-01	181	N/A
LVK-02	3	N/A
LVK-03	10	N/A
LVK-04	93	N/A
LVK-05	131	N/A
LVK-06	11	N/A
LVK-07	9,958	N/A
LVK-08	133	N/A
LVK-09	203	N/A

RESOURCE DESCRIPTION AND ASSESSMENT

Natural Resources

Topography

Lignumvitae Key Botanical State Park is part of the geographic region of high coral keys. The edge of the continental shelf parallels the Keys approximately seven miles offshore. Lignumvitae Key exhibits the characteristic domed topography of a patch reef system, with the highest elevations near the center and tapering gradually down to the shoreline. Elevations range from three to ten feet throughout most of the island with the maximum elevation reaching 16.5 feet on the north side of the island. The hammock grades down to just above sea level near the shoreline.

Solution holes are created by the dissolution of the limestone by rainfall and are a common component of the rockland hammocks in the Florida Keys and south Florida. Some solution holes on Lignumvitae Key are several feet in depth and often hold water even during the dry season.

Alterations to the topography on Lignumvitae Key are minimal and consist of the pre-historic burial site that created a slightly elevated area in the mangroves, and an area in the hammock that was dredged by Matheson. This area still has the old machinery that was used for trail clearing and dredging on the island.

Shell Key Preserve is a mangrove island with a large interior lagoon. This island, unlike Lignumvitae Key, originated as a supratidal mud bank, typical of other Florida Bay islands. There is a narrow coastal berm on the northwest side of the island, but the remainder of the emergent land on Shell Key is intertidal and is composed of mangrove vegetation. A narrow creek connects to the interior lagoon, but over time, this creek is becoming overgrown by mangrove vegetation.

Depths within the Lignumvitae Key Submerged Land Management Area (LKSLMA) range from one to four feet over the seagrass flats, and from six to sixteen feet in the navigational channels.

LIGNUMVITAE KEY BOTANICAL STATE PARK

N

0 1,250 2,500 5,000 Feet

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

MANAGEMENT ZONES MAP

During extreme low tides, some seagrass flats will be exposed for brief periods. Alteration of the topography of the submerged land consists of historic and present day activities. Dredging was conducted during the construction of Flagler's railroad, the bridges and the addition of fill material when used in place of bridges to connect Upper Matecumbe Key to Lower Matecumbe Key. The seagrass flats adjacent to the existing roadway were dredged and old dredge scars are still apparent. Other alterations to the submerged topography are from boat grounding events, where the vessels traverse into areas that are too shallow. The results are damage to the seagrass from propeller scars and blowholes varying in depth from a few inches to as much as six feet.

The Klopp tract on Lower Matecumbe Key has a series of canals that were dredged and the fill material placed in the upland portions adjacent to the canals. Elevations here range from five to ten feet.

Alterations on the Choate tract on Upper Matecumbe Key include a pre-historic Indian midden (MO00017) that elevated the area adjacent to the mangroves, and fill material from the dredged canal and interior lagoon. Other alterations are a result of railroad and bridge construction. Elevations in the rockland hammock are approximately five to ten feet above sea level, grading to mangroves on the north side of the property.

Geology

The upper layer geologic formation of the Florida Keys from soldier Key to Bahia Honda Key is Key Largo limestone. Built by the coral polyps of ancient coral reef formations, these fossilized remains are similar to the present living coral reefs offshore. As sea levels have fluctuated over time, the land mass of South Florida has alternately been submerged and exposed above the level of the water. Approximately 120,000 years ago, sea level dropped close to its present level, exposing the coral and allowing for the formation of the islands of the Florida Keys. When the area of the Keys is submerged, the limestone from ancient coral reefs provides the necessary substrate for new growth of coral formations and coral reefs. Subsequently, the Key Largo limestone is quite thick, as much as 145 feet in some areas of the upper Keys (Hoffmeister, 1974).

Soils

Information published in the U.S. Department of Agriculture's (USDA) Classification and Correlation of the Soils of Monroe County keys Area Florida identifies four soil types at Lignumvitae Key Botanical State Park (see Soils Map). They are Pennekamp gravelly muck, Rock Outcrop-Tavernier complex, Islamorada muck, and Keylargo muck.

Pennekamp gravelly muck is found in the upland hammock areas typically at the highest elevations. It is characterized by a thin layer of organic debris and leaf layer over the limestone rock. In the low intertidal areas, the soil unit is Rock Outcrop-Tavernier complex. In this soil unit, the mangrove tidal swamps are subject to daily flooding by tides causing the soil to be poorly drained. Where exposed, the limestone rock weathers into smooth caprock pitted with solution holes that fill with accumulated marl soil. Islamorada muck and Keylargo muck are also associated with mangrove tidal swamps. Addendum 3 contains detailed soil descriptions for the park.

The submerged communities are subjected to erosion from propeller scarring and boat grounding events that cut the seagrass rhizomes, and in some cases, significantly alters the topography of the seagrass flat. In addition to the physical damage to the seagrass, these injuries also cause suspended sediment in the water column that then affects the water quality of the nearshore and offshore waters. Restoration within the waters of the LKSLMA has been ongoing since 2005. Sites have been prioritized with those sites requiring topographic restoration ranking the highest. "No Motor Zone" signs mark areas of shallow seagrass flats to aid vessel operators in navigating these waters. Funding for restoration has come from multiple sources and staff and management consider this a high priority for management of the seagrass beds within the park's submerged resources. Measures will be taken to prevent soil erosion or other adverse impacts to the surrounding resources of Lignumvitae Key Aquatic Preserve and the Florida Keys National Marine Sanctuary.

Minerals

Key Largo limestone is the major mineral deposit at Lignumvitae Key Botanical State Park. Minor mineral deposits in the park include calcite and halite.

Hydrology

The primary natural source of freshwater in the Florida Keys is rain. Historically, early settlers collected rainwater in cisterns or used water from wells and solution holes that tapped the small, shallow freshwater lenses. These lenses form in the limestone above sea level during the rainy season. Until recently, nearshore freshwater upwelling, an extension of the Biscayne Aquifer, occurred in at least one location on northern Key Largo. Drainage of the Everglades and the subsequent canalization of southeast Florida (including canals in the Florida Keys) resulted in saltwater intrusion into the Biscayne Aquifer and changed the regional hydrology. Only on the larger islands such as Key Largo and Big Pine Key is rainwater retained for any length of time.

NATURAL COMMUNITIES

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

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

LIGNUMVITAE KEY BOTANICAL STATE PARK

N

0 1,250 2,500 5,000 Feet

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

SOILS MAP

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

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

COASTAL BERM

Desired future condition: Coastal berms are found on the seaward edge or landward edge of the mangroves or further inland depending on the height of the storm surge that formed them. They range in height from one to 10 feet. Structure and composition of the vegetation is variable depending on the height of the berm and the time since the last storm event. Coastal berm consists of a mixture of tropical herbs, shrubs and trees and is defined by its substrate of coarse, calcareous, storm-deposited sediment forming long narrow ridges that parallel the shore. The most stable berms may share some tree species with rockland hammocks, but generally have a greater proportion of shrubs and herbs. Tree species may include blolly (*Guapira bicolor*), gumbo limbo (*Bursera simaruba)*, and poisonwood (*Metopium toxiferum*). Characteristic tall shrub and short tree species include Spanish stopper (*Eugenia foetida*), hog plum (*Ximenia americana*), white indigo berry (*Randia aculeata*), seven year apple (*Genipa clusiifolia*), blackbead (*Pithecellobium keyense*), and saffron plum (*Sideroxylon salicifolium*). Short shrubs and herbs include spider lily (*Hymenocallis latifolia*), limber caper (*Capparis flexuosa*), lantana (*Lantana involucrata*), and rouge berry (*Rivina humilis*). More seaward berms or those recently affected by storm deposition may support a suite of plants similar to beaches, including sea purslane (*Sesuvium portulacastrum*), cordgrass (*Spartina* spp.), and seashore dropseed (*Paspalum* spp.), or dense shrub thickets with buttonwood (*Conocarpus erectus*), black mangrove (*Avicennia germinans*) red mangrove (*Rhizophora mangle*), white mangrove (*Laguncularia racemosa*), joewood (*Jacquinia keyensis*), and sea ox-eye daisy (*Borrichia arborescens*).

Description and assessment: The coastal berm is found in two areas of the park, on the north side of Lignumvitae Key and on the west side of Shell Key. The coastal berms on Lignumvitae Key and Shell Key were impacted by storm events during the 2004-2005 storm seasons but are still in excellent condition. Species found here include prickly pear cactus (*Opuntia stricta*), sea ox-eye daisy, buttonwood, black mangrove and Spanish stopper. On Shell Key, the coastal berm consists of a slightly elevated ridge behind the mangrove swamp. Sea ox-eye daisy, saltwort (*Batis maritima*), and glasswort (*Salicornia* spp.) are the dominant species on this island.

General management measures: The coastal berm habitats on Lignumvitae Key and Shell Key represent more seaward berms as described above and are in their desired future condition. In order to maintain this status, periodic surveys for exotic species will need to be conducted as

well as periodic surveys for debris washed in by storm events. Beach clean-ups on Lignumvitae Key are usually conducted during volunteer workdays.

KEYS TIDAL ROCK BARREN

Desired future condition: Keys tidal rock barren is a flat rockland in the supratidal zone with much exposed and eroded limestone and a sparse cover of stunted halophytic herbs and shrubs, and it is inundated by salt water only during the extreme spring high tides. Patches of low, salt-tolerant herbaceous species include sea ox-eye daisy, perennial glasswort, saltwort, Keys grass (*Monanthochloe littoralis*), saltgrass and seashore dropseed. Buttonwood is the dominant woody plant. It varies from stunted, sprawling, multi-stemmed shrubs to tree size. Other typical woody species are red mangrove, black mangrove, white mangrove and Christmas berry (*Lycium carolinianum*). At the transition to upland vegetation, buttonwood may be joined by a variety of shrubs and stunted trees of inland woody species including saffron plum, wild cotton (*Gossypium hirsutum*), blackbead, wild dilly (*Manilkara jaimiqui* ssp. *emarginata*), poisonwood and joewood.

Keys tidal rock barren occurs above the daily tidal range, but is subject to flooding by tides and storm events. Salt spray from coastal winds, as well as shallow soils, may limit height growth of woody plants. Aside from bare rock substrate, discontinuous patches of thin marl soils may be present. Depressions with deeper peat and mud soils support tidal swamp and tidal marsh communities, dominated respectively by mangroves or Gulf cordgrass (*Spartina spartinae*).

Description and assessment: Keys tidal rock barren is a rare community, occurring in scattered patches along a few shorelines in the Florida Keys. The substrate is exposed cap rock pitted with small solution holes, grading into a shoreline of jagged Key Largo limestone or as an ecotonal community between the hammock and the mangroves. In Lignumvitae Key, Keys tidal rock barren is found on the south side of the island between the rockland hammock and the mangrove tidal swamp. Vegetation includes black mangrove, white mangrove, key grass, saltwort, glasswort and sea purslane. Typical animal species found in this habitat include a variety of wading birds, spiders, butterflies and raccoon. A portion of the marine tidal swamp to the west of the Keys tidal rock barren was cleared in 1947 to create an airstrip. This area is now considered part of the rock barren and is comprised mostly of herbaceous vegetation with a layer of periphyton on the un-vegetated marl surface.

General management measures: The Keys tidal rock barren on Lignumvitae Key is in the desired future condition. Exotic plant species have not been an issue in this habitat except along the northern ecotonal border at higher elevations where woody vegetation specifically buttonwood and mayten are the predominate species.

In the management plan that was approved on December 19, 2000, this habitat was described as coastal rock barren. The 2009 Florida Natural Areas Inventory has updated habitat descriptions and further defined coastal rock barren as either Keys tidal rock barren, which is tidally influenced, or as Keys Cactus barren, which is an upland plant community that may only be influenced during extreme high tides or storm events.


FLORIDA BAY
MUS
CB
MS
MCPS
CB
MCNS
DV
RH
MCPS
MSGB
US-1
MS
KCB
RH
KTRB
MS
MSGB
MUS
MS
RH
DV
MCNS
MSGB
MS
RH
ATLANTIC OCEAN
LEGEND
CB - Coastal Berm 3.10 ac.
KCB - Key Cactus Barren 3.83 ac.
RH - Rockland Hammock 195.01 ac.
KTRB - Keys Tidal Rock Barren 11.45 ac.
MS - Mangrove Swamp 442.29 ac.
MCPS - Marine Composite Substrate 1094.35 ac.
MCNS - Marine Consolidated Substrate 81.84 ac.
MSGB - Marine Seagrass Bed 8459.63 ac.
MUS - Marine Unconsolidated Substrate 422.06 ac
DV - Developed 10.64 ac.
LIGNUMVITAE KEY BOTANICAL STATE PARK
N
0
1,250
2,500
5,000
Feet
Florida Department of Environmental Protection
Division of Recreation and Parks
Date of aerial: 2011
NATURAL COMMUNITIES MAP

KEYS CACTUS BARREN

Desired future condition: Keys cactus barren is an open, primarily herbaceous community with scattered shrubs on rocky areas of Key Largo limestone with little soil or leaf litter. The vegetation consists of a wide variety of herbaceous and succulent species that characteristically includes cacti, agave and several rare herbs. Such rare species include yellow hibiscus (*Cienfuegosia yucatanensis*), skyblue clustervine (*Jacquemontia pentanthos*), and Florida Keys indigo (*Indigofera mucronata* var. *keyensis*). These frequently occur with grasses and sedges, such as green sprangletop (*Leptochloa dubia*), coral panicum (*Panicum chapmanii*) and royal flatsedge (*Cyperus elegans*). Spiny species, particularly the rare three-spined pricklypear (*Opuntia triacanthos*), are characteristic but their abundance is variable. Other spiny species include false sisal (*Agave decipiens*), barbed-wire cactus (*Acanthocereus tetragonus*), and pricklypear cactus (*Opuntia stricta*). Scattered clumps of stunted trees may be present, including gumbo limbo, buttonwood, Spanish stopper and cat's claw (*Pithecellobium unguis-cati*). It is a habitat that is confined to the Florida Keys.

Description and assessment: Keys cactus barren occurs on the Choate tract in a narrow band between the rockland hammock and the mangrove edge. This community has been impacted by exotic vegetation including lead tree, Madagascar rubber vine (*Cryptostegia madagascariensis*), Life plant (*Kalanchoe* spp.), Brazilian pepper (*Schinus terebinthifolius*), Australian pine (*Casuarina equisetifolia*), night blooming cereus (*Hylocereus undatus*), and Guinea grass (*Panicum maximum*). It leads to the archeological site where the habitat grades into rockland hammock. Numerous exotic removal projects have been conducted at this site both by contractors and by park and District staff.

General management measures: In order to achieve the desired future condition of the Keys cactus barren, exotic species removal will need to continue until they have been eradicated. Additionally, limited access to this habitat needs to be enforced not just for the protection of the archeological site, but also to prevent adverse impacts from unauthorized human use.

In the Unit Management Plan that was approved on December 19, 2000, this habitat was described as coastal rock barren. The 2009 Florida Natural Areas Inventory has updated habitat descriptions and has further defined coastal rock barren as either Keys tidal rock barren that is tidally influenced, or as Keys Cactus barren, which is an upland plant community that may only be influenced during extreme high tides or storm events.

ROCKLAND HAMMOCK

Desired future conditions: Rockland hammock is a rare tropical hardwood forest on upland sites and occurs on a thin layer of highly organic soil covering limestone. This habitat does not regularly flood, but it is often dependent upon a high water table to maintain reservoirs in solution features of the limestone and to keep humidity levels high. Organic acids dissolve the surface limestone creating eroded depressions in the rock called solution holes.

Rockland hammocks typically have larger more mature trees in the interior, while the margins are dense with growth of smaller shrubs, trees and vines. There are differences in species composition between rockland hammocks found on the mainland and in the Florida Keys. Even

within the Florida Keys, there is variation and some species are found only in the upper Keys, while others are found only in the lower Keys. This is due to elevation, geologic and rainfall differences between the two regions. Typical canopy and understory species include, gumbo limbo, wild tamarind (*Lysiloma latisiliquum*), pigeon plum (*Coccoloba diversifolia*), mastic (*Sideroxylon foetidissimum*), strangler fig (*Ficus aurea*), poisonwood, several species of stoppers (*Eugenia* spp.), thatch palms (*Thrinax* spp.), torchwood (*Amyris elemifera*), marlberry (*Ardisia escallonioides*), satinleaf (*Chrysophyllum oliviforme*), and blackbead. Vines and herbaceous vegetation are less common and include greenbrier (*Smilax havanensis*) and bamboo (*Lasiacis divaricata*). Epiphytes, including orchids, ferns, and bromeliads can be found on larger trees.

Description and assessment: The rockland hammock in the park is found on Lignumvitae Key, the Klopp tract and the Choate tract. However, species composition and diversity is not universal at each site so separate plant lists are included in Addendum 5. Typical canopy trees found in the hammock include gumbo limbo, poisonwood, mastic, Jamaica dogwood (*Piscidia piscipula*), and West Indian mahogany (*Swietenia mahagoni*). Understory species include lignum vitae (*Guajacum sanctum*), white stopper *(Eugenia axillaris*), Spanish stopper (*E. foetida*), torchwood, and crabwood (*Gymnanthes lucida*).

Animal species found in the hammock include white-crowned pigeon (*Patagioenas leucocephala*), Chuck-will's-widow (*Caprimulgus carolinensis*), *Liguus* tree snail and a variety of butterflies including white peacock (*Anartia jatrophae*), the imperiled Florida purple wing (*Enuica tatila*) and tropical checkered skipper (*Pyrgus oileus oilesu*).

The rockland hammock on Lignumvitae Key is in excellent condition and has been subjected to only minor disturbances due to its isolation from the populated islands of the Florida Keys. Nine national champion species have been recorded for Lignumvitae Key; poisonwood, red ironwood (*Reynosia septentrionalis*), blolly, black ironwood (*Krugiodendron ferreum*), crabwood, torchwood, Florida thatch palm (*Thrinax radiata*), Florida boxwood (*Schaefferia frutescens*), and shortleaf fig (*Ficus citrifolia*). Imperiled species found on the island include milkbark (*Drypetes diversifolia*), red stopper (*Eugenia confusa*) and a large population of lignum vitae trees. Eight color forms of *Liguus* tree snail have been recorded for the island two of which are endemic to Lignumvitae Key.

Although the hammock is relatively undisturbed, exotic species are found scattered throughout the hammock particularly where former inhabitants cleared a 15-acre parcel for agricultural purposes. Remnants of this activity are still present including a portion of the fence, coconut palms (*Cocos nucifera*), Tamarind (*Tamarindus indicus*), Benjamin fig (*Ficus benjamina*), and copperpod (*Peltophorum pterocarpum*). Sapodilla (*Manilkara zapota*) has also been problematic in this hammock having spread from individuals that were planted in the cultural area during the Matheson occupation of the island. Numerous exotic removal projects conducted by District and park staff have focused on all of these species and follow-up treatment continues. All of the mature sapodilla in the cultural landscape were removed in 2008 as part of a DEP Bureau of Invasive Exotic Plant grant. This will lead to the total eradication of sapodilla in the hammock since the fruits are mammal dispersed and not wind or bird dispersed.

Several solution holes are found throughout the hammock, some of which retain freshwater except in times of drought. Pond apple (*Annona glabra*), an uncommon species in the Florida Keys, is found along the edge of a solution hole adjacent to the nature trail. Two solution holes near the shop area were historically used as dumps by previous owners of the island. In the past, park staff had attempted to remove material from one of these solution holes, but soil testing determined that it contained toxic material so work ceased. The second solution hole has been covered over by cement and it is unknown what lies beneath the cement. Both solution holes will need to be addressed by indivdiuals who are experienced in this type of debris removal.

Three nature trails originally created by Matheson wind through the hammock. The trail that runs west from the edge of the cultural area ends in a rock wall that separates the hammock from a scrubby, lower elevation hammock, then grades into the Keys tidal rock barren. On the north side of the island, the hammock grades to a coastal berm, on the south side, to a Keys tidal rock barren, and on the east side, to a mangrove ecotone. This mangrove edge has been subjected to exotic infestation mainly portia and Brazilian pepper, but has been the focus of numerous exotic removal projects and all mature trees have been eradicated.

The rockland hammock sustained minor damage from the 2004 and 2005 hurricane seasons. Most of the impact was along the outer edge on the west side of the island where salt spray burned the hammock vegetation. Only minor damage in the interior of the rockland hammock was recorded from the hurricanes, mostly in the form of downed limbs, although a few of the hammock trees were killed.

The rockland hammock on the Choate tract is in good condition. The south end of this property has been impacted by dredging associated with canals, the railroad and road development. A pre-historic midden is located in this section of the property but it has been disturbed by authorized archaeological surveys as well as by vandalism. Because of this disturbance, artifacts are scattered in the vicinity of the midden.

The northern end of the Choate tract has had little disturbance and is in great condition. Of significance here is a small population of the federally endangered tree cactus (*Pilosocereus robinii*), one of only a few populations found throughout the Keys. Due to a decline in this population, the Florida Park Service is working on a conservation project with researchers from the U.S. Fish and Wildlife Service and Fairchild Tropical Botanic Garden (FTBC). Researchers are monitoring all of the populations found on public lands and have authority to survey a few populations found on private lands. In addition, seeds have been collected and sites have been identified for augmenting populations where they occur, and for reintroducing the species into sites where they historically occurred. Windley Key Fossil Reef Geological State Park is slated for a reintroduction outplanting, and the Choate tract is slated for an augmentation outplanting.

The Klopp tract is dividied into two sections with a tennis court complex situated on an outparcel in between the two. The majority of the quality hammock is on the southern parcel which is borderd on the south side by private residences. Exotic species here are limited but include sapodilla and night-blooming cereus. On the northern parcel, the hammock is more disturbed particularly near the land base for Lignumvitae Key.

