

DAGNY JOHNSON KEY LARGO HAMMOCK

BOTANICAL STATE PARK

UNIT MANAGEMENT PLAN

APPROVED

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

SEPTEMBER 1, 2004



Department of Environmental Protection

Jeb Bush
Governor

Marjorie Stoneman Douglas Building
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Colleen M. Castille
Secretary

September 1, 2004

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

Re: Dagney Johnson Key Largo Hammock Lease # 3267

Ms. White:

On August 20, 2004, the Acquisition and Restoration Council recommended approval of the Dagney Johnson Key Largo State Park management plan.

On September 1, 2004, the Office of Environmental Services, acting as agent for the Board of Trustees of the Internal Improvement Trust Fund, approved the management plan for Dagney Johnson Key Largo Hammock State Park. Pursuant to Section 253.034, Florida Statutes, and Chapter 18-2, Florida Administrative Code this plan's ten-year update will be due on September 1, 2014.

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

Sincerely,

Paula L. Allen

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

"More Protection, Less Process"

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INTRODUCTION

Dagny Johnson Key Largo Hammock Botanical State Park is located in Monroe County (see Vicinity Map) on the east side of County Road 905 (C-905). An additional parcel is located on the northwest side of C-905 south of the Angler's Club. On the west side north of the intersection of C-905 and U.S. Highway 1 is a 37-acre parcel that is leased to the U.S. Fish and Wildlife Service. Although C-905 is owned by the Department of Transportation (DOT), and is therefore listed on some maps as State Road 905, it is maintained by Monroe County and is designated on all road signs as C-905. Therefore, in this plan, this road will be referred to as C-905. Access to the park is ¼ mile north of the junction of U.S. Highway 1 and C-905 at the old Port Bougainville entrance.

The park currently contains approximately 2,454 acres. For this plan, park acreage is calculated on the composition of natural communities, in addition to ruderal and developed areas.

At Dagny Johnson Key Largo Hammock Botanical State Park, public outdoor recreation and conservation is the designated single use of the property. There are no legislative directives that constrain the use of this property; however, the North Key Largo Land Use Feasibility Study, approved by the Governor and Cabinet in April 1991, contains executive directives that apply to the park. The initial acquisition of the park was on July 26, 1982, and was funded under the Land Acquisition Trust Fund (see Addendum 1).