General management measures: Exotic species removal is the primary resource management activity necessary to achieve the desired future condition of the rockland hammock on all of the parcels that are part of Lignumvitae Key Botanical State Park. In addition, both the Choate tract and the Klopp tract require park boundary signs and/or fencing in order to protect these parcels from unauthorized access. This is particularly critical near the archeological sites on the Choate tract.

MARINE COMPOSITE SUBSTRATE

Desired future condition: Marine composite substrate consists of a combination of natural communities including seagrass beds, consolidated substrate and unconsolidated substrate. Because composite substrate is a combination of community types, floral and faunal components from any of these communities may be found in the composite substrate habitat, so species diversity is often times greater than the surrounding habitats.

Description and assessment: The marine composite community forms a mosaic with associated submerged communities representing an ecotonal community where plant and animal species diversity is high. At Lignumvitae Key, the marine composite substrate is found north and west of Lignumvitae Key and on the northwest side of the Klopp tract at the edge of the boundary of the submerged land. It is a mixture of seagrass, macroalgae, and open, sandy substrate and includes stony corals, soft corals, sponges, worms and anemones.

General management measures: For most areas where the marine composite substrate occurs in the park, it is in excellent condition. However, all submerged land within the 10,000 acres of the LKSLMA is subject to impacts from boat grounding events. All areas that are four feet or less in depth at mean high tide are closed to motorized engines and delineated by "No Motor Zones." Restoration efforts in the park focus on damage to seagrass beds including where they are significant components of the marine composite substrate. Protection of all of the submerged communities from vessel impacts will achieve the desired future condition of this habitat.

MARINE CONSOLIDATED SUBSTRATE

Desired future condition: Marine consolidated substrate is characterized by Key Largo limestone substrate with minimal sediment accumulation. This habitat is also known as hardbottom and an often time consists of a combination of macroalgae, octocoral and stony coral species. Because there is minimal sediment accumulation, seagrass do not thrive in this environment.

Description and assessment: The marine consolidated substrate is found on the west and north side of Lignumvitae Key and on the south and southwest side of Indian Key. This is an important community because it provides a foundation for the development of other marine communities. Seagrasses do not thrive here, instead, the community is dominated by macroalgae including Shaving brush algae (*Penicillus* spp.), Oatmeal algae (*Halimeda* spp.), Fern algae (*Caulerpa* spp.), and Mermaid's wine cup (*Acetabularia* sp.). Other species prevalent in the marine consolidated substrate within these submerged resources are finger coral (*Porites* spp.), rose coral (*Manicina areolata*), lobed star coral (*Solenastrea hyades*), starfish and a variety of fish common in the shallow waters off the Florida Keys.

General management measures: The marine consolidated substrate in Lignumvitae Key is in excellent condition. Periodic surveys will be required to monitor for potential impacts from park visitors and to maintain the desired future condition of this submerged community. Water quality affects all of the submerged resources of the park, particularly the stony coral species. Monitoring for long-term impacts from coral bleaching, such as disease and coral die-off, will be necessary.

SEAGRASS BED

Desired future condition: Seagrass beds are typically characterized as expansive stands of vascular plants and are one of the most productive communities in the world. Seagrass beds occur in clear, coastal waters where wave energy is moderate. The three most common species of seagrasses in Florida are turtle grass (*Thalassia testudinum*), manatee grass (*Syringodium filiforme*), and shoal grass (*Halodule wrightii*). Johnson's grass (*Halophila* spp.) may be intermingled with the other seagrasses, but species of this genus are considerably less common.

Seagrass beds require unconsolidated substrate in order to establish their underground biomass root structure. They are typically found in waters ranging from 20° to 30°C (68° to 86°F), and require clear water for photosynthesis. Seagrass beds do not thrive where nutrient levels are high because of increased turbidity and competition of undesirable algae species.

Seagrass beds provide important habitat for a host of commercially and recreationally important species including the Florida spiny lobster (*Panulirus argus*), queen conch (*Strombus gigas*) and shrimp. Information from the Florida Fish and Wildlife Conservation Commission's Annual Landings Report for 2006 estimated that the harvest of the six major recreational and commercially important species was $25.8 million in the Florida Keys. All of these species rely on the marine grass bed for part or all of their life cycle. Larger predators such as the loggerhead turtle (*Caretta caretta*), green turtle (*Chelonia mydas*), hawksbill turtle (*Eretmochelys imbricata*), West Indian manatee (*Trichechus manatus*), and bottlenose dolphin (*Tursiops truncatus*) also utilize the seagrass beds.

Most species migrate between the coral reef, seagrass beds and mangrove communities on a diurnal, seasonal or life cycle pattern. Seagrass stabilize sediment, cycle nutrients, and the seagrass blades trap suspended sediment in the water allowing clear water to be transported to the offshore coral reefs during tidal movement.

Description and assessment: The three species of seagrass found in the park are turtle grass, shoal grass, and manatee grass. Turtle grass is the climax species while shoal grass and manatee grass are the pioneer species and first to colonize into open and/or disturbed sites. Shoal grass has a greater tolerance for salinity and temperature fluctuations and is therefore typically found in areas where extreme conditions occur nearshore and in areas of minimal water depth. The morphology of its root structure enables shoal grass to effectively colonize open or disturbed areas stabilizing the sediment for the heavier rooted turtle grass. Manatee grass can be found in association with the other two species but is far less common in the park.

Macroalgae are found in association with the seagrass community although they are not as abundant in a climax seagrass bed that is predominantly a monoculture of turtle grass. These include *Penicillus* spp., *Halimeda* spp., *Udotea* spp., *Acetabularia* sp., *Caulerpa* spp. and

Batophora sp. Several non-reef building species of coral can be found in this habitat including finger coral, rose coral, ivory tube coral (*Oculina* spp.), golfball coral (*Favia fragram*), and lobed star coral. These non-reef building coral species are adapted to the higher salinity and temperature conditions of a seagrass bed, and are able to survive in water with higher suspended sediment than is typical of the offshore coral species. Other animals found in the seagrass include echinoderms, crustaceans, fish, worms, sponges, and epiphytic species that attach themselves to the turtle grass blades.

The seagrass beds make up approximately 80 percent; 8,400 acres of the 10,000 acres of submerged land contained by the park. Of this, approximately 503 acres have been damaged by boat grounding events and these areas are only in fair condition. All seagrass beds that are four feet or less in depth at mean high tide are marked by "No Motor Zone" signs delineating the edges of the seagrass flat to aid vessel operators in avoiding areas that are too shallow to safely navigate. Despite these and other aids to navigation such as channel markers, vessel groundings regularly occur, causing damage to the seagrass root and rhizome structures, and in extreme cases, causing topographic damage to the seagrass flat. This damage is in the form of propeller scars, vessel impressions, blowholes and berms. It has been documented that it can take a damaged seagrass flat 10-60 years to recover (Engeman et al 2007, Fonseca et al 2004, Zieman 1976) to its climax community. If topographic damage is greater than twenty-centimeters in depth, the natural community will be unable to recover naturally since seagrass rhizomes are unable to grow with that great a vertical relief. Over time erosion caused by tidal movement and currents will increase the size of the original footprint and there will be continued loss of habitat.

General management measures: Although protection of the resource to prevent damage is a top priority, seagrass restoration is also crucial to repair existing damage and to achieve the desired future condition of the marine grass bed. The park has been conducting seagrass restoration in the 10,000 acres of the LKSLMA since 2005. Funding from grants and other sources has enabled the park to conduct aerial surveys to help management prioritize restoration sites. There are currently 26 restoration sites. Several of the restoration sites are so large that they require multiple funding sources in order to accomplish full restoration. Restoration techniques used at Lignumvitae topographic restoration where necessary and bird stake installation (perches over the restored areas that attract roosting birds) to promote the growth of the pioneer species that responds well to short-term increase in nutrients.

In addition to restoration measures, the park will continue to maintain aids to navigation markers and "No Motor Zone" signs. Additional law enforcement presence on the water will also act as a preventive measure and aid in the protection of the submerged communities of the park.

Education plays an important role in the protection of this habitat. Park staff is involved with the Seagrass Outreach Partnership, a consortium of government, non-government, private and local citizens whose goal is educating the public on the importance of protecting the seagrass.

MANGROVE SWAMP

Desired future condition: Mangrove swamp consists of a low, dense forest occurring on low energy, flat shorelines. Dominant plants include mangrove species. Other species may be present including saltgrass, cordgrass and sea ox-eye daisy.

Description and assessment: The mangrove swamp at Lignumvitae Key is in excellent condition. It occurs on the south side of Lignumvitae Key, is the dominant plant community on Shell Key, occurs on the northern boundary of the Choate tract and the Klopp tract and occurs along the edges of the canals on the Klopp tract. The three species found in the park are red, black and white mangrove. In addition to the marine species found in the mangrove swamp, other species found here include white-crowned pigeon, black whiskered vireo (*Vireo altiloquus*), snowy egret (*Egretta thula*), brown pelican (*Pelecanus occidentalis*), white ibis (*Eudocimus albus*), and roseate spoonbill (*Ajaia ajaja*).

The mangrove swamp is an important community because it provides storm protection, stabilizes the shoreline and traps sediment. It also provides a nursery ground for many species of fish, shrimp, crab, crustaceans, nudibranchs, mollusks, lobster, oysters and barnacles. Detritus is the foundation of the food chain eventually supporting much larger animals including manatee and wading birds.

General management measures: The mangrove swamp at Lignumvitae Key is in excellent condition, although it is impacted by flotsam and jetsam that wash in with tides and storm surges. In order to maintain the desired future condition, periodic removal of this debris is necessary.

MARINE UNCONSOLIDATED SUBSTRATE

Desired future conditions: Marine unconsolidated substrates are characterized as expansive, relatively open areas of subtidal, intertidal, and supratidal zones that lack dense populations of sessile plant species. Unconsolidated substrates are unsolidified material and include coral, algae, marl, mud, mud/sand, sand or shell. This community may support a large population of infaunal organisms as well as a variety of transient planktonic and pelagic organisms. While these areas may seem relatively barren, the densities of infaunal organisms in subtidal zones can be quite numerous, making this habitat an important feeding ground for many bottom feeding fish. Unconsolidated substrates are important because they form the foundation for the development of other marine communities.

Description and assessment: The unconsolidated substrate that occurs in the submerged land of Lignumvitae Key is found in the shallow waters that border Lignumvitae Key and Shell Key, and is found along the edges of and in the navigational channels. Although this habitat type appears barren, it supports a diverse array of infaunal organisms including worms, mollusks, shrimp and crabs. Because of the presence of these organisms, the unconsolidated substrate is an important feeding ground for bottom-dwelling fish, invertebrates and wading birds.

Areas of unconsolidated substrate are also found on the shallow grass flats due to the loss of seagrass from boat grounding events and seagrass die-off. These areas of unnaturally bare substrate are detrimental to the health of the seagrass community because of the loss of the faunal organisms that support a host of fish, invertebrates, crustaceans and mollusks, and which provides important ecological functions to the nearshore and offshore waters of the Florida Keys (See seagrass bed text for habitat description and general management measures).

General management measures: Several navigational channels within the park have expanded beyond the original size as they were delineated by the channel markers. This is a result of cumulative impacts from vessels and their boat wakes coming through the channels, and in some

cases, operating just along the edge of the channel. Over many years, this has resulted in erosion and the widening of the channel, which in turn, has increased the acreage of the marine unconsolidated substrate. In other areas of the submerged land where the marine unconsolidated substrate is interspersed with seagrass bed, it is subject to boat grounding events. However, this habitat within the park is in good condition and the best way to achieve the desired future condition is to maintain the "No Motor Zone" signs to protect the shallow submerged resources.

RUDERAL

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

Description and assessment: The ruderal area on the Klopp tract includes the dredged canals and the north section that is not part of the developed area that includes the land base and the residence. Despite past disturbance, vegetative growth is significant including several imperiled species; Garber's spurge, sky blue morning glory, and yellow hibiscus.

On the Choate tract, ruderal areas include the dredged canals, and the old home site and fishing camp structure across the canal from the former Papa Joe's restaurant.

General management measures: Exotic species projects have targeted the ruderal areas at both the Klopp tract and the Choate tract. In order to achieve the desired future condition of the ruderal areas, it will be necessary to continue with exotic removal projects to prevent their spread into the natural communities of the park.

The structure on the Choate tract is covered with asbestos and needs to be removed from the site.

Park boundary signs and fencing need to be installed on the Choate tract and on the Klopp tract to protect these parcels from unauthorized access.

DEVELOPED

Desired future condition: The developed areas within the park will be managed to minimize the effect of the developed areas on adjacent natural areas. Priority invasive plant species (FLEPPC Category I and II species) will be removed from all developed areas.

Description and assessment: On Lignumvitae Key, the developed areas include the cultural site that consists of the five-acre landscaped area, the Matheson House, chicken coop, hurricane shelter and the remains of an unknown structure, and the wind generator tower. Modern facilities include the dry composting bathroom facility, residence, shop and the dock. The five-acre parcel, its structures and landscape are interpreted for the cultural significance of the Matheson era. Vegetation historic to this period which includes Key lime (*Citrus aurantifolia*), day Jessamine (*Cestrum diurnam*), coconut palm, oleander (*Nerium oleander*), and Surinam cherry (*Eugenia uniflora*) is maintained. Sapodilla, a Florida Exotic Pest Plant Council Category I species, was

also planted during the occupation of the Matheson family. This species was removed from the Matheson House landscape in 2008 because they had spread into the rockland hammock.

Before the development of the land base facility on the Klopp tract, park staff used a room in the Matheson House as office space. With the relocation of office space to the new land base, staff removed modern additions and completed stabilization of the historic house.

The developed area on the Klopp tract includes the land base facility for Lignumvitae Key, Indian Key Historic State Park, Shell Key Preserve State Park and the San Pedro Underwater Archaeological State Park. The land base consists of an office and shop complex, staff parking area, dredged canals and two docks. The park manager's residence was recently constructed to the east of the parking area.

General management measures: Maintenance of exotic species, except where they are part of the cultural landscape on the island will be necessary in order to achieve the desired future condition of the developed areas of the park.

In 2009 in an effort to decrease the cost to supply electricity to the residence on Lignumvitae Key, staff installed batteries that work in conjunction with the generator. This has significantly reduced the amount of diesel fuel required to supply electricity to the residence.

Imperiled Species

Imperiled species are those that are (1) tracked by FNAI as critically imperiled (G1, S1) or imperiled (G2, S2); or (2) listed by the U.S. Fish and Wildlife Service (USFWS), Florida Fish and Wildlife Conservation Commission (FFWCC) or the Florida Department of Agriculture and Consumer Services (FDACS) as endangered, threatened or of special concern.

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

1. Due to the limited access on Lignumvitae Key, the imperiled species found on the island are protected from poaching or other potential impacts. Storm events have occurred since the approval of the last management plan, but these have not adversely impacted the imperiled plant or animal species in the park.

2. A single red stopper tree persists along the edge of the nature trail. No other individuals have been found throughout the hammock.

3. Protection of the imperiled plant species relies on the successful treatment of exotic species. For example, Sapodilla alters both canopy cover and ground cover densities, which then impacts natural recruitment of native species. Removal of the sapodilla trees in the cultural area is significant, as it will prevent further impact of this species on the imperiled species in the rockland hammock.

4. All naturally occurring imperiled plant species have been mapped using a Trimble GPS unit. These were recorded either as individual occurrences, or as polygons occurring

within a natural community. This information will be updated when significant alterations to the habitat occur such as tropical storm or hurricane events.

5. The population of Lignum vitae trees on Lignumvitae Key was surveyed and cataloged during two separate monitoring events. This inventory needs to be updated to evaluate the status of the population, status of the Lignumvitae scale, and the level of successful recruitment.

6. The occurrence of yellow hibiscus and Florida Keys indigo in the park is significant because these species are limited in their range in the Florida Keys and south Florida.

7. There is a small population of Keys tree cactus on the Choate tract that is in good condition. One individual however, has been affected by an unknown pathogen and is in poor condition. Researchers collected soil samples and tissue samples to try and determine the pathogen and the cause of the decline of the individual cactus. A project is planned to augment the population of this species in the vicinity of the naturally occurring population.

8. The coral species found in the park are subjected to impacts from boat grounding damage as well as impacts from coral bleaching events and disease. Regular monitoring will be conducted in order to monitor the status of these species.

9. The population of American crocodile has expanded throughout the Florida Keys and several individuals have been observed within the park.

10. One imperiled butterfly species is found on Lignumvitae Key. The imperiled Schaus' butterfly is recorded for Upper Matecumbe Key.

Table 2: Imperiled Species Inventory

Common & *Scientific* Name	**Imperiled Species Status**				**Management Actions**	**Monitoring Level**
	FFWCC	**USFWS**	**FDACS**	**FNAI**		
PLANTS						
Blodgett's silverbush *Argythamnia blodgettii*			LE	G2,S2	2	Tier 3
Cinnamon bark *Canella winterana*			LE	G5, S2	2	Tier 3
Garber's spurge *Chamaesyce garberi*		LT	LE	G1,S1	2	Tier 3
Yellow hibiscus *Cienfuegosia yucatanensis*			LE	G4, S1	2	Tier 3
Milkbark *Drypetes diversifolia*			LE	G4, S2	2	Tier 3
Red stopper *Eugenia rhombea*			LE	G5, S1	2	Tier 3
Wild cotton *Gossypium hirsutum*			LE	G4, G5, S3	2	Tier 3

Common & *Scientific* Name	**Imperiled Species Status**				**Management Actions**	**Monitoring Level**
	FFWCC	**USFWS**	**FDACS**	**FNAI**		
Lignum vitae *Guajacum sanctum*			LE	G2, S1	2	Tier 3
Florida Keys' indigo *Indigofera mucronata* var. *keyensis*			LE	G5 T1Q, S1	2	Tier 3
Sky-blue morning glory *Jacquemontia pentanthos*			LE	G4G5,S2	2	Tier 3
Joewood *Jacquinia keyensis*			LT	G4,S3	2	Tier 3
Wild dilly *Manilkara jaimiqui* ssp. *emarginata*			LT	G4, S3	2	Tier 3
Passionflower *Passiflora multiflora*			LE	G4,S1	2	Tier 3
Tree cactus *Pilosocereus robinii*		LE	LE	G1,S1	2,3	Tier 4
Florida boxwood *Schaefferia frutescens*			LE	G5,S2	2, 3	Tier 4
West Indian mahogany *Swietenia mahagoni*			LT	G3G4, S3	2	Tier 3
Florida thatch palm *Thrinax radiata*			LE	G4G5, S2	2	Tier 3
INVERTEBRATES						
Knobby brain coral *Diploria clivosa*				G4G5,S2	10,13	Tier 1
Symmetrical brain coral *Diploria strigosa*				G4,S2	10,13	Tier 1
Florida purple wing *Eunica tatila tatilista*				G5T4 T5, S1	10	Tier 2
Boulder star coral *Montastraea annularis*				G5, S2	10,13	Tier 1
Schaus' swallowtail butterfly *Papilio aristodemus ponceanus*		LE		G3G4 T1,S1	10	Tier 2
Massive starlet coral *Siderastrea siderea*				G4,S2	10,13	Tier 1
REPTILES						
Loggerhead turgle		LT		G3, S3	13	Tier 1

Common & *Scientific* Name	**Imperiled Species Status**				**Management Actions**	**Monitoring Level**
	FFWCC	**USFWS**	**FDACS**	**FNAI**		
Carretta carretta						
Atlantic green turtle *Chelonia mydas*		LE		G3, S2	13	Tier 1
American crocodile *Crocodylus acutus*		LE		G2,S2	13	Tier 1
Eastern indigo snake *Drymarchon corais cooperi*		LT		G3, S3	13	Tier 1
Hawksbill turtle *Eretmochelys imbricata*		LE		G3, S1	13	Tier 1
Striped mud turtle *Kinosternon baurii*	ST			G5T2Q, S2	13	Tier 1
BIRDS						
Great white heron *Ardea occidentalis*				G5T2, S2	13	Tier 1
Reddish egret *Egretta rufescens*				G4,S2	13	Tier 1
Peregrine falcon *Falco peregrinus tundrius*				G4,S2	13	Tier 1
Southeastern american kestrel *Falco sparverius*	ST			G5T4,S3	13	Tier 1
Magnificent frigatebird *Fregata magnificens*				G5,S1	13	Tier 1
White-crowned pigeon *Patagioenas leucocephala*	ST			G3,S3	13	Tier 1
Roseate spoonbill *Platalea ajaja*				G5, S2	13	Tier 1
Louisiana waterthrush *Seiurus motacilla*				G5,S2	13	Tier 1
American redstart *Setophaga ruticilla*				G5,S2	13	Tier 1
Least tern *Sterna antillarum*	ST			G4,S3	13	Tier 1
MAMMALS						
West Indian manatee *Trichechus manatus*		LE		G2, S2	13	Tier 2

Management Actions:

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

Monitoring Level:

Tier 1. Non-Targeted Observation/Documentation: includes documentation of species presence through casual/passive observation during routine park activities (i.e. not conducting species-specific searches). Documentation may be in the form of *Wildlife Observation Forms*, or other district specific methods used to communicate observations.

Tier 2. Targeted Presence/Absence: includes monitoring methods/activities that are specifically intended to document presence/absence of a particular species or suite of species.

Tier 3. Population Estimate/Index: an approximation of the true population size or population index based on a widely accepted method of sampling.

Tier 4. Population Census: A complete count of an entire population with demographic analysis, including mortality, reproduction, emigration, and immigration.

Tier 5. Other: may include habitat assessments for a particular species or suite of species or any other specific methods used as indicators to gather information about a particular species.

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

Exotic Species

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

Table 3 contains a list of the Florida Exotic Pest Plant Council (FLEPPC) Category I and II invasive, exotic plant species found within the park (FLEPPC, 2009). The table also identifies relative distribution for each species and the management zones in which they are known to occur. An explanation of the codes is provided following the table.

Numerous exotic removal projects have been conducted by park and district staff and by contractors on all parcels of Lignumvitae Key Botanical State Park. As a result, the island is in a maintenance phase requiring periodic surveys in order to treat species that have re-sprouted or recruited in from other areas. Despite the cultural significance of the sapodilla trees on Lignumvitae Key, removing the mature trees from the five-acre cultural site is a positive step in preventing the spread of this FLEPPC Category I species into the rockland hammock. This will result in the eradication of sapodilla from the island. Due to the sensitivity of Lignumvitae Key, all exotic plant control projects except for the sapodilla project have been conducted by park staff, District 5 staff and exotic plant removal technician teams.

The Choate tract has been subjected to several contract exotic plant removal projects targeting lead tree, Portia, Australian pine and bowstring hemp. Once the plants were treated, Guinea grass recruited in to the treated areas, so follow-up treatment included initial treatment of this species. Other problem species occurring here included Madagascar rubber vine, *Kalanchoe* and night blooming cereus.

The south parcel of the Klopp tract is in good condition with minimal infestation of sapodilla, night blooming cereus and Brazilian pepper. These species have been treated. Periodic surveys to monitor for and retreat infestations will be necessary.

The north parcel of the Klopp tract is more disturbed, and therefore, contains a higher concentration of exotic species including Australian pine, Brazilian pepper, lead tree, night blooming cereus and mahoe. The first exotic plant removal project was completed prior to the construction of the land base facility. Follow-up exotic removal has been conducted at the east end of the parcel by Keys-wide Resource Management Team projects and park staff.

Since the approval of the 2000 Management Plan, approximately 40 acres have been treated on all parcels part of the management of Lignumvitae Key Botanical State Park.

Table 3: Exotic Plant Species Inventory

Common & *Scientific* Name	**FLEPPC Category**	**Distribution**	**Management Zone**
PLANTS			
Sisal hemp *Agave sisalana*	II	2	1
Day jessamine *Cestrum diurnum*	II	1	2
Latherleaf *Colubrina asiatica*	I	0	
Madagascar rubber vine	II	0	

Common & *Scientific* Name	**FLEPPC Category**	**Distribution**	**Management Zone**
Cryptostegia madagascariensis			
Egyptian grass *Dactyloctenium aegyptium*	II	2	5, 8
Surinam cherry *Eugenia uniflora*	I	2	2
Lantana *Lantana camara*	I	2	2
Lead tree *Leucaena leucocephala*	II	3	5
Sapodilla *Manilkara zapota*	I	0	
Natal grass *Melinis repens*	I	2	5, 8
Orange jessamine *Murraya paniculata*	II	1	2
Guinea grass *Panicum maximum*	II	3	8
Bowstring hemp *Sansevieria hyacinthoides*	II	0	
Brazilian pepper *Schinus terebinthifolius*	I	2	5
Portia *Thespesia populnea*	I	0	
Mahoe *Taliparti tiliaceum*	II	1	5
Puncture vine *Tribulus cistoides*	II	2	8

Distribution Categories (FNAI):

0 No current infestation: All known sites have been treated and no plants are currently evident.

1 Single plant or clump: One individual plant or one small clump of a single species.

2 Scattered plants or clumps: Multiple individual plants or small clumps of a single species scattered within the gross area infested.

3 Scattered dense patches: Dense patches of a single species scattered within the gross area infested.

4 Dominant cover: Multiple plants or clumps of a single species that occupy a majority of the gross area infested.

5 Dense monoculture: Generally, a dense stand of a single dominant species that not only occupies more than a majority of the gross area infested, but also covers/excludes other plants.

6 Linearly scattered: Plants or clumps of a single species generally scattered along a linear feature, such as a road, trail, property line, ditch, ridge, slough, etc. within the gross area infested.

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

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

Black rats are occasionally observed on Lignumvitae Key. The population of green iguanas throughout the Florida Keys has significantly increased in the last five years. The concern with this population explosion is the potential impacts on the native plant recruitment if iguanas eat flowers, thus preventing fruits from forming. This is especially of concern for the imperiled species within the park. Feral and domestic cats are also prevalent in the Florida Keys and impact songbirds and nesting birds. When these species are observed in the park, they are removed according to the protocols set forth in the Operations Manual.

No exotic animals have been removed from Lignumvitae Key or its associated parcels since the approval of the current management plan. However, management will pursue the feasibility of contracting the USDA to remove iguanas and feral cats from the park.

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

Special Natural Features

The relatively undisturbed rockland hammock on Lignumvitae Key is one of the special natural features at this site. Limited access to the island has prevented massive land clearing of the upland plant community. As discussed above, nine national champion rockland hammock tree species and a large population of lignumvitae trees are supported on the island.

The extensive seagrass bed community is the second natural feature at this site. Although the seagrass beds have been impacted by boat grounding events, they play an important ecological role by trapping suspended sediment, producing oxygen, stabilizing sediment and providing food and shelter for numerous species, many of which are commercially and recreationally important to the economy of the Florida Keys. The health of this ecosystem is linked to the health of the mangrove ecosystem along the shoreline, and the coral reef ecosystem offshore.

Cultural Resources

This section addresses the cultural resources present in Lignumvitae Key Botanical State Park that may include archaeological sites, historic buildings and structures, cultural landscapes and collections. The Florida Department of State (FDOS) maintains the master inventory of such resources through the Florida Master Site File (FMSF). State law requires that all state agencies locate, inventory and evaluate cultural resources that appear to be eligible for listing in the National Register of Historic Places. Addendum 7 contains the FDOS, Division of Historical Resources (DHR) management procedures for archaeological and historical sites and properties on state-owned or controlled properties; the criteria used for evaluating eligibility for listing in the National Register of Historic Places, and the Secretary of Interior's definitions for the various preservation treatments (restoration, rehabilitation, stabilization and preservation).

For the purposes of this plan, significant archaeological site, significant structure and significant landscape means those cultural resources listed or eligible for listing in the National Register of Historic Places. The terms archaeological site, historic structure or historic landscape refer to all resources that will become 50 years old during the term of this plan.

Condition Assessment

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

Level of Significance

Applying the criteria for listing in the National Register of Historic Places involves the use of contexts as well as an evaluation of integrity of the site. Every cultural resource's significance derives from historical, architectural or archaeological contexts. Evaluation will result in a designation of NRL (National Register or National Landmark Listed or located in an NR district), NR (National Register eligible), NE (not evaluated) or NS (not significant) as indicated in the table at the end of this section.

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

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

Pre-Historic and HistoricArchaeological Sites

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

Description: The Florida Master Site File lists nine archaeological sites in Lignumvitae Key Botanical State Park. Three of these listed archaeological sites, MO00013, MO00014 and MO01446, are also included as contributing sites within the Lignumvitae Key Archaeological and Historical District (MO00210).

Occupation of Lignumvitae Key dates to the Glades period. There is evidence that the Calusa were already present in this region when Europeans arrived in the early 1500s. The fact that the burial site on Lignumvitae Key (MO00013) indicates little or no habitation, and that the sites on Indian Key, Upper Matecumbe Key, Lower Matecumbe Key and Teatable Key represent chiefly occupational remains with little or no human remains suggests that these deposits were created by one coherent group that traveled back and forth between the islands. The burial site is located in an isolated and difficult to access area in the mangroves, so it is in good condition and has not been subject to tampering.

Lignumvitae Key was mapped as early as 1760 and named "Cayo de la Lena" which means Isle of Wood. When the English took control of south Florida, the name was changed to Jenkinson Island. The name was later changed during the wrecking period in the early 1800s to "Lignurd Vetoz." It was during this time that residents of Indian Key began using the island for planting crops including sisal. In the late 1800s to early 1900s, coconuts were planted by Thomas and Edward Hine. At some point during this time period the island was renamed Lignumvitae Key.

The archaeological site located on the Choate tract on Upper Matecumbe Key (MO00017) was first recorded by John Goggin in 1947. Surveys that are more recent were conducted in 2002, 2004, and 2005 with two new sites added to the Florida Master Site File during the 2005 survey. The pre-historic midden on the Choate tract was impacted during construction of a boat basin on the property. This large shell midden represents Glades II and Glades III cultural periods, and although it has been subjected to looting, it is considered to be in good condition and relatively intact.

Two new sites were recently recorded on the Choate tract. One site (MO01885) is an historic quarry dating sometime between 1914 and 1935 associated with construction of the Overseas Highway (U.S. Highway 1). The second site (MO01886) represents an historic artifact scatter believed to be a result of the storm surge from the 1935 Labor Day Hurricane.

The two underwater archaeological sites (MO01335 and MO01336) are historic shipwrecks and are located on the ocean side of U.S. Highway 1.

The stone wall located on the west side of the island (MO01446) is of unknown origin. It is speculated that it was built by the Spaniards and used for cattle or for slave residences on the western side of the wall. No evidence has ever been found to corroborate either story.

Although Indian Key Historic State Park is a separate park with its own Unit Management Plan, the Indian Key site (MO00015) is also included in the FMSF for Lignumvitae Key.

Condition Assessment: The burial site on Lignumvitae Key (MO00013), the midden on the Choate tract (MO00017), and the stone wall (MO01446) are in good condition. Because of the limited access to Lignumvitae Key, the burial site and stonewall are easier to protect from human disturbance. The midden on the Choate tract is more vulnerable to alteration either in the form of direct looting and disturbance, or by general site disturbance.

Due to the fact that the historic sites on the Choate tract consist of a quarry (MO01885) and scattered debris from the 1935 Labor Day Hurricane (MO01886), it is difficult to assess their condition.

The two historic shipwrecks are buried below the substrate, and therefore, their condition is unknown. State archaeologists conducting inspections of these sites are the only authorized staff to disturb the substrate. All seagrass restoration within Lignumvitae Key Submerged Land Managed Area is subject to review by the DHR of in order to ensure the protection of these two sites.

Level of Significance

Three archaeological sites, MO00013, MO00014 and MO01446, are listed on the National Register of Historic Places as contributing sites within the Lignumvitae Key Archaeological and Historical District (MO00210). These sites are considered significant under National Register Criterion D for their potential to yield information about prehistoric and historic occupations of the island.

Three sites on the Choate tract on Upper Matecumbe Key and an historic shipwreck are considered potentially eligible for the National Register. MO00017 is considered likely eligible as a site that was instrumental in the development of south Florida's historic ceramic typology. MO01885, a quarry site, is considered potentially eligible in association with other sites relative to the construction of the Overseas Highway, and MO01885, a hurricane debris site, in association with other storm surge events relative to the 1935 Labor Day Hurricane. MO01335 is considered eligible for it potential to yield significant information about historic shipwrecks.

Indian Key (MO00015) is listed on the National Register of Historic Places and is included in the FMSF for Lignumvitae Key. However, as the majority of the site lies within the current boundaries of Indian Key Historic State Park, discussion of the site's significance is not included with this Unit Management Plan for Lignumvitae Key.

General management measures: Protection of the seagrass beds in Lignumvitae Key Submerged Land Managed Area is the best way to protect the archaeological sites located in the vicinity of Indian Key.

The midden on the Choate tract will need additional protection in order to achieve the desired future condition. The looting holes should be filled in to maintain the integrity of the site, and the boundary needs to be posted and/or fenced in order to prevent unauthorized access. This will also protect the other archeological sites on this parcel.

In order to maintain the integrity of the stone wall; vegetation is regularly removed to prevent damage from root structures.

Historic Structures

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

Description: The FMSF individually lists one historic structure, the Matheson House (MO03447) in Lignumvitae Key Botanical State Park. The Matheson House and the cistern and hurricane shelter located next to the house are also listed as contributing historic structures in the Lignumvitae Key Archaeological and Historical District (MO00210).

Most of the construction on the island occurred during the early 1900s after the Matheson family took ownership of the island. The Matheson House is listed on the National Register of Historic Places but other structures associated with this time period are the chicken coop, cistern, hurricane shelter and the remains of smaller houses where the workers on the island lived. This is all part of the five-acre parcel that is interpreted for the Matheson era.

Matheson fenced the grove that had been established by the Hines brothers and additional agricultural plants were planted and sold on the mainland. Matheson also used heavy machinery to establish trails through the hammock. These trails are still used today for interpreted walks led by park rangers. The machinery that was left on the island includes a 1936 Dodge truck, a rock crusher and a large Caterpillar treaded tractor.

Condition Assessment: The Matheson House and its associated structures are in good condition. Because of the limited access to Lignumvitae Key, the historical structures and surrounding landscape are fairly easy to protect from human disturbance.

Level of Significance

The Matheson House (MO03447) and the cistern and hurricane shelter located next to the house are listed on the National Register of Historic Places as contributing structures within the Lignumvitae Key Archaeological and Historical District (MO00210). These structures are considered significant under National Register Criterion C as superior examples of vernacular architecture adapted to its location and use in the Upper Florida Keys.

General management measures: When the park offices were moved offsite from the Matheson House, the house was stabilized and the bathroom facilities removed from underneath the structure. However, there are roof shakes that need to be replaced due to damage from the 2004 and 2005 hurricane seasons.

Collections

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

Description: Most of the collections that are housed in the Matheson House are artifacts from Indian Key. However, what is found here that is part of the historical and cultural resources of Lignumvitae Key are displays with butterfly and *Liguus* tree snail collections and two oil original oil paintings. One of these was donated by Koreshan Historic State Park and it depicts the wrecking industry, and was considered more applicable to be an interpretive display in the Florida Keys. The furniture represents the type of furniture used during this time period, but is not the original furniture used by the Matheson family.

Records kept by the former caretakers, Russell and Charlotte Niedhawk are located at the landbase facility on lower Matecumbe Key. Machinery on the island from the Matheson era consists of a 1936 Dodge truck; Caterpillar treaded tractor and rock crusher.

Condition Assessment: The machinery on Lignumvitae Key has been subjected to the marine environment since the early 1900s and is only in fair condition.

The Niedhawks' records are currently stored in boxes and need to be evaluated in order to determine their condition.

Level of Significance

The furniture and most of the furnishings within the Matheson House, while not original to the property, are representative of what would have been used throughout the occupancy of the house from the Mathesons through the Niedhawks (the early 1900s to the 1970s). It is not meant to convey any one particular period of time, but the transition of owners and occupants throughout the years. The collection of machinery on the island reflects not only the historic activities of the island's former occupants, but their self-reliance in an isolated environment. The Niedhawks' records are an especially important resource in providing original documentation of what occurred on the island during the time they were its caretakers (1953-1970).

Discussion of significance of artifact collections solely associated with Indian Key, but housed in the Matheson House, is not included with this Unit Management Plan for Lignumvitae Key. Detailed information on the Indian Key collections can be found in the cultural resources section of the Indian Key Historic State Park Unit Management Plan.

General management measures: The machinery on Lignumvitae Key requires protection from the harsh elements of the marine environment. A Cyclical Maintenance Plan needs to be drafted to give guidance to park management on methods and time frames in order to prevent continual deterioration.

The records maintained by Russell and Charlotte Niedhawk need to be evaluated, catalogued and stored in a climate controlled environment.

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

Table 4: Cultural Sites Listed in the Florida Master Site File

Site Name and FMSF #	Culture/Period	Description	Significance	Condition	Treatment
Lignumvitae Mound MO00013	Prehistoric	Archaeological Site	NRL	G	ST
Lignumvitae Key stone structure MO00014	Glades IIIc, Spanish 1st or 2nd	Archaeological Site	NRL	G	P
Indian Key MO00015	American 1821-Present	Archaeological Site	NRL	G	ST
Upper Matecumbe Key MO00017	Glades II a-c, Glades III a-c	Archaeological Site	NR	G	ST
Lignumvitae Key Archaeological and Historical District MO00210	Glades II & III, A.D. 800-1513, c1830-1948	District	NRL	G	P
Indian Key Anchorage MO01335	1st Spanish Period 1513-1763, 2nd Spanish Period 1783-1821, American Acquisition & Development, 1821-1845	Archaeological Site	NR		P
Tea Table Anchorage MO01336	Glades IIIc, 1st Spanish Period 1513-1763, 2nd Spanish Period 1783-1821, American	Archaeological Site	NE		P

Site Name and FMSF #	Culture/Period	Description	Significance	Condition	Treatment
	Acquisition & Development, 1821-1845				
Lignumvitae Key Stone wall MO01446	Unknown	Archaeological Site	NRL	G	ST
Choate Construction Basin MO01885	American - 20th Century	Archaeological Site	NR	G	P
Hurricane debris MO01886	Depression/ New Deal 1930-1940	Archaeological Site	NR	G	P
Matheson House MO03447	Early 20th Century	Historic Structure	NRL	G	P

Significance

NRL National Register listed
NR National Register eligible
LS Locally Significant
NE Not evaluated
NS Not significant

Condition

G Good
F Fair
P Poor

Recommended Treatment

RS Restoration
RH Rehabilitation
ST Stabilization
P Preservation
R Removal

RESOURCE MANAGEMENT PROGRAM

Management Goals, Objectives and Actions

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

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

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

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

Natural Resource Management

Hydrological Management

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

The natural hydrology of most state parks was impaired prior to acquisition to one degree or another. Florida's native habitats are precisely adapted to natural drainage patterns and seasonal water level fluctuations, and variations in these factors frequently determine the types of natural communities that occur on a particular site. Even minor changes to natural hydrology can result in the loss of plant and animal species from a landscape. Restoring state park lands to original natural conditions often depends on returning natural hydrological processes and conditions to the park. This is done primarily by filling or plugging ditches, removing obstructions to surface

water "sheet flow," installing culverts or low-water crossings on roads, and installing water control structures to manage water levels.

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

As is the case with the impact of canals in south Florida and the Florida Keys disrupting hydrological flow and lowering of the water table, the canals on the Klopp tract and the canals, and the boat basin on the Choate tract impact these parcels. However, it is not feasible to restore these canals to their original topography. On the Klopp tract, they now function as navigational channels. The quarry on the Choate tract has historical significance since it was used during the construction of Flagler's railroad so altering this to the original topography is not applicable. Therefore, there are no hydrological restoration needs to be addressed at Lignumvitae Key Botanical State Park.

Objective: Conduct an assessment on the condition of the solution holes on Lignumvitae Key.

Two solution holes near the shop area were historically used as dumps by previous owners of the island. In the past, park staff had attempted to remove material from one of these solution holes, but soil testing determined that it contained toxic material so work ceased. The second solution hole has been covered over by cement and it is unknown what lies beneath the cement. Both solution holes need to be evaluated and removed by indivdiuals who are qualified to manage toxic waste removal projects.

Natural Communities Management

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

As discussed above, DRP practices natural systems management. In most cases, this entails returning fire to its natural role in fire-dependent natural communities. Other methods to implement this goal include large-scale restoration projects as well as smaller scale natural communities' improvements. Following are the natural community management objectives and actions recommended for the state park.

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

Examples that would qualify as natural communities' restoration, requiring annual restoration plans, include large mitigation projects, large-scale hardwood removal and timbering activities, roller-chopping and other large-scale vegetative modifications. The key concept is that restoration projects will go beyond management activities routinely done as standard operating procedures such as routine mowing, the reintroduction of fire as a natural process, spot treatments of exotic plants, small-scale vegetation management and so forth.

Following are the natural community/habitat restoration and maintenance actions recommended to create the desired future conditions in the one community at Lignumvitae Key Botanical State Park.

> ***Objective: On average, restore approximately two acres per year of the 503 acres of damaged marine grass bed community in Lignumvitae Key Submerged Land Managed Area and conduct necessary follow-up management activities.***

Of the 8,400 acres of seagrass within Lignumvitae Key Submerged Land Managed Area, approximately 503 have been damaged by grounding events in the form of propeller scars, blowholes and berms. Seagrass rhizomes are unable to grow if the vertical depth is greater than 20cm so it is necessary to restore the topography to the grade of the surrounding seagrass flat as the first step in restoration. If topographic restoration is not conducted, the injury feature will be subjected to both vertical and horizontal erosion causing the footprint of the injury to increase in size and depth. Therefore, DRP has developed and is implementing a restoration plan for this natural community within the boundaries of both Indian Key Historic State Park and Lignumvitae Key Botanical State park.

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

The natural communities at Lignumvitae Key do not require habitat manipulation or vegetative management to reach their desired future goals. Instead, the park will focus on restoration and exotic removal in order to achieve the desired future condition for these communities.

Imperiled Species Management

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

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

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

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

Objective: Monitor and document four imperiled coral species in the park.

1. Four imperiled coral species – *Diplora strigosa, Diplora clivosa, Montastraea annularis,* and *Siderastrea siderea*, will be monitored annually for presence/absence, overall condition, disease, physical impacts, and bleaching.

2. Park staff conducts coral monitoring in John Pennekamp Coral Reef State Park as part of the park's coral reef survey project and as part of the Nature Conservancy's Florida Reef Resilience Project. Established survey protocols for these projects will be modified to survey this site.

3. Monitoring will be conducted by park staff knowledgeable in the identification of Caribbean coral species and their diseases.

Objective: Monitor and document all of the imperiled plant species in the park.

1. All naturally occurring imperiled species have been mapped using a Trimble GPS unit. These were recorded either as individual occurrences, or as polygons occurring within a natural community. This data will be updated when significant events occur such as a tropical storm or hurricane, which would potentially impact population distribution and density.

2. Update survey of lignum vitae trees on Lignumvitae Key

Objective: Augment the population of the endangered Keys tree cactus on the Choate tract.

1. Continue to collaborate with researches from Fairchild Tropical Botanic Garden (FTBG) on augmenting the population of the endangered Keys tree cactus at the Choate tract on Upper Matecumbe Key. Site selection has been conducted including elevation measurements, soil samples and canopy cover. This project is a coordinated effort between FTBG, the Florida Park Service (FPS), and the US Fish and Wildlife Service. Fruits have been collected from several public lands in the Florida Keys and once there is sufficient maternal stock from each genotype (100/genotype), then the individuals will be out planted in the park. Monitoring will be conducted by FTBG and FPS staff.

2. The existing population will continue to be monitored as part of this project.

Objective: Conduct population dynamics study of the imperiled Schaus' swallowtail butterfly.