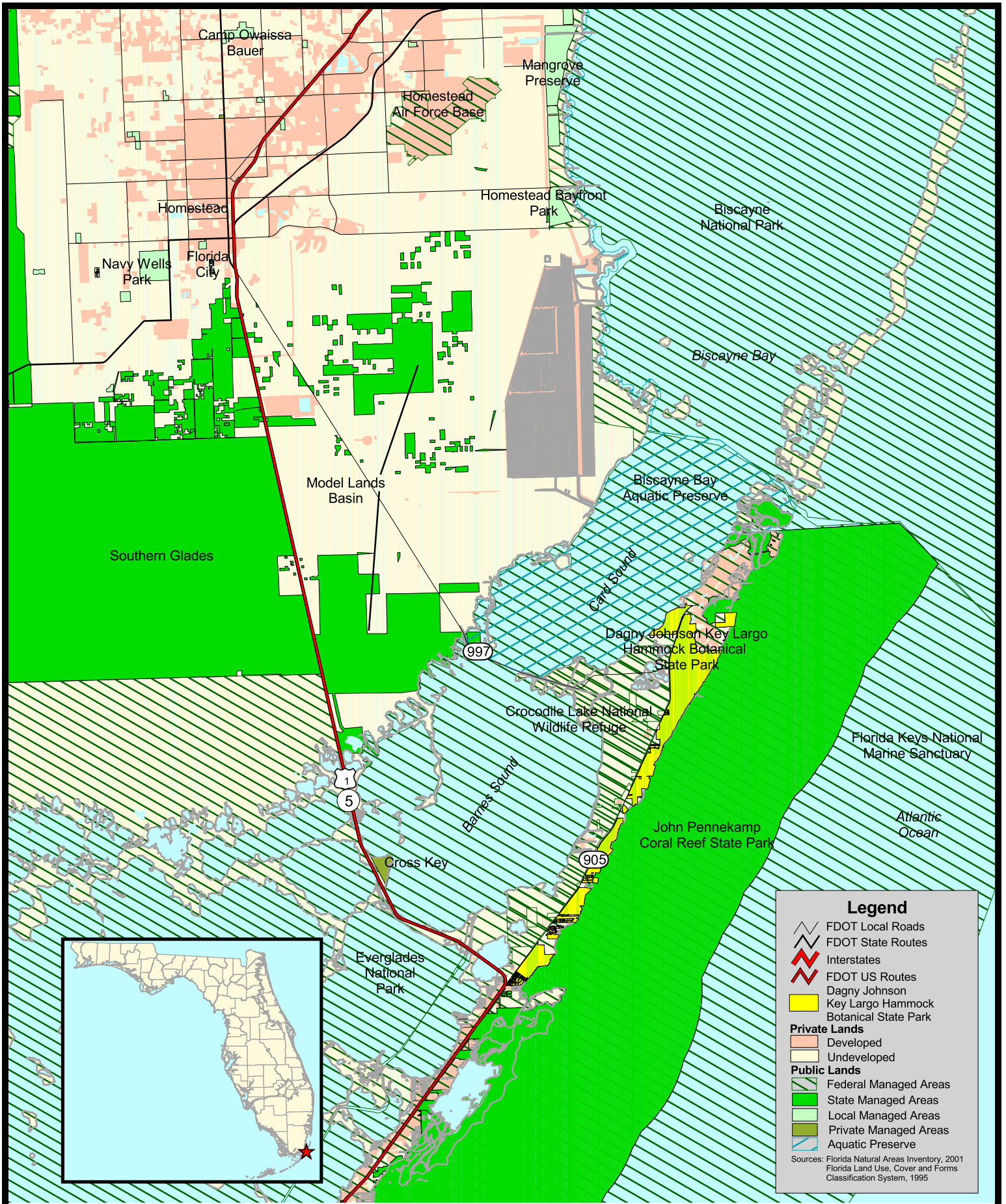
PURPOSE AND SCOPE OF THE PLAN

This plan serves as the basic statement of policy and direction for the management of Dagny Johnson Key Largo Hammock Botanical State Park as a unit of Florida's state park system. It identifies the objectives, criteria and standards that guide each aspect of park administration, and sets forth the specific measures that will be implemented to meet management objectives. The plan is intended to meet the requirements of Sections 253.034 and 259.032, Florida Statutes, Chapter 18-2, Florida Administrative Code, and intended to be consistent with the State Lands Management Plan. With approval, this management plan will replace the March 20, 1998 approved plan. All development and resource alteration encompassed in this plan is subject to the granting of appropriate permits; easements, licenses, and other required legal instruments. Approval of the management plan does not constitute an exemption from complying with the appropriate local, state or federal agencies. This plan is also intended to meet the requirements for beach and shore preservation, as defined in Chapter 161, Florida Statutes and Chapters 62B-33, 62B-36 and 62R-49, Florida Administrative Code.

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

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

In the development of this plan, the potential of the park to accommodate secondary management purposes ("multiple uses") was analyzed. These secondary purposes were considered within the context of the Division's statutory responsibilities and an analysis of the resource needs and values of the park. This analysis considered the park natural and cultural



Dagny Johnson Key Largo Hammock Botanical State Park



Vicinity Map

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

MANAGEMENT PROGRAM OVERVIEW

Management Authority and Responsibility

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

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

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

Many operating procedures are standard system wide and are set by policy. These procedures are outlined in the Division's Operations Procedures Manual (OPM) that covers such areas as personnel management, uniforms and personal appearance, training, signs, communications,

fiscal procedures, interpretation, concessions, camping regulations, resource management, law enforcement, protection, safety and maintenance.

In the management of Dagny Johnson Key Largo Hammock Botanical State Park preservation and enhancement of natural conditions is all important. Resource considerations are given priority over user considerations and development is restricted to the minimum necessary for ensuring its protection and maintenance, limited access, user safety and convenience, and appropriate interpretation. Permitted uses are primarily of a passive nature, related to the aesthetic, educational and recreational enjoyment of the preserve, although other compatible uses are permitted in limited amounts. Program emphasis is placed on interpretation of the natural and cultural attributes of the preserve.

Park Goals and Objectives

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

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

Natural and Cultural Resources

1. Provide habitat protection and preservation in order to protect the flora and fauna of the site.
 - A. Continue actively removing exotic flora and fauna, especially feral and free roaming cats, which adversely affect park wildlife.
 - B. Continue to pursue grants and other funding sources to restore disturbed areas within the park.
 - C. Continue to protect endangered species, especially the Key Largo woodrat and the Key Largo cotton mouse, by monitoring population size and distribution within the park, augmenting populations where necessary, and reintroducing extirpated species where appropriate.
 - D. Continue conservation of endangered species work including mahogany mistletoe, Cuban clustervine and semaphore cactus.
 - E. Inventory marine species in Dispatch Slough.
 - F. Conduct survey and identify species of shrew that was caught during woodrat research project.
 - G. Conduct vertebrate and invertebrate surveys to update animal list for park.
 - H. Continue to ensure that all access points are secured to prevent unauthorized access.
 - I. Continue to monitor Mosquito Control activities to protect invertebrate species specifically the endangered Schaus swallowtail butterfly, and determine mortality rates within the park.

- J. Continue to work cooperatively with the U.S. Fish and Wildlife Service to monitor, protect and augment the imperiled wood rat population in North Key Largo.
- K. Re-map listed plant species on a five year schedule (completed in 2001).
- 2. Increase protection of the cultural resources of the site.
 - A. Conduct a Level II archaeological survey to determine the extent and location of prehistoric and historic sites.
 - B. Protect existing archaeological sites and their associated artifact assemblage from vandalism, erosion and other forms of encroachment.
- 3. Continue to restore the natural communities and hydrology that has been impacted by human activity.
 - A. Continue to remove all manmade structures associated with Port Bougainville, Nike Missile Tracking Site and other developed areas.
 - B. Restore natural hydrology and topography by removing basins, canals, rock quarries and the fill mound in Port Bougainville.
 - C. Open culverts under C-905 where it crosses Dispatch Slough to improve water flow and circulation.
 - D. Investigate feasibility of re-establishing pine rockland habitat.
 - E. Work with law enforcement to prevent illegal activities such as poaching, drug smuggling, illegal access, and dumping of trash and vegetative debris.

Recreational Goals

- 4. Continue to provide quality resource based outdoor recreational and interpretive programs and facilities at the state park.
 - A. Continue to interpret natural and cultural resources.
 - 1) Continue to host “Delicate Balance of Nature” lecture series.
 - B. Continue to maintain the nature trail at Port Bougainville.
- 5. Seek funding to expand recreational and interpretive opportunities through the improvement of programs and the development of new use areas and facilities, as outlined in this management plan.
 - A. Increase interpretive opportunities.
 - 1) Pursue funding to improve nature trail and interpretive signs, educational brochures and kiosks.
 - 2) Conduct guided nature walks on subjects such as bird watching, nature photography and plant identification.
 - 3) Continue public education programs.
 - B. Expand hiking and biking trails.
 - 1) Utilize old C-905 and Card Sound Road east extension for hiking and biking.
 - 2) Expand hiking trails in Port Bougainville area.
 - 3) Work with the Overseas Heritage Trail to connect the bike trail to the northern end of Key Largo along C-905.

Park Administration/Operations

- 6. Pursue funding to complete acquisition of the parcels identified as optimum boundary including parcels identified by the North Key Largo CARL projects.
- 7. Investigate methods of monitoring and controlling visitor entrance to the park
 - A. Survey, post, and maintain all park boundaries; fencing where necessary.
- 8. Host special events for local schools.
- 9. Continue partnerships with other governmental and private land managers to manage the site.
- 10. Continue volunteer and internship programs.

Management Coordination

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

The Department of Agriculture and Consumer Services, Division of Forestry (DOF), assists Division staff in the development of wildfire emergency plans and provides the authorization required for prescribed burning. The Florida Fish and Wildlife Conservation Commission (FFWCC), assists staff in the enforcement of state laws pertaining to wildlife, freshwater fish and other aquatic life existing within park boundaries. In addition, the FFWCC aids the Division with wildlife management programs, including the development and management of Watchable Wildlife programs. The U.S. Fish and Wildlife Service (USFWS) is working extensively with park staff on the Key Largo woodrat and Key Largo cottonmouse populations both within the park boundaries and in the nearby Crocodile Lake National Wildlife Refuge. In addition to surveying for species distribution and population size, this partnership also includes a captive breeding program for the Key Largo woodrat. The DEP, Bureau of Invasive Plant Management has provided funds to the park for invasive exotic plant removal projects. The Department of State, Division of Historical Resources (DHR) assists staff to assure protection of archaeological and historical sites. The Department of Environmental Protection (DEP), Office of Coastal and Aquatic Managed Areas (CAMA) aids staff in aquatic preserves management programs. The DEP, Bureau of Beaches and Wetland Resources aids staff in planning and construction activities seaward of the Coastal Construction Line. In addition, the Bureau of Beaches and Wetland Resources aid the staff in the development of erosion control projects. Emphasis is placed on protection of existing resources as well as the promotion of compatible outdoor recreational uses.

Public Participation

The Division provided an opportunity for public input by conducting a public workshop and an advisory group meeting. A public workshop was held on December 3, 2003 and a DEP Advisory Group meeting was held on December 4, 2003. The purpose of these meetings is to present the plan to the public and to provide the Advisory Group members the opportunity to discuss this draft management plan. Addendum 1 also contains the advisory group members list and the advisory group staff report.

Other Designations

Dagny Johnson Key Largo Hammock Botanical State Park is within an Area of Critical State Concern as defined in section 380.05, Florida Statutes. The park is a component of the Florida Greenways and Trails System.

All waters within the unit have been designated as Outstanding Florida Waters, pursuant to Chapter 62-302 Florida Administrative Code. Surface waters in this unit are also classified as Class III waters by DEP. This unit is adjacent to an aquatic preserve as designated under the Florida Aquatic Preserve Act of 1975 (section 258.35, Florida Statutes).

RESOURCE MANAGEMENT COMPONENT

INTRODUCTION

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

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

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

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

RESOURCE DESCRIPTION AND ASSESSMENT

Natural Resources

Topography

Dagny Johnson Key Largo Hammock Botanical State Park is part of the geographic region of high coral keys with maximum elevations of ten to twelve feet above mean sea level. The natural intertidal, tidal and submerged areas of this park, including Dispatch Slough at the north end, are less than two feet below mean sea level. Natural solution holes, created by the dissolution of the limestone by rainfall, form depressions in the limestone. Some solution holes are more than five feet in depth. Some of the topography of the upland and submerged areas have been altered by human activity. This activity includes: the digging of deep canals and basins; filling wetlands to create adequate elevations for residential construction and installation of roads; and a large fill mound at the Port Bougainville site.

Geology

The upper layer geologic formation of the Florida Keys from Soldier Key to Bahia Honda 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 level has 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 Classification and Correlation of the Soils of Monroe County Keys Area Florida identifies six soil types at Dagny Johnson Key Largo Hammock Botanical State Park. They are Pennekamp gravelly muck, Matecumbe muck, Rock Outcrop-Tavernier complex, Islamorada muck, Key Largo muck and Udorthents-Urban land complex (see Soils Map).

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. Soil in this unit is well drained. Pennekamp gravelly muck is found in close association with Matecumbe muck, which is found at lower elevations that are subject to occasional flooding. In the low intertidal area, 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. The exposed limestone rock has weathered into smooth caprock pitted with solution holes filled with accumulated marl soil. The submerged shallow bottom in Dispatch Slough consists of fine mud of organic particles and calcareous sediments known as Islamorada muck. In addition to the Rock Outcrop-Tavernier complex, both Islamorada muck and Key Largo muck are associated with mangrove tidal swamps. Udorthents-Urban land complex includes constructed upland areas where land has been altered by dredging and filling for development. Addendum 3 contains detailed soil descriptions.

Minerals

Key Largo limestone is the major mineral deposit at Dagny Johnson Key Largo Hammock Botanical State Park. Minor mineral deposits in the park are calcite and halite.