The Schaus' swallowtail butterfly is recorded for Upper Matecumbe Key, but the current population size and distribution in the park is unknown. This study would entail surveying the Choate tract to determine if the Schaus' swallowtail butterfly adult or larvae are present.

Exotic Species Management

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

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

Objective: Annually treat 2 ¼ acres of exotic plant species in the park.

Park staff, district staff and Resource Management Team projects will conduct exotic removal treatment at Lignumvitae Key, the Choate tract and the Klopp tract for Category I and II species. The goal will be to treat exotic species that either have re-sprouted or have recruited into the site following previous exotic removal treatments.

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

When black rats, green iguanas and feral or free roaming cats are observed in the park, they will be removed according to the guidelines outlined in DRP's Operations Manual. Management will investigate the feasibility of contracting the USDA to conduct this removal.

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. During the development of this plan, an analysis was made regarding the feasibility of timber management activities in the park. It was determined that the primary management objectives of the unit could be met without conducting timber management activities for this management plan cycle.

Arthropod Control Plan

All Division lands are designated as "environmentally sensitive and biologically highly productive" in accordance with Ch. 388 and Ch. 388.4111. If a local mosquito control district proposes a treatment plan, the Division responds within the allotted time and reaches consensus with the mosquito control district. By policy of the Department since 1987, no aerial adulticiding is allowed, but larviciding and ground adulticiding (truck spraying in public use areas) is typically allowed. The Division does, not authorize new physical alterations of marshes through ditching, or water control structures. Mosquito control plans temporarily may be set aside under declared threats to public or animal health, or during a Governor's Emergency Proclamation.

Cultural Resource Management

Cultural Resource Management

Cultural resources are individually unique, and collectively, very challenging for the public land manager whose goal is to preserve and protect them in perpetuity. DRP is implementing the following goals, objectives and actions, as funding becomes available, to preserve the cultural resources found in Lignumvitae Key Botanical State Park.

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

The management of cultural resources is often complicated because these resources are irreplaceable and extremely vulnerable to disturbances. The advice of historical and archaeological experts is required in this effort. All activities related to land clearing, ground disturbing activities, major repairs or additions to historic structures listed or eligible for listing in the National Register of Historic Places and collections care must be submitted to the FDOS, DHR for review and comment prior to undertaking the proposed project. Recommendations may include, but are not limited to concurrence with the project as submitted, pre-testing of the project site by a certified archaeological monitor, cultural resource assessment survey by a qualified professional archaeologist, modifications to the proposed project to avoid or mitigate potential adverse effect. In addition, any demolition or substantial alteration to any historic structure or resource must be submitted to DHR for consultation and DRP must demonstrate that there is no feasible alternative to removal and must provide a strategy for documentation or salvage of the resource. Florida law further requires that DRP consider the reuse of historic buildings in the park in lieu of new construction and must undertake a cost comparison of new development versus rehabilitation of a building before electing to construct a new or replacement building. This comparison must be accomplished with the assistance of DHR.

Objective: Assess and evaluate eight of eleven recorded cultural resources in the park.

Due to the fragile nature of the midden on Lignumvitae Key, and the sensitive habitat where this is located, this site will be periodically examined for integrity. The historical shipwrecks are below the substrate in the submerged communities of the park, and it is not feasible to unearth these sites in order to assess their condition. In the event that a storm event or physical damage by boat grounding events alters these sites, then State archaeologists will be employed to evaluate the remains and/or damage.

Because the Matheson House and associated structures are part of the guided tours conducted by park staff, their condition is regularly assessed. However, a more detailed inspection of the outside of the structure will be scheduled periodically.

The stone wall is regularly inspected for vegetative growth that is treated in order to protect the integrity of the wall. In addition, any loose stones are put back in place.

The cultural sites on the Choate tract are more vulnerable to impacts due to the location of the parcel. Park boundary signs and a fence will aid in the protection of these sites.

Indian Key is managed by Lignumvitae Key staff but is considered a separate unit and will be evaluated according to the Unit Management Plan for the park.

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

There have been extensive archaeological surveys conducted on Lignumvitae Key, with no known sites that need to be added to the Florida Master Site File. The Choate tract has also had a significant amount of archaeological surveys conducted. However, it is believed that there are human burials in the vicinity of the Choate tract from the 1935 Labor Day Hurricane. This will need to be investigated to determine if they are found on the Choate tract or on the private land to the north.

Objective: Maintain eight of 11-recorded cultural resources into good condition.

Eight of the eleven cultural resources are in good condition. The condition of the submerged sites is unknown. Regular assessment and management action, as appropriate, will insure the continued protection of these resources.

The roof of the Matheson House needs to have a few of the roof shakes replaced. The machinery on Lignumvitae Key is part of the cultural history of the park but is not delineated as a separate cultural resource. However, it does require restoration in order to prevent deterioration from the marine environment. A Cyclical Maintenance Plan for the machinery needs to be developed and implemented. Protection of the submerged historic shipwrecks in the park will continue to protect the submerged cultural resources.

The midden on the Choate tract needs to have the looter holes filled in to protect the integrity of this site. Park boundary signs and a fence will also protect this site and the other cultural sites on this parcel from unauthorized access.

Resource Management Schedule

A priority schedule for conducting all management activities that is based on the purposes for which these lands were acquired, and to enhance the resource values, is located in the Implementation Component of this management plan.

Land Management Review

Section 259.036, Florida Statutes, established land management review teams to determine whether conservation, preservation and recreation lands titled in the name of the Board of Trustees are being managed for the purposes for which they were acquired and in accordance with their approved land management plans. The managing agency shall consider the findings and recommendations of the land management review team in finalizing the required update of its management plan.

Lignumvitae Key Botanical State Park was subject to a land management review on January 24, 2000. The most recent LMR was conducted in November 2010. 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 Florida Department of Environmental Protection (DEP), Division of Recreation and Parks (DRP). These responsibilities are to preserve representative examples of original natural Florida and its cultural resources, and to provide outdoor recreation opportunities for Florida's citizens and visitors.

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

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

Lignumvitae Key Botanical State Park is located within Monroe County, about one and a half miles north of Lower Matecumbe Key and U.S. Highway 1.

Shell Key State Preserve is located about one mile east of Lignumvitae Key, and approximately one mile north of Upper Matecumbe Key. The Lignumvitae Key Submerged Land Management Area is an addition to the DRP's lease to include a large open water area within the park boundary. Both of the island sites are accessible only by boat. . The Indian Key fill site along the U.S. Highway 1 causeway is leased from the Florida Department of Transportation (FDOT) and is managed as part of Lignumvitae Key Botanical State Park. An interpretive kiosk at this site provides information on the parks in the Lignumvitae Island Complex, and refers visitors to a nearby private marina that offers boat trips to Lignumvitae Key and Indian Key. Across the U.S. Highway 1 causeway, to the south, lays Indian Key State Historic Site.

Existing Use of Adjacent Lands

Upper Matecumbe Key is heavily developed with mixed commercial and residential uses. Lower Matecumbe Key is less developed, with a greater proportion of land in residential use. Intensive recreational boating and fishing activities occur in the waters surrounding Lignumvitae Key and Shell Key.

Planned Use of Adjacent Lands

Continued development is anticipated, especially on the undeveloped portions of Upper and Lower Matecumbe Key. Potential effects of future population growth in the Middle Keys include increased visitation, increased boating activities within the boundary of the park, and increased traffic congestion on U.S. Highway 1. Potential concerns with additional boating activities include increased water pollution and destruction of natural features. the DRP staff will continue to work with the city, Monroe County and other planning and resource management agencies, to coordinate its park management and development efforts with all applicable land use and resource management guidelines and regulations.

PROPERTY ANALYSIS

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

Recreation Resource Elements

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

Land Area

Lignumvitae Key is the slightly larger of the two islands that comprise the state park. The island is the only readily accessible Florida Key that is still in its natural state. Lignumvitae Key was chosen as the state’s first botanical site because of its rare and delicate ecosystem. It evolved over many centuries on exposed corals, building up land and forest together, and capturing species from the coast of Florida and from the Caribbean. A rockland hammock covering about 80 percent of the island is one of the best remaining examples of this natural community. The largest trees have trunks are more than two feet in diameter and stand as tall as 70 or 80 feet. A mangrove community on the eastern and southern fringes of the island occupies about 15 percent of the island and transition zone areas compromise the remaining 5 percent. A dock on the eastern side of the island provides the only designated public access to the site. The historic Matheson House, near the eastern side of the island, serves a visitor center for the park.

Shell Key is primarily a mangrove island. This mangrove community is regularly inundated by tidal waters of the Gulf. Shell Key has remained undisturbed because of its mangrove-lowland character. It is significant as a marine nursery.

The property under the DRP management includes an area on Lower Matecumbe Key, known as the Klopp Tract. Uplands of the property front on U.S. Highway 1, and contain disturbed uplands and navigable canals. The purpose for the DRP's acceptance of management authority for the Klopp Tract in 1995 was to protect and restore natural vegetative communities to the disturbed areas while providing a small development area for public access and park operations facilities for the three park units nearby.

Water Area

The shallow water surrounding most of the island is a popular attraction for boaters. Snorkeling and fishing are the primary activities of these visitors, although canoeing and kayaking activities are now the fastest-growing offshore recreational use in the Keys, a trend that is being observed in the area of this park. Beaching of boats on the shoreline and anchor damage to the submerged communities are management problems associated with boating, not canoeing/kayaking.

The management boundary of the Lignumvitae Island complex also includes approximately 10,000 acres of submerged land. The majority of the Submerged Land Management Area (SLMA) is on the Gulf side, but a portion of the management boundary extends across the highway to the Atlantic and includes submerged land around Indian Key State Historic Site. This special management area was created under the direction of the Governor and Cabinet, as a measure to protect sea grasses and other aquatic resources adjacent to the two state parks. Management techniques currently being used in this area include reduced speed zones, prohibition of motor boats in water less than four feet deep at high tide, buffer zones for bird roosting, nesting and feeding areas, and marked channels. Mooring buoys are available in some areas to protect sea grass beds from anchor damage.

Shoreline

Two-thirds of the Lignumvitae Key Shoreline is mangrove community with little or no public access. The southern third is the coastal rock barren community. A footpath through this community has been blocked for resource protection purposes. Visitor use of the shoreline should not be encouraged.

Natural Scenery

The mixture of native and exotic plant species, historic structures and occasional views through the vegetation to the open water create striking scenery at Lignumvitae Key.

Significant Wildlife Habitat

As discussed in the resource management component the offshore waters and submerged communities surrounding the island are attractive marine habitats that need of protective management of boating activities.

Archaeological and Historical Features

The Tequesta Native Americans lived in the Keys, and used Lignumvitae Key as a burial place. Preliminary investigations of the burial mound on the southwest side of the island revealed the presence of human bones believed to be around 1,000 years old.

The most notable historic features of the park were developed during the period the island was owned by the Matheson family from 1919 to 1953. The Matheson House, built in 1919, was constructed from Key Largo limestone and South Florida slash pine, also known as Dade County pine. A 12,000-gallon cistern, adjacent to the house, provided the island's only source of drinking water. The Matheson House has been renovated, and now serves as a visitor center for the botanical site. The surrounding grounds are managed to resemble their appearance during the Matheson era.

The oldest evidence of structures found on Lignumvitae Key is the two foundations and a rock wall, which predate any available written records. The two foundations apparently were small buildings located on opposite sides of the island. The other structure is a 3,000-foot rock wall.

Shell Key has no known archaeological features. Some pilings from a small stilt house, thought to be a fish camp constructed during the 1930s or 1940s, are located on Shell Key.

Assessment of Use

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

Past Uses

William H. Bethel, a Bahamian, lived on Lignumvitae Key and cultivated limes, pineapples, watermelons, and sisal when the island was surveyed in 1873. In 1888, brothers Thomas and Edward Hine acquired the island to raise their crops in sinkholes, a Bahamian technique called "potholing" or "kettle farming."

William Matheson from Coconut Grove purchased Lignumvitae Key in 1919, and built the Matheson House the same year. The key remained in family ownership until 1953 when his son, Hugh Matheson, died.

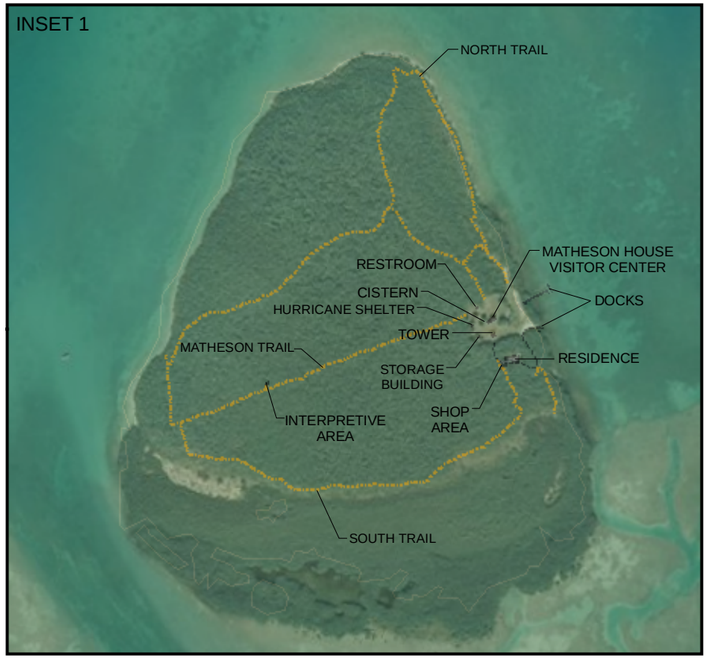
Nelson Pearson, J. Abney Cox and E.C. Lunsford bought Lignumvitae Key in 1953. In the 1960s, attempts were made by one owner to link the island to U.S. Highway 1. Local opposition blocked the construction of a causeway from Indian Key Fill to the east side of the key.

Shell Key has had very limited human use because of its mangrove-lowland character. Consequently, it remains an undisturbed mangrove community.

Future Land Use and Zoning

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

The Future Land Use as listed in the 2010 Monroe County comprehensive plan is conservation. This designation does not create any conflict with the planned use of Lignumvitae Key Botanical State Park.



LIGNUMVITAE KEY BOTANICAL STATE PARK

N

0 1,625 3,250 6,500 Feet

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

BASE MAP

Current Recreational Use and Visitor Programs

The present interpretive and recreational use at Lignumvitae Key Botanical State Park includes a guided tour that commences from the Matheson House visitor center. A nature trail of about one and a half miles provides ranger-led access to the rockland hammock on the island. Because of the rich cultural and natural resources of the site, all other public access is restricted. Access to the site is by way of private boats or charter boats from nearby marinas. Currently, the DRP contracts ferry service with a nearby private marina. Power boating, canoeing and kayaking, sport fishing, snorkeling and diving are popular recreational activities that occur within the submerged land surrounding the Lignumvitae Island Complex. There is no authorized public recreational use of Shell Key.

Lignumvitae Key Botanical State Park recorded 32,904 visitors in FY 2010/2011. By DRP estimates, the FY 2010/2011 visitors contributed nearly $2 million in direct economic impact and the equivalent of 39.6 jobs to the local economy (Florida Department of Environmental Protection, 2009).

Other Uses

Submerged land within the boundary of the state historic site has historically been used for a variety of commercial activities, including lobstering, stone crabbing, commercial sport fishing, tropical fish collecting, commercial bait fishing and sponging.

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.

The entire island of Lignumvitae Key has been designated as a protected zone because of the sensitivity of the natural and cultural resources. At Shell Key State Preserve, the entire island has been designated as a protected zone because of the sensitivity of the undisturbed mangrove habitat. The submerged land management area, all mangrove wetlands and the restored uplands southwest of the park support area located on Lower Matecumbe Key are also designated as protected zones.

Existing Facilities

Recreation Facilities

Matheson House Visitor Center

Residence
Cisterns (2)
Shop

On Lower Matecumbe Key:

Shop/office building
Fuel storage

Nature Trail (1.5 mi.)

Support Facilities

Generator shed
Public dock (470 ft.)
Service dock
Dock (300 ft.)
Residence

There are no facilities on Shell Key.

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.

The conceptual land use plan described here is the long-term, optimal development plan for the park, based on current conditions and knowledge of the park's resources, landscape and social setting. The development plan will be reassessed during the next update of the park management plan, and modified to address new conditions, as needed.

During the development of the management plan, the DRP assessed potential impacts of proposed uses or development on the park resources and applied that analysis to decisions on the future physical plan of the park as well as the scale and character of proposed development. Potential impacts are more thoroughly identified and assessed as part of the site planning process once funding is available for facility development. At that stage, design elements (such as existing topography and vegetation, sewage disposal and stormwater management) and design constraints (such as imperiled species or cultural site locations) are more thoroughly investigated. Municipal sewer connections, 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

Public Access and Recreational Opportunities

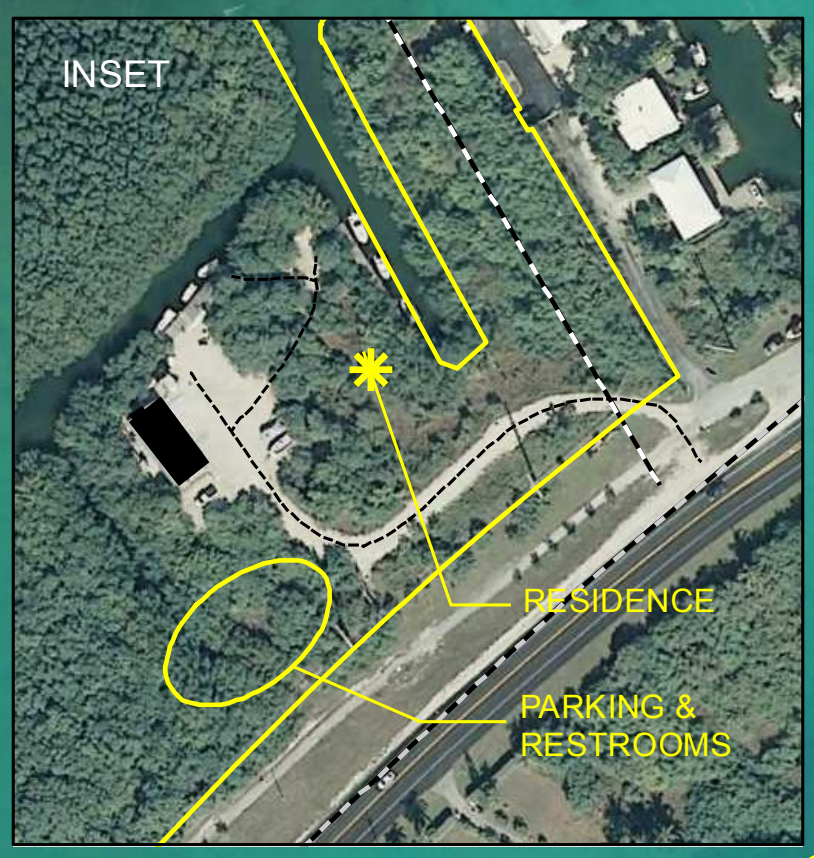
Goal: Provide public access and recreational opportunities in the park.

The existing recreational activities and programs of this state park are appropriate to the natural and cultural resources contained in the park and should be continued. No new recreational or interpretive facilities are proposed by thismanagement plan.

Objective: Maintain the park's current recreational carrying capacity of 50 users per day.

The park will continue to provide opportunities for visitor access to the visitor center and nature trails the island.

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



FLORIDA BAY

LIGNUMVITAE KEY BOTANICAL STATE PARK
SUBMERGED LAND BOUNDARY

SHELL KEY PRESERVE

SHELL KEY

RACE CHANNEL

YELLOW SHARK

UPPER MATECUMBE KEY

LIGNUMVITAE KEY BOTANICAL STATE PARK

LIGNUMVITAE KEY BANK

LIGNUMVITAE CHANNEL

INDIAN KEY FILL BOAT LAUNCH IMPROVEMENTS

US-1

INDIAN KEY FILL

TEATABLE KEY CHANNEL

INDIAN KEY CHANNEL

INDIAN KEY HISTORIC STATE PARK

HAWK CHANNEL

SEE INSET

LIGNUMVITAE KEY BOTANICAL STATE PARK
SUBMERGED LAND BOUNDARY

LOWER MATECUMBE KEY

ATLANTIC OCEAN

LEGEND
PARK BOUNDARY
PROTECTED ZONE

LIGNUMVITAE KEY
BOTANICAL STATE PARK

N

0 0.25 0.5 1 Miles

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

CONCEPTUAL LAND USE PLAN

The current interpretive/education program includes Ranger-led tours twice daily, three times a week on Lignumvitae Key. This program will be continued with other tours to be provided on a case-by-case basis depending on current staffing and time frame of request. There are no plans for expanding the repertoire of interpretive or educational programs due to the current availability of staff coverage.

Proposed Facilities

Capital Facilities and Infrastructure

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

The existing facilities of this state park are appropriate to the natural and cultural resources contained in the park and should be maintained. New construction, as discussed further below, is recommended to improve the protection of park resources and to streamline the efficiency of park operations. The following is a summary of improved and new facilities needed to implement the conceptual land use plan for Lignumvitae Key Botanical State Park.

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

All capital facilities, trails and roads within the park will be kept in proper condition through the daily or regular work of park staff and/or contracted labor.

Objective: Improve/repair existing facilities on site.

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

The support facilities on Lignumvitae Key constructed during the 1970s do not meet current needs for sustainability and energy conservation. Renovations on the ranger residence should be undertaken to reduce energy requirements and reduce or eliminate exhaust emissions from the diesel generator now used for electrical service. A photovoltaic system should be considered for use as the primary source of electricity, with the existing generator retained as a backup

Objective: Construct new facilities on site, as needed.

A park residence is proposed for construction on Lignumvitae Key adjacent to the park's support building and docks. If in the future, a visitor service provider is not available to provide ferry service to Lignumvitae Key and Indian Key, the DRP will need to provide public access at this land base. This will require construction of up to 30 parking spaces and restroom facilities in the area shown in the Conceptual Land Use Plan.

Boat launching at the Indian Key Fill is a traditional activity. Improvements are recommended to provide better management of the activity at that site. As an initial action, Division staff should coordinate with the local government and other state and federal

regulatory agencies concerning public use patterns, and resource protection and management, in order to determine the appropriate level of parking and road improvements that will be required to improve safety at the boat launching area.

Facilities Development

Preliminary cost estimates for the recommended facilities are provided in the Ten-Year Implementation Schedule, and Cost Estimates located in the Implementation Component of this plan. These cost estimates are based on the most cost-effective construction standards available at this time. The preliminary estimates are provided to assist the DRP in budgeting future park improvements, and may be revised as more information is collected through the planning and design processes.

New facilities and improvements to existing facilities recommended by the plan include:

Lignumvitae Key Day Use Area

Photovoltaic Generation System

Lower Matecumbe Key Shop and Residence Area

Residence
Parking (Up to 30 Cars)
Restroom

Indian Key Fill Boating Area

Boating, parking and circulation improvements

Existing Use and Recreational Carrying Capacity

Carrying capacity is an estimate of the number of users a recreation resource or facility can accommodate and still provide a high quality recreational experience and preserve the natural values of the site. The carrying capacity of a unit is determined by identifying the land and water requirements for each recreation activity at the unit, and then applying these requirements to the unit's land and water base. Next, guidelines are applied which estimate the physical capacity of the unit's natural communities to withstand recreational uses without significant degradation. This analysis identifies a range within which the carrying capacity most appropriate to the specific activity, the activity site and the unit's classification is selected (see Table 5).

The recreational carrying capacity for this park is a preliminary estimate of the number of users the unit could accommodate after the current conceptual development program has been implemented. When developed, the proposed new facilities would approximately increase the unit's carrying capacity as shown in Table 5.

Table 5--Existing Use and Recreational Carrying Capacity

	Existing Capacity		Proposed Additional Capacity		Estimated Recreational Capacity	
Activity/Facility	One Time	Daily	One Time	Daily	One Time	Daily
Matheson House						
Trails	50	100	0	0	50	100
TOTAL	**50**	**100**	**0**	**0**	**50**	**100**

Optimum Boundary

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

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

The optimum boundary map reflects lands identified for direct management by the DRP 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. At this time, no lands are considered surplus to the needs of the park.

Two parcels of the CARL Florida Keys Ecosystems acquisition project, two submerged lands parcels, as well as the surrounded mangrove wetlands north of U.S. Highway 1 on Lower Matecumbe Key are recommended for addition to the botanical site (see Optimum Boundary Map). These additions are proposed to bring additional undeveloped uplands, mangrove wetlands and grass beds under the management authority of the DRP. Consolidation of these areas will improve the management staff's ability to protect fragile resources and enforce existing rules and regulations.

LIGNUMVITAE KEY BOTANICAL STATE PARK

N

0 1,350 2,700 5,400 Feet

Florida Department of Environmental Protection
Division of Recreation and Parks
Date of aerial: 2004

OPTIMUM BOUNDARY MAP

IMPLEMENTATION COMPONENT

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

MANAGEMENT PROGRESS

Since the approval of the last management plan for Lignumvitae Key Botanical State Park in 2000, significant work has been accomplished and progress made towards meeting DRP's management objectives for the park. These accomplishments fall within three of the five general categories that encompass the mission of the park and DRP.

Acquisition

- No land was acquired as part of Lignumvitae Key Botanical State Park

Park Administration and Operations

- Permanent staff was increased by one position.

Resource Management

Natural Resources

- Removed 98 Acres of invasive exotic plants
- Developed Seagrass Restoration Management Plan
- Conducted seagrass restoration in approximately six acres within the park
- Removed debris from the Choate tract that was impacting the rockland hammock
- Conducted multiple shoreline clean-ups on Lignumvitae Key

Recreation and Visitor Services

- Annual Lignumvitae Christmas event held.
- Conducted ranger-led tours of the park on a regular schedule

Park Facilities

- Installed solar hot water heater to reduce dependence on diesel generator
- Installed four large batteries to help reduce dependence on diesel generator
- Removed septic tanks on island
- Constructed a shop, offices, a residence and docks at the Lower Matecumbe Key land base

MANAGEMENT PLAN IMPLEMENTATION

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

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

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

Table 6
Lignumvitae Key Botanical State Park Ten-Year Implementation Schedule and Cost Estimates
Sheet 1 of 3

NOTE: THE DIVISION'S ABILITY TO COMPLETE THE OBJECTIVES OUTLINED BY THE MANAGEMENT PLAN IS CONTINGENT ON THE AVAILABILITY OF FUNDING AND OTHER RESOURCES FOR THESE PURPOSES.				
Goal I: Provide administrative support for all park functions.		**Measure**	**Planning Period**	**Estimated Manpower and Expense Cost* (10-years)**
Objective A	**Continue day-to-day administrative support at current levels.**	Administrative support ongoing	C	**$297,310**
Goal II: Protect water quality and quantity in the park, restore hydrology to the extent feasible, and maintain the restored condition.		**Measure**	**Planning Period**	**Estimated Manpower and Expense Cost* (10-years)**
Objective A	**Conduct an assessment on the condition of the solution holes on Lignumvitae Key**	Assessment conducted	ST	**$100,090**
Goal III: Restore and maintain the natural communities/habitats of the park.		**Measure**	**Planning Period**	**Estimated Manpower and Expense Cost* (10-years)**
Objective A	**On average, restore approximately 2 acres per year of the 503 acres of damaged seagrass bed community.**	# Acres restored or with restoration underway	UFN	**$2,026,250**
Goal IV: Maintain, improve or restore imperiled species populations and habitats in the park.		**Measure**	**Planning Period**	**Estimated Manpower and Expense Cost* (10-years)**
Objective A	**Update baseline imperiled species occurrence inventory lists for plants and animals, as needed.**	List updated	C	**$280**
Objective B	**Monitor and document 4 selected imperiled animal species in the park.**	# Species monitored	C	**$10,620**
Action 1	Implement monitoring protocols for the selected imperiled coral species including brain coral, symmetrical brain coral, boulder star coral and massive starlet coral annually.	# Species monitored	C	$10,620
Objective C	**Monitor and document 17 selected imperiled plant species in the park.**	# Species monitored	C	**$700**
Action 1	Update data of imperiled plant species in the park when significant events occur such as a tropical storm or hurricane, which would potentially impact population distribution and density.	# Protocols developed	C	$280
Action 2	Update survey of lignum vitae trees on Lignumvitae Key.	# Species monitored	C	$420
Objective D	**Augment the population of the endangered Keys tree cactus on approximately .25 acres of the Choate tract.**	# of individuals introduced	LT	**$1,350**
Objective E	**Conduct population dynamics study of the imperiled Schaus' swallowtail butterfy.**	Study Completed	UFN	**$40,000**

* 2011 Dollars
ST = actions within 2 years
LT = actions within 10 years
C = long term or short term actions that are continuous or cyclical
UFN = currently unfunded need

Table 6
Lignumvitae Key Botanical State Park Ten-Year Implementation Schedule and Cost Estimates
Sheet 2 of 3

NOTE: THE DIVISION'S ABILITY TO COMPLETE THE OBJECTIVES OUTLINED BY THE MANAGEMENT PLAN IS CONTINGENT ON THE AVAILABILITY OF FUNDING AND OTHER RESOURCES FOR THESE PURPOSES.

Goal V: Remove exotic and invasive plants and animals from the park and conduct needed maintaince-control.		**Measure**	**Planning Period**	**Estimated Manpower and Expense Cost* (10-years)**
Objective A	**Annually treat 2 1/4 acres of exotic plant species in the park.**	# Acres treated	C	**$15,440**
Action 1	Update exotic plant management annual work plan.	Plan Updated	C	$1,000
Action 2	Implement annual work plan by treating 2 1/4 acres in park, annually, and continuing maintenance and follow-up treatments, as needed.	# Acres treated		$14,440
Objective B	**Implement control measures on 3 exotic and nuisance animal species in the park.**	# Species for which control measures implemented	C	**$16,430**
Action 1	Monitor black rats, green iguanas and free-roaming or feral cats within the park boundary, and remove them according to procedures outlined in the operations manual when encountered.			$16,430

Goal VI: Protect, preserve and maintain the cultural resources of the park.		**Measure**	**Planning Period**	**Estimated Manpower and Expense Cost* (10-years)**
Objective A	**Assess and evaluate 8 of 11 recorded cultural resources in the park.**	Documentation complete	LT	**$6,920**
Objective B	**Compile reliable documentation for all recorded historic and archaeological sites.**	Documentation complete	UFN	**$25,000**
Objective C	**Keep 8 of 11 recorded cultural resources in good condition.**	# Sites in good condition	LT	**$178,620**
Action 1	Continue to implement regular monitoring programs for 8 cultural sites	# Sites monitored	C	$138,620
Action 2	Create and implement a cyclical maintenance program for Matheson House	Program implemented	C	$40,000

Goal VII: Provide public access and recreational opportunities in the park.		**Measure**	**Planning Period**	**Estimated Manpower and Expense Cost* (10-years)**
Objective A	**Maintain the park's current recreational carrying capacity of 50 users per day.**	# Recreation/visitor opportunities per day	C	**$283,760**
Objective B	**Continue to provide the current repertoire of 20 interpretive, educational and recreational programs on a regular basis.**	# Interpretive/education programs	C	**$292,880**

Goal VIII: Develop and maintain the capital facilities and infrastructure necessary to meet the goals and objectives of this management plan.		**Measure**	**Planning Period**	**Estimated Manpower and Expense Cost* (10-years)**
Objective A	**Maintain all public and support facilities in the park.**	Facilities maintained	C	**$236,240**
Objective B	**Continue to implement the park's transition plan to ensure facilities are accessible in accordance with the American with Disabilities Act of 1990.**	Plan implemented	LT	**$8,500**
Objective C	**Repair the Matheson House roof.**	Facility Repaired	LT	**$35,000**
Objective D	**Construct land base facilities and new ranger residence.**	Facility Constructed	UFN	**$250,000**
Objective E	**Expand maintenance activities as existing facilities are improved and new facilities are developed.**	Facilities maintained	C	**$30,000**

* 2011 Dollars
ST = actions within 2 years
LT = actions within 10 years
C = long term or short term actions that are continuous or cyclical
UFN = currently unfunded need

Table 6
Lignumvitae Key Botanical State Park Ten-Year Implementation Schedule and Cost Estimates
Sheet 3 of 3

NOTE: THE DIVISION'S ABILITY TO COMPLETE THE OBJECTIVES OUTLINED BY THE MANAGEMENT PLAN IS CONTINGENT ON THE AVAILABILITY OF FUNDING AND OTHER RESOURCES FOR THESE PURPOSES.

Summary of Estimated Costs

Management Categories		Total Estimated Manpower and Expense Cost* (10-years)
Resource Management		**$2,421,700**
Administration and Support		**$297,310**
Capital Improvements		**$293,500**
Recreation Visitor Services		**$576,640**
Law Enforcement Activities[1]		**$0**
	[1]Law enforcement activities in Florida State Parks are conducted by the DEP Division of Law Enforcement and by local law enforcement agencies.	

* 2011 Dollars
ST = actions within 2 years
LT = actions within 10 years
C = long term or short term actions that are continuous or cyclical
UFN = currently unfunded need

Addendum 1—Acquisition History

Sequence of Acquisition

On March 2, 1971, the Board of Trustees of the Internal Improvement Trust Fund of the State of Florida (Trustees) obtained title to a 550.03-acre property constituting the initial area of Lignumvitae Key Botanical State Park. The Trustees purchased the property for $1,850,000 from C. E. Lunsford, Abney Cox and Nelson Pearson. This purchase was funded under the Land Acquisition Trust Fund (LATF) program. Since this initial purchase, the Trustees has acquired several parcels through donations and under Preservation 2000/Acquisition and Inholdings program and added them to the park. Lignumvitae Key Botanical State Park comprises 10,818 acres.

Title Interest

The Trustees hold fee simple title of Lignumvitae Key Botanical State Park.

Lease Agreement #2534

On June 8, 1971, with Lease No. 2534, the Trustees leased Lignumvitae Key Botanical State Park to the Florida Department of Environmental Protection (Department), Division of Recreation and Parks (Division) under a 99 (ninety-nine) lease, Lease No. 2534. On January 22, 1985, the Trustees reduced the term of the lease to 50 (fifty) years effective as of this date. The lease expiration is January 21, 2035.

According to lease 2534, the Division manages Lignumvitae Key Botanical State Park for the purpose of preserving, developing, operating and maintaining the property for outdoor recreational, park, conservation and related purposes.

Special Conditions On Use

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

Outstanding Reservations

There are no known encumbrances that apply to Lignumvitae Key Botanical State Park.

Addendum 2—Advisory Group Members and Report

Elected Officials

Honorable Michael Reckwerdt, Mayor
Islamorada Village Council
86800 Overseas Highway
Islamorada, FL 33036

Represented by:
Honorable Ted Blackburn
Islamorada Village Council
86800 Overseas Highway
Islamorada, FL 33036

Honorable Heather Carruthers, Mayor
Monroe County Board of
County Commissioners
530 Whitehead Street
Key West, FL 33040

Agency Representatives

Melba Nezbed, Park Manager
77200 Overseas Highway
Islamorada, Florida 33036

Sean Morton, Superintendent
Florida Keys National Marine Sanctuary
Upper Keys Region Office
95230 Overseas Highway
Key Largo, Fl. 33037

Represented by:
John Halas
Florida Keys National Marine Sanctuary
Upper Keys Region Office
95230 Overseas Highway
Key Largo, Fl. 33037

Mark Torok
Department of Agriculture and Consumer
Services
Florida Forest Service
3315 S.W. College Ave
Davie, FL 33314

Randal T. Grau
Florida Fish and Wildlife
Conservation Commission
P.O. Box 430541
Big Pine Key, FL 33043

Mike Wisenbaker
Florida Division of Historical Resources
500 South Bronough Street,
Mail Station 8
Tallahassee, Florida 32399-0250

S. Cooper McMillan, Chair
South Dade Soil And Water Conservation
District
1450 N. Krome Avenue,
Suite 104
Florida City, FL 33034

Represented by:
L.T. "Sonny" Clayton
South Dade Soil And Water
Conservation District
1450 N. Krome Avenue,
Suite 104
Florida City, FL 33034

Environmental Representatives

Peter Frezza
Audubon of Florida
115 Indian Mound Trail
Tavernier, FL 33070

Volunteers

Karen Sunderland Strobel
Friends of Islamorada Parks
168 Plantation Drive
Plantation Key, Fl 33070

User Group Representatives

Frank Woll
104050 Overseas Highway
Key Largo, Florida 33037

Historical Preservation Society Representative
Jerry Wilkenson
38 East Beach Road
Tavernier, Florida 33070

Adjacent Landowners
Nick Tagliareni
32 Park Road
Islamorada, FL 33035

Sue Miller
151 Columbus Drive
Islamorada, Fl 33036

The Advisory Group meeting to review the proposed land management plan for the Islamorada Area State Parks was held at the Allison Fahrer Environmental Education Center at Windley Key Fossil Reef Geological State Park on October 27, 2011 at 9:00 AM.

The Honorable Michael Reckwerdt of the Village Council of the Islamorada Village of Islands was represented by The Honorable Ted Blackburn. Mr. Sean Morton of the Florida Keys National Marine Sanctuary was represented by Mr. John Halas. Mr. S. Cooper McMillan of the South Dade South and Water Conservation District was represented by Mr. L.T. "Sonny" Clayton. The Honorable Heather Carruthers (Monroe County Board of County Commissioners), Mr. Randal Grau (Florida Fish and Wildlife Conservation Commission), Mr. Mike Wisenbaker (Florida Division of Historical Resources), Mr. Frank Woll, and Mr. Jerry Wilkinson (Historical Preservation Society of the Upper Keys) were not in attendance. Attending staff were Mr. Paul Rice, Mr. Lew Scruggs, Mr. Ernest Cowan, Ms. Melba Nezbed, Ms. Janice Duquesnel, and Mr. Joe Blazina. All other Advisory Group members were in attendance.

Mr. Blazina began the meeting by explaining the purpose of the Advisory Group and reviewing the meeting agenda. He provided a brief overview of the Division's planning process and summarized public comments received during the previous evening's public workshop. He then asked each member of the advisory group to express his or her comments on the plans.

Summary of Advisory Group Comments

Mr. Frezza addressed the unimproved boat ramp on Indian Key Fill. He recommended that the ramp needs to be addressed, and was glad to see it in the management plan. Mr. Frezza stated that he did not know the ramp was managed by the Division of Recreation and Parks, adding that as a local user, he has seen the operational issues that it presents, and recommended that the Division assess a fee if the ramp is improved. He said that if the ramp cannot be improved, it should be closed to motorized boats and used for paddling access due to its location and access to Lignumvitae Key. He discussed Horseshoe Key, recommending that the nearshore area around it be closed to fishers due to heavy use by nesting shorebirds and frigate birds. Mr. Frezza concluded by commending the Park Staff on their work to protect the parks' shallow water habitats and seagrass beds, adding that their signage and outreach programs are a model for other submerged land managers.

Mr. Halas began his comments adding to Mr. Frezza's concerns regarding the boat launching facilities on Indian Key Fill. He agreed that the ramp should definitely be renovated and managed with better rule enforcement, adding that with a better boat ramp will come even more traffic; as a result the parking should be reconfigured and improved as well. Mr. Halas concluded his comments commending the plans for being very well written and comprehensive.

Mr. Tagliareni addressed the entrance to Windley Key Fossil Reef Geological State Park. He suggested that the Division should work with DOT in the future to establish a right turn lane into the park, since a lot of people do not realize where the entrance to the park is until they drive past it. Mr. Tagliareni asked about paddling access to Indian Key, as the current dock is difficult to access from a kayak. Melba Nezbed responded that both Indian Key and Lignumvitae Key now have kayak landings.

Mr. Blackburn said that he was thrilled with all four of the parks, and what the park staff do to to manage them. He added to the Indian Key Fill boat ramp comments, discussing the traffic issues along US 1 with trucks and boat trailers stopping traffic to enter and exit the boat launching area. Mr. Blackburn added to Mr. Tagliareni's comments, letting Division Staff know that DOT had recently conducted public hearings regarding widening the shoulder of US 1 on Upper Matecumbe Key, suggesting the Division work with DOT to get a right turn lane into Windley Key Fossil Reef Geological State Park included in that project. Mr. Blackburn discussed the Village of Islamorada's progress in establishing wastewater treatment in the area.

Mr Blackburn also asked about the status of the proposed dinosaur theme park development at Windley Key Fossil Reef Geological State Park. Mr. Scruggs responded that division staff met with the interested parties to discuss the idea, and requested a detailed business plan and specific site plans to further explain the proposal. He explained that no formal proposal has been received by the Division to date. He explained if any such proposal is received in the future, and if the Division were interested in exploring the idea, then a public workshop would be held in the local area to ensure the involvement of local residents and stakeholders, and that an amendment to the park's management plan would be required.

Ms. Miller agreed that there should be a fee to use the boat ramp on Indian Key Fill, adding that the traffic congestion in the area is a safety hazard. She commented that there needs to be more signs in Robbie's Marina, pointing visitors to where they are supposed to go to buy tickets to gain access to Indian Key and Lignumvitae Key. Ms. Miller commended the park staff on their terrific job with educational outreach and interpretation of the parks, and encouraged them to expand their efforts further so that future generations understand the significance of the state parks in their area. She suggested establishing a kayak trail in the canal system near the land base, noting that the mangrove-lined canals are fantastic, and people should be able to enjoy them. Ms. Miller noted that allowing visitors to kayak in the waters surrounding the islands would not have a negative impact on the sensitive resources on the islands themselves. Ms. Miller concluded her comments discussing the Choate Tract and the DOT picnic area adjacent to it. She suggested the Division work with DOT to establish a restroom, or fence the park boundary to manage access to the property.

Ms. Sunderland Strobel began her discussion asking if Robbie's Marina had a formal concession contract with the Division, adding that Robbie's should be required to provide better signage so that visitors know where to go to purchase tickets to gain access to the islands. She continued her comments discussing the option to rent kayaks, adding that the rentals provide income to the Parks. Ms. Sunderland Strobel agreed with Ms. Miller that there should be a restroom located at the Choate Tract if people are going to be allowed to picnic adjacent to it. She also said that the boat ramp area on Indian Key Fill should have a restroom, especially with the potential for sewer to come in the future. Ms. Sunderland Strobel concluded her comments stating that the plans are excellent and very well written.

Mr. Clayton began his comments stating that he grew up in the Islamorada area, and that the State Parks are very important to him. He added that the South Dade Soil and Water

Conservation District provides education outreach to local schools, agreeing that education of young people is very important. Mr. Clayton concluded his comments stating that the plans are very well done, and he will continue to review them and submit further comments following the Advisory Group Meeting.

Mr. Torok commented that the plans are well written, adding that he is familiar with the parks through the Champion Tree Program. He asked park staff if the Champion Trees located on Lignumvitae Key are signed or interpreted to visitors. Janice Duquesnel responded that the Champion Trees are deep within the hammock of the island, and not accessible from the main trail that goes around the island, so signing the trees is not necessary.

Summary of Written Comments

Mr. Wisenbaker was not able to attend the advisory group meeting, but did submit written comments regarding the plans. His comments included typographical and editorial changes to the plans, as well as discussion. Mr. Wisenbaker commended the Division of Recreation and Parks in its efforts to preserve and protect Florida's irreplaceable historical resources. He recommended the Division to continue its efforts to nominate Windley Key Fossil Reef Geological State Park to the National Register of Historic Places. He also added that staff at the Division of Historical Resources who may be able to assist with the nomination process, as well as treating and restoring the historic quarrying machinery. He asked if a cyclical maintenance plan has been developed for the historical machinery found on Lignumvitae Key, and what the schedule was. Mr. Wisenbaker commended the Division for their continued work to preserve, protect, and interpret Indian Key Historic State Park, and the work to develop a cyclic maintenance plan for the ruins there. He concluded by suggesting the mention of San Pedro Underwater Archaeological Preserve State Park as 1 of 11 archaeological preserves in the State of Florida, and commended the plan for being well researched and written.