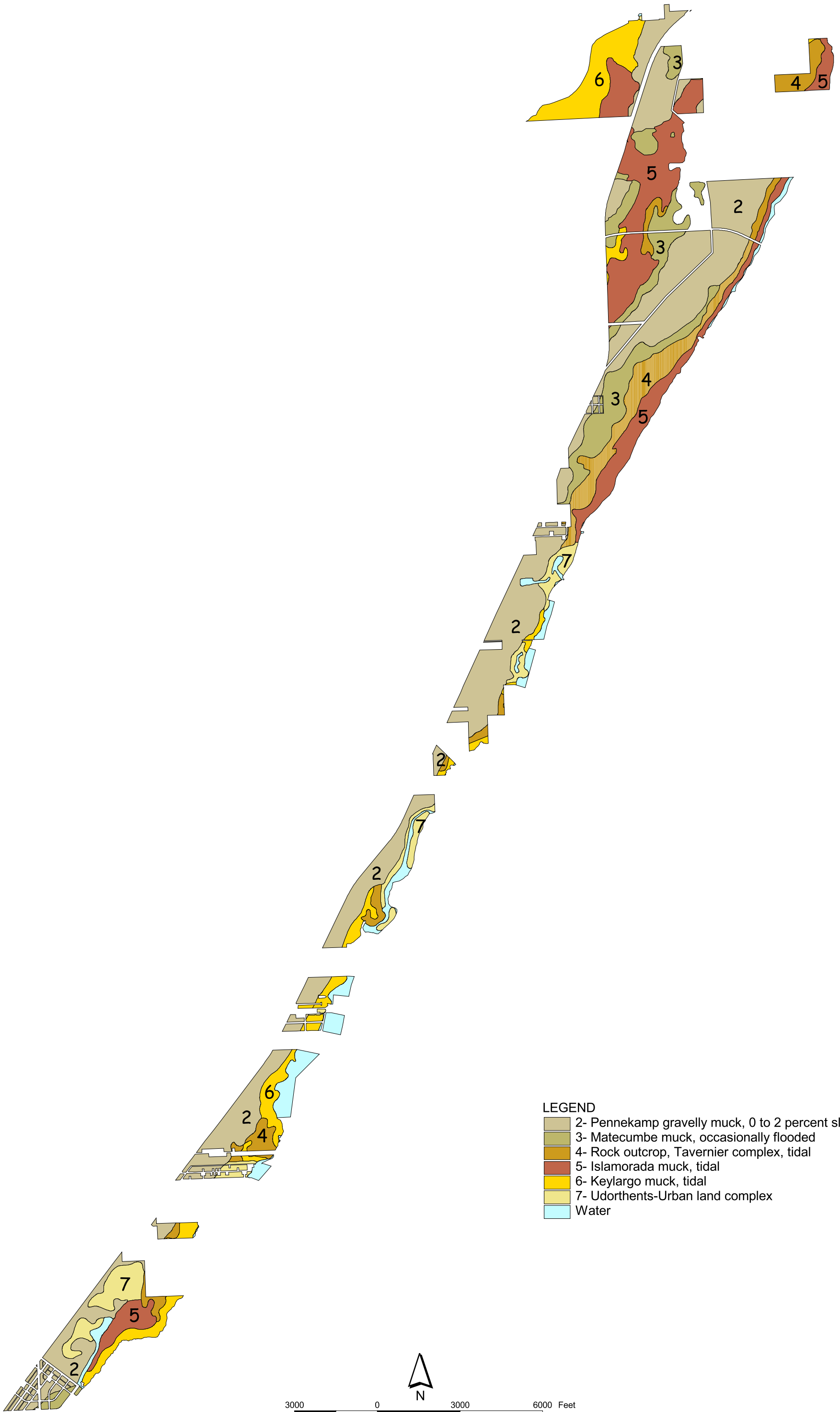
Hydrology

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

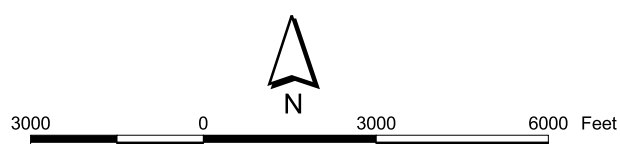
The system of classifying natural communities employed in this plan was developed by the Florida Natural Areas Inventory (FNAI) [FNAI Descriptions](#). The premise of this system is that physical factors, such as climate, geology, soil, hydrology and fire frequency generally determine the species composition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

The park contains six distinct natural communities (see Natural Communities Map) in addition to ruderal and developed areas. Park specific assessments of the existing natural communities are provided in the narrative below. A list of plants and animals occurring in the unit is contained in



LEGEND

- 2- Pennekamp gravelly muck, 0 to 2 percent slopes
- 3- Matecumbe muck, occasionally flooded
- 4- Rock outcrop, Tavernier complex, tidal
- 5- Islamorada muck, tidal
- 6- Keylargo muck, tidal
- 7- Udorthents-Urban land complex
- Water





BARNES SOUND

ATLANTIC OCEAN

LEGEND

- 3 - Coastal Berm-40.13 ac.
- 4 - Coastal Rock Barren-188.06 ac.
- 10 - Pine Rockland-27.21 ac.
- 12 - Rockland Hammock-1091.35 ac.
- 76 - Marine Tidal Swamp-876.48 ac.
- 77 - Marine Unconsolidated Substrate-22.97 ac.
- 81 - Ruderal-208.25ac.
- Shore Lines



DAGNY JONSON KEY LARGO
HAMMOCKS BOTANICAL STATE PARK

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

NATURAL COMMUNITIES
MAP

Addendum 4.