Mr. Wilkinson was not able to attend the advisory group meeting, but did submit written comments regarding the plans. Mr. Wilkinson's comments included discussion regarding the origin of the names of the quarries and the names discussed in the management plan. Mr. Wilkinson recommended that whichever names are used in the management plan and interpretation at the park should be labeled on a map so that anyone reading the plan can understand their locations, uses and significance.

Staff Recommendations

Suggestions received from the Advisory Group meeting resulted in revisions to the draft management plan. The Resource Management Component has been updated to include the most recent natural and cultural resource management. Division staff will continue to monitor impacts of nearshore fishing activities around Horseshoe Key, and consider Mr. Frezza's comments. In the Land Use Component, additional language was included regarding the coordination of the appropriate managing agencies to determine what level of parking and road improvements are feasible in the boat launch area on Indian Key Fill. Division staff also considered the feasibility of restroom facilities on the Choate Tract and Indian Key Fill, but determined it would be unable to properly manage them. The Division will continue to work to protect the boundaries of all park

lands to manage access. Minor cartographic, typographical and grammatical changes and corrections were also completed as a result of the public workshop and Advisory Group review.

With these changes, DRP staff recommends approval of the proposed management plans for the following State Parks:
Indian Key Historic State Park
Lignumvitae Key Botanical State park
San Pedro Underwater Archaeological Preserve State park
Windley Key Fossil Reef Geological State Park

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

"Individual management plans required by s. 253.034(5), for parcels over 160 acres, shall be developed with input from an advisory group. Members of this advisory group shall include, at a minimum, representatives of the lead land managing agency, co-managing entities, local private property owners, the appropriate soil and water conservation district, a local conservation organization, and a local elected official."

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

November 2, 2011

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Addendum 4—Soil Descriptions

(**3) Pennekamp gravelly muck, 0 to 2 percent slopes, extremely stony –** The Pennekamp series consists of well drained soils that are shallow to rippable coral limestone bedrock. The depth to bedrock is 4 to 16 inches. These soils formed in material weathered from the coral limestone bedrock.They generally have a thin overburden of sapric material. They are on uplands. Slopes range from 0 to 2 percent. The taxonomic class is loamy-skeletal, carbonatic, isohyperthermic Lithic Rendolls.

This soil is on tropical hammocks in the upland of the upper keys. About 10 percent of the surface of this soil is covered with stones that are dominantly 10 to 20 inches in diameter. Individual areas are subject to rare flooding from hurricanes and other tropical storms. Elevations are dominantly 5 to 15 feet above sea level, according to National Geodoetic Vertical Datum of 1929. The mean annual temperature is about 78 degrees F, and the mean annual precipitation is about 50 inches.

The Pennekamp soil is dominant in this map unit. Soils in areas on the keys between Upper Matecumbe Key and Big Pine Key are more sandy than the Pennekamp soil; however, uses and interpretations are the same as those of the Pennekamp soil. Areas that have different uses and interpretations are rare and generally are adjacent to the boundaries of the map unit.

Soils that are associated with the Pennekamp soil are the moderately well drained, organic Matecumbe soils in the slightly lower position on the landscape and the poorly drained, marly Cudjoe, Lignumvitae, and Keywest soils and very portly drained, organic Islamorada, Keylargo, and Tavernier soils in the significantly lower positions on the landscape.

The Pennekamp soil is well drained. It has a seasonal high water table at a depth of 3.5 to 5.0 feet during the wet periods of most years. Permeability is moderately rapid.

Most areas of this soil support native vegetation and are used as habitat for tropical hammock species. Some areas have been developed for residential, urban or recreation use. Characteristic vegetation for the soils in the survey area include; poisonwood, wild tamarind, gumbo limbo, strangler fig and wild coffee.

Depth to bedrock and the flooding are severe limitations affecting most uses of this soil, including most kinds of building site and recreational development and salinity facilities.

(4) Rock outcrop – Tavernier complex, tidal – The Tavernier series consists of very poorly drained soils that are shallow to rippable coral limestone bedrock. The depth to bedrock is dominantly 3 to 16 inches but ranges to 20 inches. These soils formed in sapric material. The taxonomic class is Euic, isohyperthermic, shallow Lithic Troposaprists.

This map unit is in mangrove swamps throughout the keys. Individual areas are subject to daily flooding by tides. Elevations are less than 2 feet above sea level, according to National Geodetic Vertical Datum of 1929. The mean annual temperature is about 75 degrees F, and the mean annual precipitation is about 55 inches.

Approximately 60 percent of this map unit consists of areas of exposed bedrock. These areas are dominantly 1 to 4 inches above the surface of the surrounding soils and range from approximately 2 feet to more than 200 feet in diameter. The Tavernier soil is dominant in about 35 percent of this map unit. Areas that have different uses and interpretations are rare and generally are adjacent to the boundaries of this map unit.

Soils that are associated with the Tavernier soil are the very poorly drained, organic Islamorada and Keylargo soils in landscape positions similar to those of the Tavernier soil; the poorly drained, marly Cudjoe, Lignumvitae, and Keywest soils in the slightly higher positions on the landscape; and the moderately well drained, organic Matecumbe soils and somewhat poorly drained, marly Saddlebunch soils in the significantly higher positions on the landscape.

The Tavernier soil is very poorly drained. The seasonal high water table is at or near the surface during much of the year. Permeability is rapid.

Most areas of this map unit support native vegetation and are used for wetland wildlife. Some areas have been developed for residential, urban, or recreational use. Characteristic vegetation for the soils in the survey area include; red mangrove, black mangrove, and saltwort.

The flooding, the depth to bedrock and the wetness are severe limitation affecting most uses of this map unit, including most kinds of building site and recreational development.

(5) Islamorada muck, tidal – The Islamorada series consists of very poorly drained soils that are moderately deep to rippable coral or oolitic limestone bedrock. The depth to bedrock is 20 to 50 inches. These soils formed in sapic material. Slopes are less than 1 percent. Taxonomic class is Euic, isohyperthermic Lithic Troposaprists.

This soil is dominantly on the upper keys in mangrove swamps. Individual areas are subject to daily flooding by tides. Elevations are dominantly at or below sea level, according to National Geodetic Vertical Datum of 1929. The mean annual temperature is about 75 degrees F, and the mean annual precipitation is about 50 inches.

The Islamorada soil is dominant in this map unit. Areas of the Tavernier soils are also included. These soils have bedrock within a depth of 20 inches. Other areas that have different uses and interpretations are rare and generally are adjacent to the boundaries

of the map unit.

Soils that are associated with the Islamorada soils are the very poorly drained, organic Keylargo and Tavernier soils in landscape positions similar to those of the Islamorada soil; the poorly drained, marly Cudjoe, Lignumvitae, and Keywest soils in the slightly higher position on the landscape; and the moderately drained, organic Matecumbe soils and somewhat poorly drained, marly Saddlebunch soils in the significantly higher positions on the landscape.

The Islamorada soil is very poorly drained. The seasonal high water table is at or near the surface during much of the year. Permeability is rapid.

Most areas of this soil support native vegetation and are used as habitat for wetland wildlife. Some areas have been developed for residential or recreation use. Characteristic vegetation for the soils in the survey area include; red and black mangrove.

The wetness, the flooding, and depth to bedrock are severe limitations affecting most uses of this soil, including most kinds of building site and recreational development.

(6) Keylargo muck, tidal – The Keylargo series consists of very poorly drained soils that are deep to rippable coral or oolitic limestone bedrock. The depth to bedrock is 50 to 90 inches. These soils formed in sapric material. Slopes are less than 1 percent. The taxonomic class is Euic, isohyperthermic Typic Troposaprists.

This soil is dominantly on the upper keys but can occur throughout the keys. It is in mangrove swamps. Individual areas are subject to daily flooding by tides. Elevations are dominantly at or below sea level, according to National Geodetic Vertical Datum of 1929. The mean annual temperature is about 75 degrees F, and the mean annual precipitation is about 50 inches.

The Keylargo soil is dominant in the map unit. Areas that have different uses and interpretations are rare and generally are adjacent to the boundaries of the map unit.

Soils that are associated with the Keylargo soils are the very poorly drained, organic Islamorada and Tavernier soils in the landscape positions similar to those of the Keylargo soil; the poorly drained, marly Cudjoe, Lignumvitae and Keywest soils in the slightly higher position on the landscape; and the moderately well drained, organic Matecumbe soils and somewhat poorly drained, marly Saddlebunch soils in the significantly higher positions on the landscape.

The Keylargo soil is very poorly drained. The seasonal high water table is at or near the surface during much of the year. Permeability is rapid.

Most areas of this soil support native vegetation and are used as habitat for wetland wildlife. A few areas have been developed for residential or recreation use. Characteristic vegetation for the soils in the survey areas include; red and black mangrove.

The wetness, an excessive amount of humus, and the flooding are severe limitations affecting most uses of this soil, including most kinds of building site and recreational development.

Addendum 5—Plant And Animal List

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

Lignumvitae Key

PTERIDOPHYTES

giant leather fern ..... *Acrostichum danaeifolium*

ANGIOSPERMS

MONOCOTS

false sisal ..... *Agave decipiens*
sisal hemp ..... *Agave sisalana* *
aloe ..... *Aloe vera* *
pitted bluestem ..... *Bothriochloa pertusa* *
papaya ..... *Carica papaya* *
southern sandbur ..... *Cenchrus echinatus*
coastal sandbur ..... *Cenchrus incertus*
Florida flatsedge ..... *Cyperus floridanus*
limestone flatsedge ..... *Cyperus fuligineus*
umbrella sedge ..... *Cyperus planifolius*
Egyptian grass ..... *Dactyloctenium aegyptium* *
Southern crabgrass ..... *Digitaria ciliaris*
butterfly orchid ..... *Encyclia tampensis*
gophertail lovegrass ..... *Eragrostis ciliaris* *
finger grass ..... *Eustachys petraea*
hurricane grass ..... *Fimbristylis cymosa* *
key grass ..... *Monanthochloe littoralis*
ground orchid ..... *Oeceoclades maculata* *
blue paspalum ..... *Paspalum caespitosum*
winged paspalum ..... *Paspalum fimbriatum* *
salt joint grass ..... *Paspalum setaceum*
salt joint grass ..... *Paspalum vaginatum*
date palm ..... *Phoenix dactylifera* *
natal grass ..... *Rhynchelytrum repens* *
coral dropseed grass ..... *Sporobolus domingensis*
coastal dropseed ..... *Sporobolus virginicus*

DICOTS

Indian mallow ..... *Abutilon permolle*
barb-wire cactus ..... *Acanthocereus tetragonus*
chaff flower ..... *Alternanthera flavescens*

Common Name	*Scientific Name*	Primary Habitat Codes (for designated species)
torchwood	*Amyris elemifera*	
pond apple	*Annona glabra*	
marlberry	*Ardisia escallonioides*	
Blodgett's silverbush	*Argythamnia blodgetti*	81
sand atriplex	*Atriplex pentandra*	
black mangrove	*Avicennia germinans*	
saltwort	*Batis maritima*	
Spanish needle	*Bidens alba var. radiata*	
samphire	*Blutaparon vermiculare*	
red spiderling	*Boerhavia diffusa*	
sea ox-eye daisy	*Borrichia arborescens*	
sea oxeye	*Borrichia frutescens*	
gumbo limbo	*Bursera simaruba*	
gray nicker-bean	*Caesalpinia bonduc*	
cinnamon bark	*Canella winterana*	13
Jamaica caper	*Capparis cynophallophora*	
limber caper	*Capparis flexuosa*	
goatweed	*Capraria biflora*	
balloon vine	*Cardiospermum corindum*	
Madagascar periwinkle	*Catharanthus roseus* *	
day jessamine	*Cestrum diurnum* *	
Blodgett's spurge	*Chamaesyce blodgettii*	
hairy spurge	*Chamaesyce hirta*	
graceful sandmat	*Chamaesyce hypericifolia*	
Florida hammock sandmat	*Chamaesyce ophthalmica*	
snowberry	*Chiococca alba*	
fennel	*Chromolaena frustrata*	
fiddlewood	*Citharexylum spinosum*	
Key lime	*Citrus aurantiifolia* *	
pigeon plum	*Coccoloba diversifolia*	
seagrape	*Coccoloba uvifera*	
coconut palm	*Cocos nucifera* *	
day flower	*Commelina erecta*	
buttonwood	*Conocarpus erecta*	
dwarf horseweed	*Conyza canadensis var. pusilla*	
cordia	*Cordia globosa*	
geiger tree	*Cordia sebestena*	
leafless cynanchum	*Cynanchum scoparium*	
virgate mimosa	*Desmanthus virgatus*	
beggarweed	*Desmodium incanum*	
false-mint	*Dicliptera sexangularis*	

Common Name	*Scientific Name*	Primary Habitat Codes (for designated species)
milkbark	*Drypetes diversifolia*	13
Guiana plum	*Drypetes lateriflora*	
black torch	*Erithalis fruticosa*	
white stopper	*Eugenia axillaris*	
Spanish stopper	*Eugenia foetida*	
red stopper	*Eugenia rhombea*	13
Surinam cherry	*Eugenia uniflora* *	
seaside gentian	*Eustoma exaltatum*	
creeping morning glory	*Evolvulus convolvuloides*	
inkwood	*Exothea paniculata*	
strangler fig	*Ficus aurea*	
weeping fig	*Ficus benjamina* *	
shortleaf fig	*Ficus citrifolia*	
blanket flower	*Gaillardia pulchella* *	
milk pea	*Galactia striata*	
seven-year apple	*Genipa clusiifolia*	
Madre de Cacao	*Gliricidia sepium* *	
wild cotton	*Gossypium hirsutum*	3,4
lignum vitae	*Guajacum sanctum*	13
blolly	*Guapira discolor*	
Everglades velvetseed	*Guettarda elliptica*	
crabwood	*Gymnanthes lucida*	
scorpion tail	*Heliotropium angiospermun*	
seaside heliotrope	*Heliotropium curassavicum*	
bladder mallow	*Herissantia crispa*	
wild hibiscus	*Hibiscus poeppigii*	
night-blooming cereus	*Hylocereus undatus* *	
spider lily	*Hymenocallis latifolia*	
Florida Keys indigo	*Indigofera mucronata var. keyensis*	81
moon-flower	*Ipomoea alba*	
morning glory	*Ipomoea indica var. acuminata*	
bloodleaf	*Iresine diffusa*	
sky blue morning glory	*Jacquemontia pentanthos*	81
joewood	*Jacquinia keyensis*	4,13
star jasmine	*Jasminum multiflorum* *	
chandelier plant	*Kalanchoe tubiflora* *	
black ironwood	*Krugiodendron ferreum*	
white mangrove	*Languncularia racemosa*	
lantana	*Lantana camara* *	
wild lantana	*Lantana involucrata*	
wild lettuce	*Launaea intybacea* *	

Common Name	*Scientific Name*	Primary Habitat Codes (for designated species)
peppergrass	*Lepidium virginicum*	
sea lavender	*Limonium carolinianum*	
Christmas berry	*Lycium carolinianum*	
Barbados cherry	*Malpighia emarginata* *	
false mallow	*Malvastrum corchorifolium*	
wild dilly	*Manilkara jaimiqui subsp. emarginata*	4
sapodilla	*Manilkara zapota* *	
mayten	*Maytenus phyllanthoides*	
poisonwood	*Metopium toxiferum*	
cheeseweed	*Morinda royoc*	
orange jasmine	*Murraya paniculata* *	
Jamaican weed	*Nama jamaicense*	
oleander	*Nerium oleander* *	
lancewood	*Ocotea coriacea*	
prickly-pear cactus	*Opuntia stricta*	
lady's sorrel	*Oxalis corniculata*	
passionflower	*Passiflora multiflora*	13
corky-stemmed passionflower	*Passiflora suberosa*	
devil's backbone	*Pedilanthus tithymaloides* *	
copperpod	*Peltophorum pterocarpum* *	
wild allamanda	*Pentalinon luteum*	
creeping charlie	*Phyla nodiflora*	
gale of wind	*Phyllanthus amarus* *	
ground cherry	*Physalis pubescens*	
artillery plant	*Pilea microphylla*	
Jamaica dogwood	*Piscidia piscipula*	
cockspur	*Pisonia aculeata*	
blackbead	*Pithecellobium keyense*	
cat's claw	*Pithecellobium unguis-cati*	
marsh fleabane	*Pluchea odorata*	
wild plumbago	*Plumbago scandens*	
rustweed	*Polypremum procumbens*	
purslane	*Portulaca oleracea*	
pink purslane	*Portulaca pilosa*	
purslane	*Portulaca rubricaulis*	
velvet burr	*Priva lappulacea*	
wild coffee	*Psychotria nervosa*	
mock bishopweed	*Ptilimnium capillaceum*	
white indigo-berry	*Randia aculeata*	
myrsine	*Rapanea punctata*	
darling plum	*Reynosia septentrionalis*	

Common Name	*Scientific Name*	Primary Habitat Codes (for designated species)
red mangrove	*Rhizophora mangle*	
rougeberry	*Rivina humilis*	
annual glasswort	*Salicornia bigelovii*	
woody glasswort	*Salicornia perennis*	
pineland pimpernel	*Samolus valerandi*	
soapberry	*Sapindus saponaria*	
milkweed vine	*Sarcostemma clausum*	
Florida boxwood	*Schaefferia frutescens*	13
Brazilian pepper	*Schinus terebinthifolius* *	
gulf graytwig	*Schoepfia chrysophylloides*	
snake cactus	*Selenicereus pteranthus* *	
sea purslane	*Sesuvium portulacastrum*	
spreading fan petals	*Sida abutifolia*	
broomweed	*Sida acuta*	
saffron plum	*Sideroxylon celastrinum*	
mastic	*Sideroxylon foetidissimum*	
greenbrier	*Smilax havanensis*	
American black nightshade	*Solanum americanum*	
Bahama nightshade	*Solanum bahamense*	
potato tree	*Solanum erianthum*	
necklace-pod	*Sophora tomentosa var. occidentalis* *	
necklace-pod	*Sophora tomentosa var. truncata*	
large leaf buttonweed	*Spermacoce assurgens*	
blue porterweed	*Stachytarpheta jamaicensis*	
pencil flower	*Stylosanthes hamata*	
sea blite	*Suaeda linearis*	
bay cedar	*Suriana maritima*	
West Indian mahogany	*Swietenia mahagoni*	13
mahoe	*Talipariti tiliaceus* *	
tamarind	*Tamarindus indicus* *	
portia	*Thespesia populnea* *	
Florida thatch palm	*Thrinax radiata*	13
silvery wild pine	*Tillandsia paucifolia*	
Spanish moss	*Tillandsia usneoides*	
giant wild pine	*Tillandsia utriculata*	
soldier bush	*Tournefortia volubilis*	
poison ivy	*Toxicodendron radicans*	
Mexican daisy	*Tridax procumbens* *	
Dominican panicum	*Urochloa adspersa*	
signal grass	*Urochloa subquadripara* *	
muscadine grape	*Vitis rotundifolia*	

*Non-native Species

Common Name	*Scientific Name*	Primary Habitat Codes (for designated species)
waltheria	*Waltheria indica*	
hog-plum	*Ximenia americana*	
wild lime	*Zanthoxylum fagara*	

MARINE PLANTS

Mermaids wine cup	*Acetabularia calyculus*	
Red calcareous algae	*Amphiroa nigricans*	
Fan algae	*Avrainvillea nigricans*	
	Batophora oerstedii	
Fern algae	*Caulerpa sertularioides*	
Fern algae	*Caulerpa paspaloides*	
	Dasycladus vermicularis	
Oatmeal algae	*Halimeda incrassata*	
Oatmeal algae	*Halimeda monile*	
Oatmeal algae	*Halimeda opuntia*	
Shoal grass	*Halodule wrightii*	
Red algae	*Laurencia* spp.	
Shaving brush algae	*Penicillus capitatus*	
Shaving brush algae	*Penicillus dumetosus*	
Sargassum weed	*Sargassum* spp.	
Manatee grass	*Syringodium filiforme*	
Turtle grass	*Thalassia testudinum*	
Stiff fan algae	*Udotea flabellum*	

Klopp Tract

ANGIOSPERMS

MONOCOTS

papaya	*Carica papaya* *	
Egyptian grass	*Dactyloctenium aegyptium* *	
Guinea grass	*Panicum maximum* *	
natal grass	*Rhynchelytrum repens* *	
bowstring hemp	*Sansevieria hyacinthoides* *	
turf grass	*Zoysia matrella* *	

DICOTS

Indian mallow	*Abutilon permolle*	
sweet acacia	*Acacia farnesiana*	

*Non-native Species

Common Name	*Scientific Name*	Primary Habitat Codes (for designated species)
barb-wire cactus	*Acanthocereus tetragonus*	
sisal hemp	*Agave sisalana* *	
chaff flower	*Alternanthera flavescens*	
torchwood	*Amyris elemifera*	
pond apple	*Annona glabra*	
Blodgett's silverbush	*Argythamnia blodgettii*	81
sand atriplex	*Atriplex pentandra*	
black mangrove	*Avicennia germinans*	
saltwort	*Batis maritima*	
Spanish needle	*Bidens alba var. radiata*	
samphire	*Blutaparon vermiculare*	
sea ox-eye daisy	*Borrichia arborescens*	
sea oxeye	*Borrichia frutescens*	
Bahama strong bark	*Bourreria succulenta*	
gumbo limbo	*Bursera simaruba*	
limber caper	*Capparis flexuosa*	
goatweed	*Capraria biflora*	
balloon vine	*Cardiospermum corindum*	
Garber's spurge	*Chamaesyce garberi*	4,81
hairy spurge	*Chamaesyce hirta*	
fennel	*Chromolaena frustrata*	
yellow hibiscus	*Cienfuegosia yucatanensis*	4,81
sorrel vine	*Cissus trifoliata*	
pigeon plum	*Coccoloba diversifolia*	
seagrape	*Coccoloba uvifera*	
latherleaf	*Colubrina asiatica* *	
buttonwood	*Conocarpus erecta*	
dwarf horseweed	*Conyza canadensis var. pusilla*	
cordia	*Cordia globosa*	
milkweed	*Cynanchum angustifolium*	
false-mint	*Dicliptera sexangularis*	
milkbark	*Drypetes diversifolia*	13
white stopper	*Eugenia axillaris*	
Spanish stopper	*Eugenia foetida*	
creeping morning glory	*Evolvulus convolvuloides*	
inkwood	*Exothea paniculata*	
strangler fig	*Ficus aurea*	
shortleaf fig	*Ficus citrifolia*	
yellowtop	*Flaveria linearis*	
stalkless yellowtop	*Flaveria trinervia*	
wild cotton	*Gossypium hirsutum*	13