Coastal berm. A narrow coastal berm parallels the fringe of red mangroves along portions of the shoreline of Key Largo Hammock. This berm is characterized by a ridge of storm deposited sediment that is subjected to an accumulation of flotsam. The substrate is coarse, calcareous sand which has accumulated to an elevation of one to two feet. A variety of plant associations develop on this ridge and include dense thickets of large shrubs, small trees or sparse shrubby vegetation. Such species include; blackbead (*Pithecellobium keyense*), prickly pear cactus (*Opuntia stricta*), Spanish stopper (*Eugenia foetida*), poisonwood (*Metopium toxiferum*), sea oxeye (*Borrchia arborescens*), manchineel (*Hippomane mancinella*), and white indigo berry (*Randia aculeata*). Manchineel is a rare species found in only a few locations in the Keys. The population in the park is located on the east side of a coastal berm near a cultural site, has been impacted by recent tropical storm activity, and consists of less than twelve individuals. Unfortunately this area has been invaded both in historical times and in recent times by exotic species particularly portia (*Thespesia populnea*) and lather leaf (*Colubrina asiatica*). These areas have already been targeted by exotic removal projects.

In the areas where the coastal berm occurs, it grades into coastal rock barren and marine tidal swamp.

Coastal rock barren. Coastal rock barren is a very rare community, occurring in scattered patches along a few shorelines in the Florida Keys. At Key Largo Hammock, the coastal rock barren is in good to excellent condition and occurs between the rockland hammock and the coastal berm/marine tidal swamp. The substrate is exposed cap rock pitted with small solution holes.

The coastal rock barren extends on both sides of Dispatch Slough in small outcroppings within the slough, and forms an intermittent zone of varying width the length of the park. Prior to acquisition by the State, more land was cleared at the south end of the park for proposed developments. As a result, the north end of the park has a better-developed coastal rock barren community since there were fewer disturbances to the habitat.

The coastal rock barren occurs in areas that are close to the marine tidal swamp, and therefore becomes inundated with as much as six inches of water during extreme high tides. This periodic inundation helps to maintain this plant community. Species found here include; joewood (*Jacquinia keyensis*), black torch (*Erithalis fruticosa*), saltwort (*Batis maritima*), black mangrove (*Avicennia germinans*), white mangrove (*Laguncularia racemosa*), saffron plum (*Sideroxylon celastrina*), Key thatch palm (*Thrinax morrisii*), wild dilly (*Manilkara jaimiqui* ssp. *emarginata*), sea lavender (*Limonium carolinianum* var. *angustatum*), Christmas berry (*Lycium carolinianum*), prickly pear cactus, limber caper (*Capparis flexuosa*) and buttonwood (*Conocarpus erecta*). Exposed branches of shrubs and small trees provide suitable habitat for epiphytes including dollar orchid (*Encyclia boothiana*), butterfly orchid (*Encyclia tampensis*), common wild pine (*Tillandsia fasciculata*), twisted air plant (*Tillandsia flexouosa*), silvery wild pine (*Tillandsia paucifolia*) as well as a variety of lichens. The coastal rock barren at Key Largo Hammock needs to be protected from development, exotic species, and poaching of both plant material and driftwood.

Until recently, old C-905 and the abandoned portion of Card Sound Road bisected Dispatch Slough in two locations. This altered the natural flow of the slough and altered the population and distribution of both plant and animal species. In 2000, two sections of road were removed and the flow of Dispatch Slough was restored. Vegetation die-off has already started to occur in this ecotone including sawgrass (*Cladium jamaicense*), wild dilly, joewood, and other herbaceous vegetation. The restoration of Dispatch Slough has resulted in the widening of the

coastal rock barren habitat as the increase in saltwater impacts hammock species that were encroaching into the slough.

Mahogany mistletoe (*Phoradendron rubrum*), which was thought to have been extirpated from the park was rediscovered in 1999. Thirty-four individuals were found on three host trees approximately seventy-five feet from the edge of Dispatch Slough. However, five weeks after this discovery, the smallest host tree and six of the mistletoe individuals died of unknown causes. Until recently, it was believed to be the only wild population of mahogany mistletoe in the United States. However, two mahogany trees with mistletoe individuals were discovered on Sands Key in Biscayne National Park in December 2002 by researchers from the Institute for Regional Conservation (IRC). In Key Largo Hammock, extensive surveys were conducted by Park and District staff along with researchers from IRC to locate additional populations in the park. None were found.

The endangered semaphore cactus (*Opuntia corallicola*) was re-introduced in 1996 by Park and District staff with the cooperation of staff from Fairchild Tropical Garden (FTG) at six locations in both the hammock and the hammock/coastal rock barren ecotone. The hammock sites were later deemed unsuitable habitat and the remaining live individuals were removed. Recent storm events have altered sections of the hammock/coastal rock barren ecotone. At two of the outplanting sites, there are several downed trees and limbs, some of which have fallen close to individual plants. Canopy gaps have increased the light levels so the composition of the groundcover has changed. This area is also prone to extreme high tides in the spring and fall, which has had an impact on several of the outplanted cactus.

Observations made during this study indicated that the higher elevation coastal rock barren habitat that is not subject to even occasional tidal inundation is the more appropriate habitat for this species. Therefore, an additional fifty individuals were outplanted at two coastal rock barren locations in early 2003.

Park and District staff, staff from IRC and staff from Fairchild Tropical Garden also conducted an extensive survey in the coastal rock barren for the rare Cuban clustervine (*Jacquemontia havanensis*). Previously thought to occur only along the hammock edge at the three-way intersection, close to 100 individuals were located and mapped in the coastal rock barren/hammock ecotone during this survey. This species is found only at Key Largo Hammock and Bahia Honda State Park, 70 miles southwest of Key Largo.

Pine rockland. On approximately 15 acres east of Dispatch Slough is a relict pine rockland, an unusual plant community for the upper Keys. This habitat was first described by Taylor Alexander (Alexander, 1974), and was believed to have been a functional pine rockland until the pines were logged in the early 1900s (Stevenson, 1969 in Kruer, 1992). This habitat is thought to be a remnant pine-oak successional plant community. However, saltwater intrusion due to the impoundment by road construction across Dispatch Slough, and the rise in sea level over the past 100 years, resulted in the present elevation being just barely above high tide which is atypical for a pine rockland. Several tree stumps of Dade County slash pine (*Pinus elliottii* var. *densa*) are the only evidence of pine trees as no germination has occurred. These pine stumps are interspersed with red mangrove (*Rhizophora mangle*), black mangrove, white mangrove, and buttonwood trees, along with pine rockland plant associates including saw palmetto (*Serenoa repens*), wax myrtle (*Myrica cerifera*), and locustberry (*Byrsonima lucida*) in the higher elevations. The substrate is primarily limestone caprock with a clay-like marl in depressions overlaid with dead organic material. The southernmost live oak (*Quercus virginiana*) can be found near the edge of the abandoned portion of Card Sound Road which bisects this plant community. There is also a species of varnish leaf (*Dodonea eleagnoides*) that is restricted to Key Largo Hammock, Big Pine Key, and an island in Great White Heron National Wildlife

Refuge. It is important to note that the pine rockland species are rare or absent in the upper Keys outside this small section of the island.

Although prescribed fire is an important resource management tool in a pine rockland community, it is not utilized at this site. It is believed that sea level rise has contributed to the succession of the pine rockland to other plant community types.

Rockland hammock. The rockland hammock at Key Largo Hammock is the largest West Indian hardwood hammock in the continental United States. Despite disturbance from extensive logging activities, development, early settlers, and road construction (C-905, old C-905 and Card Sound Road), the majority of the hammock is in relatively good condition. Diversity is high as a result of many successional stages. Four U.S. champion trees, white ironwood (*Hypelate trifoliata*), milkbark (*Drypetes diversifolia*), Bahama strongbark (*Bourreria ovata*), and spicewood (*Calyptanthes zuzugium*) are found in the park. Mature wild tamarind (*Lysiloma latisiliqua*), mahogany (*Swietenia mahagoni*), gumbo limbo (*Bursera simaruba*), poisonwood and strangler fig (*Ficus aurea*) trees dominate the canopy. Understory trees include two rare species of stoppers; red stopper (*Eugenia rhombea*) and redberry stopper (*Eugenia confusa*) as well as white stopper (*Eugenia axillaris*), Spanish stopper, milkbark, wild coffee (*Psychotria nervosa*), soldierwood (*Colubrina elliptica*), lignum vitae (*Guaiacum sanctum*), wild lime (*Zanthoxylum fagara*) and torchwood (*Amyris elemifera*). Wild lime and torchwood are significant components in the hammock because they are host trees for the federally endangered Schaus swallowtail butterfly (*Heraclides aristodemus*), which has a very limited range.

A few sections of the rockland hammock were impacted by recent storm events, particularly tornadoes during Tropical Storm Mitch in 1999.

Several species of bromeliads and orchids including dollar orchid, butterfly orchid, common wild pine, twisted air plant, silvery wild pine, and giant wild pine (*Tillandsia utriculata*) can be found on mature trees throughout the hammock.

A number of solution holes in the hammock retain fresh water except under conditions of drought. These areas support moisture loving plants such as cabbage palm (*Sabal palmetto*), pond apple (*Annona glabra*), and ferns including leather fern (*Acrostichum aureum*). The hammock grades into a narrow strand of transition vegetation found along the hammock margins in areas of lower elevation.

The rockland hammock is host to several endangered animal species. The Key Largo woodrat (*Neotoma floridana smalli*) and the Key Largo cotton mouse (*Peromyscus gossypinus allapaticola*) are found only in north Key Largo. Despite attempts to translocate these species to Lignumvitae Key Botanical State Park in the early 1970s, recent studies (Duquesnel, J.G., unpublished) show that the population did not survive. Though superficially similar, there are significant differences in the species composition and size of these two hammocks. These factors may account for the failed translocation to Lignumvitae Key.

Recent work conducted by the U.S. Fish and Wildlife Service (USFWS) on the population size and distribution of the Key Largo woodrat in North Key Largo indicates that the population has seriously declined over the past few years. A captive-breeding program has been initiated by the USFWS in order to prevent the extinction of this species.

The historic range of the endangered Schaus swallowtail butterfly is limited to a few islands in the upper Keys. This species is found in the hammock and along hammock edges in the park. It is susceptible to insecticides, so close monitoring of mosquito control activities adjacent to the park is a high priority for park staff.

White-crowned pigeons, land crabs, butterflies and many species of birds also utilize the

rockland hammock in the park. However, development adjacent to and within the hammock has had detrimental effects on the species diversity.

Habitat fragmentation and areas that have been, and continue to be used as dumps, pose a serious threat by invasion of exotic species. Exotic species are also a threat in several areas that had been farmed by early settlers. In particular, sapodilla (*Manilkara zapota*) is spreading throughout undisturbed sections of hammock. Park staff and volunteers have initiated herbicide treatment of the sapodilla. Removal of all exotic species and restoration of disturbed parcels to provide a contiguous expanse of hammock are the primary goals in maintaining the hammock integrity and species diversity at this site.