*Non-native Species

Common Name	*Scientific Name*	Primary Habitat Codes (for designated species)
lignum vitae	*Guajacum sanctum*	13
blolly	*Guapira discolor*	
Everglades velvetseed	*Guettarda elliptica*	
crabwood	*Gymnanthes lucida*	
scorpion tail	*Heliotropium angiospermun*	
bladder mallow	*Herissantia crispa*	
wild hibiscus	*Hibiscus poeppigii*	
night-blooming cereus	*Hylocereus undatus* *	
Florida Keys indigo	*Indigofera mucronata var. keyensis*	81
moon-flower	*Ipomoea alba*	
morning glory	*Ipomoea indica var. acuminata*	
railroad vine	*Ipomoea pes-caprae ssp. brasiliensis*	
sky blue morning glory	*Jacquemontia pentanthos*	81
life plant	*Kalanchoe pinnata* *	
white mangrove	*Languncularia racemosa*	
lantana	*Lantana camara* *	
wild lantana	*Lantana involucrata*	
lead tree	*Leucaena leucocephala* *	
Christmas berry	*Lycium carolinianum*	
wild dilly	*Manilkara jaimiqui subsp. emarginata*	4, 81
sapodilla	*Manilkara zapota* *	
mayten	*Maytenus phyllanthoides*	
poisonwood	*Metopium toxiferum*	
climbing hempvine	*Mikania scandens*	
cheeseweed	*Morinda royoc*	
prickly-pear cactus	*Opuntia stricta*	
creeping charlie	*Phyla nodiflora*	
Jamaica dogwood	*Piscidia piscipula*	
blackbead	*Pithecellobium keyense*	
cat's claw	*Pithecellobium unguis-cati*	
wild poinsettia	*Poinsettia cyathophora*	
wild poinsettia	*Poinsettia heterophylla*	
velvet burr	*Priva lappulacea*	
white indigo-berry	*Randia aculeata*	
darling plum	*Reynosia septentrionalis*	
red mangrove	*Rhizophora mangle*	
rougeberry	*Rivina humilis*	
Florida boxwood	*Schaefferia frutescens*	13
Brazilian pepper	*Schinus terebinthifolius* *	
gulf graytwig	*Schoepfia chrysophylloides*	
sea purslane	*Sesuvium portulacastrum*	

*Non-native Species

Common Name	*Scientific Name*	Primary Habitat Codes (for designated species)
spreading fan petals	*Sida abutifolia*	
saffron plum	*Sideroxylon celastrinum*	
pencil flower	*Stylosanthes hamata*	
sea blite	*Suaeda linearis*	
portia	*Thespesia populnea* *	
Spanish moss	*Tillandsia usneoides*	
soldier bush	*Tournefortia volubilis*	
waltheria	*Waltheria indica*	
wild lime	*Zanthoxylum fagara*	

Choate Tract

ANGIOSPERMS

MONOCOTS

false sisal	*Agave decipiens*	
sisal hemp	*Agave sisalana* *	
Egyptian grass	*Dactyloctenium aegyptium* *	
butterfly orchid	*Encyclia tampensis*	
wild bamboo	*Lasiacis divaricata*	
ground orchid	*Oeceoclades maculata* *	
Guinea grass	*Panicum maximum* *	
bowstring hemp	*Sansevieria hyacinthoides* *	
cordgrass	*Spartina patens*	

DICOTS

Indian mallow	*Abutilon permolle*	
sweet acacia	*Acacia farnesiana*	
barb-wire cactus	*Acanthocereus tetragonus*	
chaff flower	*Alternanthera flavescens*	
torchwood	*Amyris elemifera*	
sand atriplex	*Atriplex pentandra*	
black mangrove	*Avicennia germinans*	
Spanish needle	*Bidens alba var. radiata*	
sea ox-eye daisy	*Borrichia arborescens*	
Bahama strong bark	*Bourreria succulenta*	
gumbo limbo	*Bursera simaruba*	
gray nicker-bean	*Caesalpinia bonduc*	
Jamaica caper	*Capparis cynophallophora*	

Common Name	*Scientific Name*	Primary Habitat Codes (for designated species)
limber caper	*Capparis flexuosa*	
goatweed	*Capraria biflora*	
papaya	*Carica papaya* *	
Australian pine	*Casuarina equisetifolia* *	
snowberry	*Chiococca alba*	
sorrel vine	*Cissus trifoliata*	
pigeon plum	*Coccoloba diversifolia*	
seagrape	*Coccoloba uvifera*	
latherleaf	*Colubrina asiatica* *	
buttonwood	*Conocarpus erecta*	
cordia	*Cordia globosa*	
geiger tree	*Cordia sebestena*	
Madagascar rubber vine	*Cryptostegia madagascariensis* *	
false-mint	*Dicliptera sexangularis*	
Black torch	*Erithalis fruticosa*	
Spanish stopper	*Eugenia foetida*	
Pencil tree	*Euphorbia tirucallii* *	
Dwarf morning glory	*Evolvulus convolvuloides*	
princewood	*Exostema caribaeum*	
inkwood	*Exothea paniculata*	
shortleaf fig	*Ficus citrifolia*	
milk pea	*Galactia striata*	
chewstick	*Gouania lupuloides*	
lignum vitae	*Guajacum sanctum*	13
blolly	*Guapira discolor*	
Everglades velvetseed	*Guettarda elliptica*	
crabwood	*Gymnanthes lucida*	
scorpion tail	*Heliotropium angiospermun*	
bladder mallow	*Herissantia crispa*	
night-blooming cereus	*Hylocereus undatus* *	
wild hibiscus	*Hibiscus poeppigii*	
spider lily	*Hymenocallis latifolia*	
Florida Keys indigo	*Indigofera mucronata var. keyensis*	81
moon-flower	*Ipomoea alba*	
morning glory	*Ipomoea indica var. acuminata*	
sky blue morning glory	*Jacquemontia pentanthos*	81
devil's backbone	*Kalanchoe daigremontiana* *	
black ironwood	*Krugiodendron ferreum*	
white mangrove	*Languncularia racemosa*	
wild lantana	*Lantana involucrata*	
lead tree	*Leucaena leucocephala* *	

Common Name	*Scientific Name*	Primary Habitat Codes (for designated species)
Christmas berry	*Lycium carolinianum*	
red jumbie bean	*Macroptilium lathyroides* *	
wild dilly	*Manilkara jaimiqui ssp. emarginata*	4
sapodilla	*Manilkara zapota* *	
marsh elder	*Melanthera nivea*	
poisonwood	*Metopium toxiferum*	
prickly-pear cactus	*Opuntia stricta*	
corky-stemmed passionflower	*Passiflora suberosa*	
wild alamanda	*Pentalinon luteum*	
tree cactus	*Pilosocereus robinii*	13
Jamaica dogwood	*Piscidia piscipula*	
blackbead	*Pithecellobium keyense*	
cat's claw	*Pithecellobium unguis-cati*	
wild poinsettia	*Poinsettia cyathophora*	
purslane	*Portulaca rubricaulis*	
wild coffee	*Psychotria nervosa*	
white indigo-berry	*Randia aculeata*	
darling plum	*Reynosia septentrionalis*	
red mangrove	*Rhizophora mangle*	
least snoutbean	*Rhynchosia minima*	
rougeberry	*Rivina humilis*	
soapberry	*Sapindus saponaria*	
Florida boxwood	*Schaefferia frutescens*	13
Brazilian pepper	*Schinus terebinthifolius* *	
sea purslane	*Sesuvium portulacastrum*	
broomweed	*Sida acuta*	
mastic	*Sideroxylon foetidissimum*	
greenbrier	*Smilax havanensis*	
Spanish moss	*Tillandsia usneoides*	
puncture weed	*Tribulus cistoides* *	
waltheria	*Waltheria indica*	
hog-plum	*Ximenia americana*	
wild lime	*Zanthoxylum fagara*	

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

MOLLUSKS

Chiton	*Acanthopleura granulata*	4
Atlantic strawberry cockle	*Americardia media*	69,71,77
Dove shells	*Anachis* sp.	69,71,77
Ark shells	*Anadara* sp.	69,71,77
Sea hare	*Aplysia dactylomela*	69,71
Star shell	*Astraea* sp.	69,71,77
Stiff pen shell	*Atrina rigida*	68,71
Black horn shell	*Batillaria minima*	68,69,71
Bittium	*Bittium varium*	69,71,77
Broad-ribbed cardita	*Carditamera floridana*	69,71,77
Ladderhorn snail	*Cerithidea scalariformis*	MTC
Ceriths	*Cerithium* sp.	69,71,77
Cross-barred venus	*Chione cancellata*	69,71,77
Tiger lucene	*Codakia orbicularis*	69,71,77
Slipper shell	*Crepidula* sp	69,71,77
Triton	*Cymatum* sp.	69,71,77
Tulip snail	*Fasciolaria tulipa*	68,69,71
Common egg cockle	*Laevicardium laevigatum*	69,71,77
Florida tree snail	*Liguus fasciatus*	13
Periwinkle	*Littorina* spp	MTC
Pennsylvania lucine	*Lucina pennsylvanica*	69,71,77
Saltmarsh snail	*Melampus coffeus*	MTC
Northern mussel	*Modulus modulus*	69,71,77
Bleeding tooth nerite	*Nerita peloronta*	4
Cherckered nerite	*Nerita tessellata*	4
Octopus	*Octopus briareus*	69,71
Predatory snail	*Pisania tincta*	MTC
Florida horse conch	*Pleuroploca gigantean*	69,71,77
Rissoina	*Rissoina* sp.	69,71,77
Queen conch	*Strombus gigas*	68,71
Sunrise telling	*Tellina radiata*	69,71,77
Vase shell	*Vasum* sp.	69,71,77

FISH

Sargeant major	*Abudefduf saxatilis*	68,69,70,71,77
Lined sole	*Achirus lineatus*	68,69,71,77
Bonefish	*Albula vulpes*	68,69,71,77
Reef silverside	*Allanetta harringonenesis*	68,69,71,77

Common Name	*Scientific Name*	Primary Habitat Codes (for all species)
Anchovies	*Anchoa* spp.	69,71,77
Porkfish	*Anisotremus virginicus*	68,69,71,77
Porgies	*Archosargus* spp.	69,71,77
Sea catfish	*Arius felis*	69,71,77
Hardhead silverside	*Atherinomorus stipes*	69,71,77
Trumpetfish	*Aulostomus maculatus*	68,69,71,77
Silver perch	*Bairdiella chrysura*	69,71,77
Gobies	*Bathygobius* sp.	69,71,77
Blennie	*Blennie* sp.	69,71,77
Dragonet	*Callionymus paraciradiatus*	69,71,77
Blue runner	*Caranx crysos*	68,69,71,77
Bar jack	*Caranx ruber*	68,69,71,77
Reef shark	*Carcharhinus springeru*	68,69,71,77
Snook	*Centropomus undecimalis*	68,69,71,77
Atlantic spadefish	*Chaetodiperus faber*	68,69,71,77
Pikeblenny	*Chaetodipterus faber*	69,71,77
Four-eyed butterflyfish	*Chaetondon capistratus*	68,69,71
Spotfin butterflyfish	*Chaetodon ocellatus*	68,69,71
Banded butterflyfish	*Chaetodon striatus*	68,69,71
Hardhead halfbeak	*Chridorus atherinoides*	69,71,77
Spotted seatrout	*Cynoscion nibulosu*	69,71,77
Sheepshead minnow	*Cyprinodon variegates*	69,71,77
South stingray	*Dasyatis americana*	68,69,71,77
Ladyfish	*Elops saurus*	69,71,77
Porcupinefish	*Diodon hystris*	68,69,71,77
Goliath grouper	*Epinephalus itajara*	69,71,77
Spotted drum	*Equetus punctatus*	68,69,71
Spotted blenny	*Eucinostomus gula*	69,71,77
Goldspotted killifish	*Ginglymostoma curratum*	69,71,77
Yellowfin mojarra	*Gerres cinereus*	68,69,71,77
Nurse shark	*Ginglymostoma cirratum*	68,69,71,77
Skilletfish	*Gobiesox strumosus*	69,71,77
White grunt	*Haemulon plumieri*	68,69,71,77
Bluestriped grunt	*Haemulon sciurus*	68,69,71,77
Slippery dick	*Halichoeres bivittatus*	69,71,77
Scaled sardine	*Harengula pensacolae*	69,71,77
Dwarf seahorses	*Hippocampus zosterae*	69,71,77
Blue angelfish	*Holacanthus bermudensis*	68,69,71
Queen angelfish	*Holacanthus ciliaris*	68,69,71,77
Needlefish	*Hyporhamphus unfasciatus*	69,71,77
Bermuda chub	*Kyphosus sectartrix*	68,69,71,77

Common Name	*Scientific Name*	Primary Habitat Codes (for all species)
Hogfish	*Lachnolaimus maximus*	68,69,70,71
Spotted trunkfish	*Lactophrys bicaudalis*	68,69,71,77
Honeycomb cowfish	*Lactophrys polygonia*	68,69,71,77
Pinfish	*Lagodon rhomboids*	69,71,77
Rainwater killifish	*Lacania parva*	69,71,77
Mutton snapper	*Lutjanus analis*	68,69,71,77
Schoolmaster	*Lutjanus apodus*	68,69,71,77
Gray snapper	*Lutjanus griseus*	68,69,71,77
Dog snapper	*Lutjanus jocu*	68,69,71,77
Lane snapper	*Lutjanus synagris*	68,69,71,77
Tarpon	*Megalops atlanticus*	68,69,71,77
Southern kingfish	*Menticirrhus americanus*	69,71,77
Fringed pipefish	*Micrognathus crinigerus*	69,71,77
Filefish	*Monocanthus cilatus*	69,71,77
Mullet	*Mugil* spp.	68,69,71,77
Gag grouper	*Mycteroperca microlepis*	69,71,77
Lemon shark	*Negeprion brevirostris*	69,71,77
Yellowtail snapper	*Ocyrurs chrysurus*	68,69,70,71
Leatherjack	*Oligoplites zaurus*	69,71,77
Atlantic red herring	*Opisthonema oglinum*	69,71,77
Gulf toadfish	*Opsanus beta*	69,71,77
Pigfish	*Orthopristis chrysoptera*	69,71,77
Sailfin molly	*Poecilia latipinna*	69,71,77
Gray angelfish	*Pomacanthus arcuatus*	68,69,71,77
French angelfish	*Pomacanthus paru*	68,69,71,77
Dusky damselfish	*Pomacentrus fuscus*	68,69
Beaugregory	*Pomacentrus leucostictus*	68,69
Bicolor damselfish	*Pomacentrus partitus*	68,69
Cocoa damselfish	*Pomacentrus variabilis*	68,69
Searobin	*Prionotus* spp.	69,71,77
Largetooth sawfish	*Pristis pristis*	71
Stoplight parrotfish	*Sparisoma viride*	69,70
Southern puffer	*Sphoeroides nephalus*	69,71,77
Great barracuda	*Sphyraena barracuda*	69,70,71
Bonnethead	*Sphyrina tiburo*	69,71,77
Bluehead	*Thalassoma bifasciatum*	70
Permit	*Trachinotus falcatus*	69,71,77
Yellow stingray	*Urolophus jamaicensis*	69,71

Common Name	*Scientific Name*	Primary Habitat Codes (for all species)
CORALS		
Elliptical star coral	*Dichocoenia stokesii*	69
Knobby brain coral	*Diplora clivosa*	69
Symmetrical brain coral	*Diplora strigosa*	69
Golfball coral	*Favia fragum*	68,69,71
	Gorgonian spp.	68,69
Rose coral	*Manicina areolata*	69,71
Boulder star coral	*Montastrea annularis*	69
Sea rod	*Plexaura* sp.	69
Mustard hill coral	*Porites astreoides*	69
Finger coral	*Porites furcata*	68,69,71
Finger coral	*Porites porites*	68,69,71
Sea plume	*Pseduopterogorgia* sp.	68,69
Sea whip	*Pterogorgia* sp.	68,69
Lesser starlet coral	*Siderastrea radians*	69
Massive starlet coral	*Siderastrea siderea*	69
Smooth star coral	*Solenastrea bournoni*	69
Knobby star coral	*Solenastrea hyades*	69,71
CNIDARIANS		
Pale anemone	*Aiptasia pallida*	69
Ringed anemone	*Bartholomea annulata*	69
Upside down jellyfish	*Cassiopeia xamachana*	71,76,77
Pink-tipped anemone	*Condylactis gigantean*	69
White encrusting zoanthid	*Palythoa caribaeorum*	69
Knobby zoanthid	*Palythoa mammillosa*	69
Portuguese man-of-war	*Physalia physalis*	MTC
Mat zoanthid	*Zoanthus pulchellus*	69
SPONGES		
Tube sponge	*Aplysina cauliformis*	69,71
Chicken liver spoinge	*Chondrilla nucula*	69,71
Heavenly sponge	*Dysidea ethereal*	69,71
Vase sponge	*Ircinia campana*	68,69,71
Stinker sponge	*Ircinia fasciculita*	68,69,71
Cake sponge	*Ircinia strobilina*	69,71
Loggerhead sponge	*Spheciospoingia vesparia*	69,71
Fire sponge	*Tedania iquis*	69,71

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

INVERTEBRATES

Gulf fritillary	*Agraulis vanillae*	13,81
White peacock	*Anartia jatrophae*	76,81
Statira	*Aphrissa statira*	4,76
Florida white	*Appias drusilla*	13
Lug worm	*Arenicola cristata*	76,77
Monk	*Asbolis capucinus*	81
Great southern white butterfly	*Ascia monuste phileta*	4,81
Eastern pigmy blue	*Brephidium pseudofea*	4
Queen	*Danaus gilippus*	3,4
Monarch	*Dannaus plexippus*	81
Julia	*Dryas iulia*	4,13,81
Giant noctuid	*Erebus odorata*	4,13
Florida purple wing	*Enuica tatila tatilista*	13
Zestos skipper	*Epargyreus zestos*	13
Dusky wing	*Erynnis zarucco*	81
Long bristle eunice	*Eunice longicerrata*	76,77
Euptychia	*Euptychia areolata*	76
Fairy yellow	*Eurema daira*	81
Little yellow	*Eurema lisa*	81
Orange bristle worm	*Eurythoe* sp.	76,77
Zebra longwig	*Heliconius charitonius*	81
Antillian blue	*Hemiargus ceraunus*	4,81
Green bristle worm	*Hermodice* sp.	76,77
Schaus' swallowtail	*Heraclides aristodemus ponceanus*	13,81
West Indian buckeye	*Junonia evarete*	4,81
Cassius blue	*Leptotes cassius*	13
Ruddy daggerwing	*Marpesia petreus*	81
Dwarf yellow	*Nathalis iole*	76
Clam worms	*Nereis* sp.	76,77
Shaggy parchment tube worm	*Onuphis magna*	76,77
Obscure skipper	*Panoquina panoquinoides*	76
Giant swallowtail	*Papilio cresphontes*	13,81
Mangrove skipper	*Phocides igmalion*	4,76,81
Orange giant sulphur	*Phoebis agarithe*	4,81
Cloudless giant sulphur	*Phoebis sennae*	13,81
Cuban crescentspot	*Phyciodes frisia*	13,81
Phaon crescentspot	*Phyciodes phaon*	81
Hammock skipper	*Polygonus leo*	81
Malachite	*Siporeta stelenes*	4

Common Name	*Scientific Name*	Primary Habitat Codes (for all species)
Burrowing scale worms	*Sthenelais* sp.	76,77
Coumella hairstreak	*Strymor columella*	81
Long-tailed hairstreak	*Strymor martialis*	81
Gray hairstreak	*Strymor melinus*	81
Terebellid worms	*Terebellides stroemi*	69,71,77
Lignum vitae	*Toumeyella* sp.	13
Lilac-banded longtail	*Urbanus dorantes*	81
Long-tailed skipper	*Urbanus proteus*	4,13,81

ARTHROPODS

Copepod	*Acartia* spp.	71
Pistol shrimp	*Alpheus* spp.	71
Mangrove tree crab	*Aratus pisonni*	76
Silver argiope	*Argiope argentata*	4,13,81
Blue crab	*Callinectes sapidus*	MTC
Land crab	*Cardisoma guanhumi*	13,81
Barnacle	*Chthamalus stellatus*	76
Land hermit crab	*Coenobita clypeatus*	4,13,81
Junk spider	*Cyclosa* sp.	4,13,81
Amphipod	*Cymadus compta*	71,76,77
Amphipod	*Gammarus mucronatus*	71,76,77
Spinybacked orbweaver	*Gasteracantha cancriformis*	4,13,81
Sea roach	*Ligia* spp.	76
Horseshoe crab	*Limulus polyphemus*	MTC
Stone crab	*Menippe mercenaria*	69,76
Golden orbweaver	*Nephila clavipes*	13,81
Shore crab	*Pachygrapsus* spp.	71
Shrimp	*Palaemonetes*spp.	71
Spiny lobster	*Panulirus argus*	MTC
Pink shrimp	*Penaeus duorarum*	71
Mantis shrimp	*Pseudosguilla* sp.	MTC
Marsh crab	*Sesarma* sp.	76
Shrimp	*Snalpheus fritzmuelleri*	71
Fiddler crab	*Uca pugilator*	76