This plant community appears to be the most susceptible to the effects of canopy fragmentation caused by roads and utility right-of-way. Contiguous canopy is the rockland hammocks' best defense against the catastrophic effects of storm winds.

Marine tidal swamp. The marine tidal swamp at Key Largo Hammock is in excellent condition. Red mangroves are established along the shoreline with their prop roots submerged in the water. Typical species found attached to or living near the red mangrove prop roots include snapper (*Lutjanus* spp.), mosquitofish (*Gambusia affinis*), oysters (*Isognomon alatus*), barnacles (*Lepas anatifera*), mangrove crabs (*Goniopsis cruentata*) and fiddler crabs (*Uca pugilator*). The black mangroves are landward of the red mangroves in the intertidal zone, which is subject to tidal influences. To cope with saltwater inundation, salinity fluctuations, and anaerobic soil, black mangroves extend pneumatophores above the surface of the soil to aid in gas exchange. The white mangroves are often found in association with the black mangroves, but prefer slightly higher ground that is not prone to the daily tidal influences.

A mature forest of red mangroves lines the Atlantic shore. This fringe is of varying width, sometimes a narrow band of less than fifty feet, sometimes several hundred feet wide. In many areas, the trees exceed twenty feet in height. The marine tidal swamp grades into marine grass bed in the submerged areas of John Pennekamp Coral Reef State Park and coastal berm or coastal rock barren as the elevation increases towards the rockland hammock.

The rocky area of scrub mangroves along the Atlantic shore inland from the fringing mangroves varies in width from less than fifty feet to almost a quarter mile depending on the elevation of the terrain. It is dominated by black and white mangroves, and is characterized by jagged limestone weathered to caprock and pitted with numerous solution holes. Additional plants found here include glasswort (*Salicornia bigelovii*), sea blite (*Suaeda linearis*), and buttonwood. A host of epiphytic plants including butterfly orchid, common wild pine, and twisted air plant, are found attached to tree branches, particularly those of buttonwood trees. Some of the solution holes found in this area were enhanced by early settlers to be utilized as freshwater holes, which has altered the natural topography of the habitat.

Another expanse of scrub mangroves occupies Dispatch Slough. Red mangroves occur in the center of the slough with the black and white mangroves and buttonwoods growing along the edges. This shallow depression originally connected the Atlantic Ocean with Card Sound. Water flow among the mangroves was initially disrupted when Card Sound Road and old C-905 were constructed to the north and again when the new Card Sound Road and C-905 were re-constructed in parallel locations in the 1970s. The few culverts that were installed in the mid-1990's allowed limited water flow, but the slough had begun to reclaim some of its former passage by eroding and crossing the old C-905 roadbed. A small borrow pit was created as a source of fill for road building. Although it is almost completely surrounded by dredged spoil, it has become part of the slough with a thicket of red mangroves along its shores. This borrow pit has become the home of one or more American crocodiles (*Crocodylus acutus*). The natural flow

of water was restored to Dispatch Slough in 2000 when sections of old C-905 and abandoned portion of Card Sound Road were removed and restored to the original topography.

The slough is dotted with shallow areas where many species of birds such as woodstork (*Mycteria americana*), white ibis (*Eudocimus albus*), white pelican (*Pelecanus erythrorhynchos*) and roseate spoonbill (*Ajaia ajaja*) frequent the area particularly in the winter months. Several species of hawks including red-shouldered (*Buteo lineatus*) and short-tailed hawk (*Buteo brachyurus*) are observed over the slough.

Ruderal and developed areas. Ruderal and developed tracts can be found throughout Key Largo Hammock. Most of these areas have been purchased by the State to prevent further development of this fragile area. Plans are to restore all disturbed sites to their natural condition (Key Largo Use Feasibility Study, 1991).

North Key Largo is bisected by C-905 which runs along the length of the northern part of the island separating Key Largo Hammock and the Crocodile Lake National Wildlife Refuge. Extending the length of Key Largo Hammock on the east side of C-905 is the Florida Keys Electric Co-op (FKEC) right-of-way clearing which also holds the Southern Bell Telephone poles and a buried Florida Keys Aqueduct Authority (FKAA) 18 inch water main. There are approximately 44 acres of hammock buffer between C-905 and this easement. The easement is approximately 30 feet wide with a cable gate at openings at each sequentially numbered utility power pole. These openings are maintained by FKEC including tree pruning and tree snail relocation, but are prime spots for dumping and unauthorized access into the park.

There are several inholdings within Key Largo Hammock. These pose a concern to the park due to exotic infestation, habitat fragmentation, free roaming cats and the potential for encroachment and dumping along park boundaries. The ruderal and developed areas of Dagny Johnson Key Largo Hammock Botanical State Park are listed below in order from the south end to the north end of the park.

- 1). The southern boundary of the park is adjacent to Garden Cove subdivision. This area includes the Assistant Park Manager's residence, an impounded marine tidal swamp, and one residential home. Of concern are the feral and free roaming cats maintained by this residence and the nearby businesses. Also of concern is the dumping of exotic vegetation in the wetlands along the park boundary by several of the adjacent residential homes.

- 2). The largest ruderal tract within Key Largo Hammock is the Port Bougainville site, which encompasses approximately 100 acres. It was significantly disturbed and altered for several proposed developments in the late 1970s early 1980s. Some development had taken place prior to the closure of the property including; an entrance archway, marina with docks, interior lakes, completed model apartments, shells of five condominium buildings, three tennis courts, bath house, fill mound, storage building, guardhouse, roads, and miscellaneous structures.