ECHINODERMS

Agassiz' sea cucumber	*Actinopyga agassizi*	68,69,71
Long-spined urchin	*Diadema antillarium*	68,69,71
Thorny starfish	*Echinaster sentus*	68,69,71

Common Name	*Scientific Name*	Primary Habitat Codes (for all species)
Rock-boring urchin	*Echinometra lucunter*	68,69,71
Florida sea cucumber	*Holothuria floridana*	68,69,71
Variegated urchin	*Lytechinus variegates*	69,71
West Indian sea biscuit	*Meoma ventricosa*	68,69,71
Cushon star	*Oreaster reticulate*	69,71
Sea egg	*Tripneustes ventricosus*	69,71
AMPHIBIANS		
Greenhouse frog*	*Eleutherodactylus planirostris planirostris*	13
Green tree frog	*Hyla cinerea*	13
REPTILES		
Turtles		
Atlantic loggerhead	*Caretta caretta*	MTC
Atlantic green turtle	*Chelonia mydas*	MTC
American crocodile	*Crocodylus acutus*	76
Hawksbill	*Eretmochelys imbricata*	MTC
Keys mud turtle	*Kinosternon bauri bauri*	13
Mangrove terrapin	*Malaclemys terrapin rhizophorarum*	76
Florida box turtle	*Terrapene carolina bauri*	13
Lizards & Snakes		
Green anole	*Anolis carolinensis*	4,81
Cuban anole *	*Anolis sagrei*	13,81
Southeastern five-lined skink	*Eumeces inexpectatus*	4,81
Reef gecko	*Sphaerodactylus notatus notatus*	13
Southern black racer	*Coluber constrictor priapus*	13
Eastern indigo snake	*Drymarchon corais couperi*	13,76
Corn snake	*Elaphe guttata*	13
Yellow rat snake	*Elaphe obsolete quadrivittata*	13
Rough green snake	*Opheodrys eastivus*	13
BIRDS		
Loons		
Common Loon	*Gavia immer*	Migrat.
Cormorants		
Double-crested Cormorant	*Phalocrocorax auritus*	MTC

*Non-native Species

Common Name	*Scientific Name*	Primary Habitat Codes (for all species)
Ducks and Geese		
Blue-winged teal	*Anas discors*	Migrat.
Lersser scaup	*Aythya affinis*	Migrat.
Red-breasted merganser	*Mergus serrator*	Migrat.
Pelicans		
Brown pelican	*Pelecanus occidentalis*	MTC
Gulls		
Herring gull	*Larus argentatus*	MTC
Laughing gull	*Larus atricilla*	MTC
Ring-billed gull	*Larus delawarensis*	MTC
Least tern	*Sterna antillarum*	MTC
Common tern	*Sterna hirundo*	MTC
Royal tern	*Sterna maxima*	MTC
Frigatebirds		
Magnificent frigatebird	*Fregata magnificens*	OF
Herons and Bitterns		
Great white heron	*Ardea herodias*	4,71,76
Great blue heron	*Ardea herodias*	4,71,76
Cattle egret	*Bubulcus ibis*	4,76
Green heron	*Butorides virescens*	4,76
Great egret	*Casmerodius albus*	4,71,76
Little blue heron	*Egretta caerulea*	4,71,76
Reddish egret	*Egretta rufescens*	4,71,76
Snowy egret	*Egretta thula*	71
Tricolored heron	*Egretta tricolor*	4,71,76
Yellow-crowned night heron	*Nycticorax violaceus*	4,76
Ibises and Spoonbills		
Roseate spoonbill	*Ajaia ajaja*	69,71
White Ibis	*Eudocimus albus*	76,81
Plovers		
Ruddy turnstone	*Arenaria interpres*	4
Black-bellied plover	*Pluvialis squatarola*	4
Snipes and Sandpipers		
Spotted sandpiper	*Actitis macularia*	77

*Non-native Species

Common Name	*Scientific Name*	Primary Habitat Codes (for all species)
Sanderling	*Calidris alba*	4
Least sandpiper	*Calidris minutilla*	77
Willet	*Catoptrophorus semipalmatus*	77
Killdeer	*Charadrius vociferous*	4,76
Black-necked stilt	*Himantopus mexicanus*	77
Short-billed dowitcher	*Limnodromus griseus*	4
Sora rail	*Porzano Carolina*	4,76
Lesser yellowlegs	*Tringa flavipes*	4
Greater yellowlegs	*Tringa melanoleuca*	4
Hawks, Eagles and Kites		
Sharp-shinned hawk	*Accipiter striatus*	Migrat.
Broad-winged hawk	*Buteo platyerus*	Migrat.
Swanson's hawk	*Buteo swaiinsoni*	Migrat.
Red-shouldered hawk	*Buteo lineatus*	13,76
Northern harrier	*Circus cyaneus*	4,13
Peregrine falcon	*Falco peregrinus tundrius*	Migrat.
American Kestrel	*Falco sparverius*	Migrat.
Bald Eagle	*Haliaeetus leucocephalus*	OF
Osprey	*Pandion haliaetus*	OF
Pigeons and Doves		
Common Ground-Dove	*Columbina passerina*	4,81
White-crowned pigeon	*Patagioenas leucocephala*	13
Mourning dove	*Zenaida macroura*	3,81
Cuckoos and Allies		
Yellow-billed cuckoo	*Coccyzus americanus*	13,76
Black-billed cuckoo	*Coccyzus erythropthalmus*	13,76
Mangrove cuckoo	*Coccyzus minor*	13,76
Smooth-billed ani	*Crotophaga ani*	81
Goatsuckers		
Chuck-will's-widow	*Caprimulgus carolinensis*	13
Whip-poor-will	*Caprimulgus vociferus*	13
Common Nighthawk	*Chordeiles minor*	OF
Hummingbirds		
Ruby-throated hummingbird	*Archilochus colubris*	81

Common Name	*Scientific Name*	Primary Habitat Codes (for all species)
Kingfishers		
Belted Kingfisher	*Ceryle alcyon*	76
Woodpeckers		
Red-bellied woodpecker	*Melanerpes carolinus*	13
Tyrant Flycatchers		
Eastern pewee	*Contopus virens*	13
Eastern kingbird	*Tyrannus tyrannus*	81
Gray kingbird	*Tyrannus dominicensis*	76,13,81
Great crested flycatcher	*Myiarchus crinitus*	13
Eastern phoebe	*Sayornis phoebe*	13,81
Swallows		
Chimney Swift	*Chaetura pelagica*	OF
Barn swallow	*Hirundo rustica*	Migrat.
Purple martin	*Progne subis*	81
Crows, Jays		
Fish crow	*Corvus ossifragus*	81
Gnatcatcher and Kinglets		
Blue-gray gnatcatcher	*Polioptila caerulea*	3,13,81
Ruby-crowned kinglet	*Regulus calendula*	Migrat.
Mockingbirds and Thrashers		
Gray catbird	*Dumetella carolinensis*	13,81
Northern Mockingbird	*Mimus polyglottos*	13, 81, 82
Brown thrasher	*Toxostoma rufum*	13,81
Thrushes		
Gray-cheeked thrush	*Catharus minimus*	13,81
American robin	*Turdus migratorius*	Migrat.
Shrikes		
Loggerhead shrike	*Lanius ludovicianus*	3,4,81
Waxwings		
Cedar waxwing	*Bombycilla cedrorum*	81

Common Name	*Scientific Name*	Primary Habitat Codes (for all species)
Vireos		
Bahama bananaquit	*Coereba flaveola*	Migrat.
Black-whiskered vireo	*Vireo altiloquus*	13,76
Yellow-throated vireo	*Vireo flavifrons*	13,76
White-eyed vireo	*Vireo griseus*	13,76
Red-eyed vireo	*Vireo olivaceus*	13,76
Solitary vireo	*Vireo solitarius*	13,76
Warblers		
Black-throated blue warbler	*Dendroica caerulescens*	3,13,76
Yellow-rumped warbler	*Dendroica coronata*	3,13,76
Praire warbler	*Dendoirca discolor*	3,13,76,81
Yellow-throated warbler	*Dendroica dominica*	3,13,76
Magnolia warbler	*Dendroica magnolia*	3,13,76
Palm warbler	*Dendroica palmarum*	3,13,76,81
Yellow warbler	*Dendroica petechia*	3,13,76
Blackpoll warbler	*Dendroica striata*	3,13
Cape May warbler	*Dendroica tigrina*	3,13,76
Common yellowthroat	*Geothylpis trichas*	3,13,76,81
Worm-eating warbler	*Helmitheros vermivorous*	3,13,76
Black and white warbler	*Mniotilta varia*	3,13,76
Northern parula	*Parula americana*	3,13,76
Prothonotary warbler	*Protonotaria citrea*	3,13,76
Ovenbird	*Seiurus aurocapillus*	3,13
Louisiana waterthrush	*Seiurus motacilla*	3,13,76
Northern waterthrush	*Seiurus noveboracensis*	3,13,76
American redstart	*Setophaga ruticilla ruticilla*	13,81
Blackbirds and Orioles		
Red-winged Blackbird	*Agelaius phoeniceus*	76,81
Bobolink	*Dolichonyx oryriverous*	81
Northern oriole	*Icterus galbula*	13
Brown-headed cowbird	*Molothrus ater*	13,81
Common Grackle	*Quiscalus quiscula*	13,81
Tanagers		
Summer tanager	*Piranga rubra*	13
Weaver Finches		
House sparrow *	*Passer domesticus*	13,81

*Non-native Species

Common Name	*Scientific Name*	Primary Habitat Codes (for all species)
Cardinals, Grosbeaks, and Buntings		
Northern Cardinal	*Cardinalis cardinalis*	13,81
Savannah sparrow	*Passerculus sandwichensis*	3,13,76
Painted bunting	*Passerina ciris*	13,81
Indigo bunting	*Passerina cyanea*	13,81
Rose-breated grosbeak	*Pheucticus ludovicianus*	13
Chipping sparrow	*Spizella passerina*	13,81
MAMMALS		
Opossum	*Didelphis virginiana*	13
Black rat*	*Rattus rattus*	4,81
Raccoon	*Procyon lotor*	13,76,81
Marsh rabbit	*Sylvilagus palustris*	4,81
West Indian manatee	*Trichechus manatus*	MTC
Atlantic bottlenose dolphin	*Tursiops truncatus*	MTC

*Non-native Species

Addendum 6—Imperiled Species Ranking Definitions

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

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

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

FNAI GLOBAL RANK DEFINITIONS

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

G2.....Imperiled globally because of rarity (6 to 20 occurrences or less than 3000 individuals) or because of vulnerability to extinction due to some natural or man-made factor.

G3.....Either very rare or local throughout its range (21-100 occurrences or less than 10,000 individuals) or found locally in a restricted range or vulnerable to extinction of other factors.

G4.....apparently secure globally (may be rare in parts of range)

G5.....demonstrably secure globally

GH.....of historical occurrence throughout its range may be rediscovered (e.g., ivory-billed woodpecker)

GX.....believed to be extinct throughout range

GXC .....extirpated from the wild but still known from captivity or cultivation

G#?.....Tentative rank (e.g.,G2?)

G#G#.....range of rank; insufficient data to assign specific global rank (e.g., G2G3)

G#T# .....rank of a taxonomic subgroup such as a subspecies or variety; the G portion of the rank refers to the entire species and the T portion refers to the specific subgroup; numbers have same definition as above (e.g., G3T1)

G#Q.....rank of questionable species - ranked as species but questionable whether it is species or subspecies; numbers have same definition as above (e.g., G2Q)

G#T#Q.....same as above, but validity as subspecies or variety is questioned.

GU.....due to lack of information, no rank or range can be assigned (e.g., GUT2).

G?.....Not yet ranked (temporary)

S1 .....Critically imperiled in Florida because of extreme rarity (5 or fewer occurrences or less than 1000 individuals) or because of extreme vulnerability to extinction due to some natural or man-made factor.
S2 .....Imperiled in Florida because of rarity (6 to 20 occurrences or less than 3000 individuals) or because of vulnerability to extinction due to some natural or man-made factor.
S3 .....Either very rare or local throughout its range (21-100 occurrences or less than 10,000 individuals) or found locally in a restricted range or vulnerable to extinction of other factors.
S4 .....apparently secure in Florida (may be rare in parts of range)
S5 .....demonstrably secure in Florida
SH.....of historical occurrence throughout its range, may be rediscovered (e.g., ivory-billed woodpecker)
SX.....believed to be extinct throughout range
SA.....accidental in Florida, i.e., not part of the established biota
SE.....an exotic species established in Florida may be native elsewhere in North America
SN.....regularly occurring but widely and unreliably distributed; sites for conservation hard to determine
SU.....due to lack of information, no rank or range can be assigned (e.g., SUT2).
S?.....Not yet ranked (temporary)
N .....Not currently listed, nor currently being considered for listing, by state or federal agencies.

LEGAL STATUS

FEDERAL

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

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

ST.....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 therefore is destined or very likely to become an endangered species within the near future.

SSC.....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 that, in the near future, may result in its becoming a threatened species.

PLANTS .....(Listed by the Florida Department of Agriculture and Consumer Services - FDACS)

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

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

Addendum 7—Cultural Information

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

A. General Discussion

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

B. Agency Responsibilities

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

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

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

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

C. Statutory Authority

Statutory Authority and more in depth information can be found in the following:

Chapter 253, F.S. – State Lands

Chapter 267, F.S. – Historical Resources

Chapter 872, F.S. – Offenses Concerning Dead Bodies and Graves

Other helpful citations and references:

Chapter 1A-32, F.A.C. – Archaeological Research

Other helpful citations and references:

Chapter 1A-44, F.A.C. – Procedures for Reporting and Determining Jurisdiction Over Unmarked Human Burials

Chapter 1A-46, F.A C. – Archaeological and Historical Report Standards and Guidelines

The Secretary of the Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings

D. Management Implementation

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

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

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

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

E. Minimum Review Documentation Requirements

In order to have a proposed project reviewed by the Division, the following information, at a minimum, must be submitted for comments and recommendations.

Project Description – A detailed description of the proposed project including all related activities. For land clearing or ground disturbing activities, the depth and extent of the disturbance, use of heavy equipment, location of lay down yard, etc. For historic structures, specific details regarding rehabilitation, demolition, etc.

Project Location – The exact location of the project indicated on a USGS Quadrangle map, is preferable. A management base map may be acceptable. Aerial photos indicating the exact project area as supplemental information are helpful.

Photographs – Photographs of the project area are always useful. Photographs of structures are required.

Description of Project Area – Note the acreage of the project; describe the present condition of project area, and any past land uses or disturbances.

Description of Structures – Describe the condition and setting of each building within project area if approximately fifty years of age or older.

Recorded Archaeological Sites or Historic Structures – Provide Florida Master Site File numbers for all recorded historic resources within or adjacent to the project area. This information should be in the current management plan; however, it can be obtained by contacting the Florida Master Site File at (850) 245-6440 or Suncom 205-6440.

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

Susan M. Harp
Historic Preservation Planner
Division of Historical Resources
Bureau of Historic Preservation
Compliance and Review Section
R. A. Gray Building
500 South Bronough Street
Tallahassee, FL 32399-0250

Phone: (850) 245-6333
Fax: (850) 245-6438

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

1) Districts, sites, buildings, structures, and objects may be considered to have significance in American history, architecture, archaeology, engineering, and/or culture if they possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:

- **a)** are associated with events that have made a significant contribution to the broad patterns of our history; and/or
- **b)** are associated with the lives of persons significant in our past; and/or
- **c)** embody the distinctive characteristics of type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; and/or
- **d)** have yielded, or may be likely to yield, information important in prehistory or history.

2) Ordinarily cemeteries, birthplaces, or graves of historical figures; properties owned by religious institutions or used for religious purposes; structures that have been moved from their original locations; reconstructed historic buildings; properties primarily commemorative in nature; and properties that have achieved significance within the past 50 years shall not be considered eligible for the *National Register*. However, such properties will qualify if they are integral parts of districts that do meet the criteria or if they fall within the following categories:

- **a)** a religious property deriving its primary significance from architectural or artistic distinction or historical importance; or
- **b)** a building or structure removed from its original location but which is significant primarily for architectural value, or which is the surviving structure most importantly associated with a historic person or event; or
- **c)** a birthplace or grave of an historical figure of outstanding importance if there is no appropriate site or building directly associated with his productive life; or
- **d)** a cemetery which derives its primary significance from graves of persons of transcendent importance, from age, distinctive design features, or association with historic events; or

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

f) a property achieving significance within the past 50 years, if it is of exceptional importance.

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

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

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

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

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

Addendum 8—2010 Land Management Review Report With Responses

Name of Site: Lignumvitae Key Botanical State Park

County: Monroe County

Managed by: Department of Environmental Protection, Division of Recreation and Parks (Division)

Acres: 10,817.65 Acres

Review Date: 11/18/10

Review Team Determination

1. Managed in accordance with acquisition purpose? **Yes**

2. Management practices, including public access, in compliance with the management plan? **Yes**

Consensus Commendations to the Managing Agency

The following commendations resulted from discussion and vote of the review team members.

1. The team commends the park staff for their major restoration efforts on the seagrass beds impacted by prop scarring.
2. The team commends the park staff on their outstanding efforts to reduce carbon footprint by installation of passive power sources on the island.
3. The team commends the park staff on the ongoing efforts to restore the Matheson House, especially the removal of the restroom and the addition of time-appropriate hurricane shutters.
4. The team commends the park staff for their innovative and attractive kiosk at the Indian Key Fill that interprets the Triangle of History.

Consensus Recommendations to the Managing Agency

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

1. The team recommends that DRP coordinate with DHR to address any discrepancies with the FMSF.

Managing Agency Response: **Neither Agree nor Disagree.** This may not be applicable with the updated Unit Management Plan since the Florida Master Site File should be current.

2. The team recommends additional marine law enforcement at this park in an effort to better protect seagrass beds.

Managing Agency Response: Agree. The management plan update will address law enforcement needs. The Division must request additional assistance through the Division of Law Enforcement or from a local law enforcement agency. However, no new law enforcement can be assigned to this or any other park unit unless they are appropriated by the Legislature or reassigned from other units. Funding is determined annually by the Florida Legislature.

3. The team recommends that DRP continue their efforts to coordinate with the Village of Islamorada, FWC, and DOT to achieve appropriate development for public use at Indian Key Fill boat ramp.

Managing Agency Response: Agree. Since the review new additions, (map/chart and "You are here") have been added. Also a "COMPASS ROSE" directional emblem will be added to deck. Plants and native thatch palms will be added. Rope now joins the pilings making it more obvious were to enter. New boat ramp will be added soon in cooperation with Florida Fish and Wildlife Conservation Commission.

4. The team recommends that DRP the park service complete the second residence as written in the Management Plan.

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

5. The team recommends that DRP establish monitoring protocol for the contaminated solution hole.

Managing Agency Response: Agree. This will require expertise from contractor and additional funding.

6. The team recommends that DRP encourage additional research organizations to include this site in their research and ensure the sharing of the data.

Managing Agency Response: Agree. Have attempted to do so in the past with Florida International University and will continue to work with other research organizations to achieve this objective.

Management Actions Exceeded Expectations

1. Natural Communities, regarding coastal berm, coastal rockland hammock, rock barren, marine tidal swamp, marine composite substrate, marine consolidated substrate, marine grass bed, and marine unconsolidated substrate.
2. Listed Species, regarding animal and plant inventory.
3. Natural Resource Survey, regarding listed species or habitat monitoring, other non-game species or habitat monitoring, other habitat management effects monitoring, and invasive species survey/monitoring.
4. Cultural Resources, regarding cultural resource surveys, protection and preservation.
5. Restoration of Ruderal Areas, regarding sea grasses and Matheson House.
6. Non-Native, Invasive & Problem Species, regarding prevention and control of plants, animals and pests/pathogens.
7. Surface Water Monitoring, regarding surface water quality.
8. Resource Protection, regarding boundary surveys and signage.
9. Adjacent Property Concerns, regarding expanding development and inholdings/additions.
10. Public Access & Education, regarding water access, environmental education and outreach, interpretive facilities and signs, and recreational opportunities.
11. Management Resources, regarding waste disposal, sanitary facilities, buildings and equipment.

Findings

1. Discussion in the management plan regarding Natural Resources Survey, more specifically, listed species or habitat monitoring.

Managing Agency Response: Agree. This has been included in the updated UMP as per the new boilerplate language.

2. Discussion in the management plan regarding Adjacent Property Concerns, regarding the discussion of surplus land determination.

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

3. Discussion in the management plan regarding Public Access & Education, specifically parking.

Managing Agency Response: Agree. With the understanding that the Klopp tract is no longer considered to be a suitable location for a proposed visitor center as it was originally intended.

4. Discussion in the management plan regarding Proposed Uses, specifically a visitor's center.

Managing Agency Response: Agree. See above.

5. The need for Surface Water Monitoring, specifically the quality, with documentation in the management plan.

Managing Agency Response: Neither Agree nor Disagree. Park and District staff will not be able to maintain a water quality monitoring program on their own. Instead, staff will attempt to enlist assistance of the Water Management District (or local Water Authority or local health department) to assist the park

6. Resource Protection, regarding more law enforcement presence, including documentation in the management plan.

Managing Agency Response: Agree. The management plan update will address law enforcement needs. The Division must request additional assistance through the Division of Law Enforcement or from a local law enforcement agency. However, no new law enforcement can be assigned to this or any other park unit unless they are appropriated by the Legislature or reassigned from other units. Funding is determined annually by the Florida Legislature.

7. **The need for Management Resources, specifically staff and funding, with documentation in the management plan.**

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