Restoration has taken place in several areas within Port Bougainville. The marina docks and pilings have been removed, and access to the marina has been blocked by pilings across the entrance channel. Sections of the interior lakes have been filled, and plans are to fill both the marina and the rest of the lakes to their original topography and replant with native hammock species. The model building has been demolished, most of the smaller structures have been removed, and portions of the roads have been removed and graded down to their original topography.

Access to the site is restricted to a 1.75-mile nature trail (paved from previous construction activities) starting at the old Port Bougainville entrance archway. All other Port Bougainville trails and old roads are off limits due to safety concerns. A ten-foot chainlink fence at the end of

the paved nature trail prevents access to the marina. Exotic species, vandalism, illegal access, feral cats, and habitat fragmentation are the major threats at Port Bougainville.

3). The next developed area is the Knowlson Colony, and although it is a platted subdivision, not all of the lots have been cleared for development. The developed lots at the southeast end bordering the park are filled wetlands. This subdivision is bordered on its south and west side by Key Largo Hammock and is adjacent to the next developed area, Gulf Stream Shores, on the north side.

4). Gulf Stream Shores is a large inholding that is a platted subdivision. All of the lots in this subdivision have been cleared of hammock vegetation, although not all of them have been developed. In order to minimize habitat fragmentation and to provide a corridor for wildlife, most of the empty lots have been purchased by the State as additions to the park. Planting native vegetation in the vacant lots to restore them to the original rockland hammock habitat is an ongoing project for park staff and volunteers. The concern in relation to the park with these subdivisions is exotic species infestation, particularly lead tree (*Leucaena leucocephala*), free roaming cats and dogs, and habitat fragmentation.

5). The 108-lot subdivision of Ocean Reef Shores is the next disturbed area within Key Largo Hammock. This subdivision consists of filled wetlands, scarified low lying uplands, a seawall, and a U-shaped dredged canal that was slated by the developer to have ocean access. The canal was illegally opened to the ocean and dredged beyond the submerged land that the developer owned. It has been plugged to protect the shallow flats that are part of John Pennekamp Coral Reef State Park. Most of the undeveloped lots and several of the houses are now part of the park. These buildings provide staff and visitor housing and the District 5 Administration Key Largo Office. Park staff and volunteers have been removing exotic vegetation and replanting with appropriate native species in the undeveloped lots that are part of the park. Exotic infestation from neighboring yards, habitat fragmentation, boundary issues, encroachment, free roaming pets, dumping, and restoration of the natural topography of the canals are the major concerns at this site.

6). Just north of Ocean Reef Shores is an area known as Banyan Terrace. This site was platted for development, but the only area cleared is a road that extends through the hammock to the shoreline and ends with a filled roadbed in the wetland. Exotic vegetation and trash including tires and at least one car occur along this unpaved road.

7). Located at FKEC power poles 212 and 213 are trails leading to a dumpsite and possibly an old homestead site. Exotic vegetation, habitat fragmentation, and trash are the major threats at this site. Tires, old appliances and other refuse collect water providing artificially enhancing breeding opportunities for mosquitos.

8). The JHT subdivision, also known as Sunland Estates (between power poles 193 & 194), is the next ruderal/developed site in Key Largo Hammock. The majority of this cleared, platted subdivision is now part of Key Largo Hammock except for two residences. The cleared areas need to be restored with native vegetation. Dumping, restoring an illegally dredged canal, exotic vegetation and habitat fragmentation are the concerns on this parcel.

9). The adjacent Elbow Light Club south of Bell hammock is the next area of disturbance. Approximately 1.5 acres of hammock were cleared for this platted subdivision, but only one residential home was built and includes two easement and several lots. The remaining properties are now part of Key Largo Hammock. Exotic vegetation and habitat fragmentation are the concerns at this ruderal site.

10). Once planned to become the Ocean Forest subdivision, the next ruderal area is the 48-acre

Harrison Tract. Here, marine tidal swamp and overwash plain habitats were destroyed, a 0.8 mile long canal was dredged, and a spoil island created from the fill. Originally meant to be temporary, this island is now covered with exotic species consisting mostly of Australian pine and Brazilian pepper (*Schinus terebinthifolius*). However, along the shoreline of the island are several sea lavender (*Argusia gnaphalodes*) individuals that are found nowhere else in the park. Plans are to restore this parcel to its original habitat by removing the island and grading the topography to restore the wetland habitat. An exotic removal project has already been initiated at this site and most of the large Australian pines have been removed. Exotic plants, dumping, and drug and refugee smuggling continue to be problems in this section of the park.

11). North of this tract at power pole 160 is a three-acre tract with one residential home, a boat basin, and a 300 foot dock with an adjacent channel for ocean access. This is a popular site for landings by illegal immigrants and by drug smuggling.

12). Another parcel that was originally platted and cleared for a subdivision is the Key Largo Beach and Tennis Club. A little more than 2 acres of this tract was dredged to provide fill for the development. This created a saltwater lake that has attracted a pair of anhingas, unique for the upper Keys. The filled areas surrounding this borrow pit are heavily infested with exotic vegetation. The topography needs to be restored and the area replanted with native vegetation so that habitat fragmentation and exotic species are eliminated. Exotic infestations on park property have already been targeted using funds from DEP's Bureau of Invasive Plant Management.

13). The next developed area is an inholding located at power pole 131. This parcel is a brine shrimp aquaculture farm and is owned by Sea Kritters, Inc. All wastewater and freshwater produced by the processing of this shrimp farm needs to stay on site and not be discharged into adjacent park land.

14). Located between power poles 131 and 132 is an old survey transect that is wide enough for a vehicle (although it is no longer utilized by vehicles). It terminates at what is probably a cultural site and is infested with bowstring hemp (*Sansevieria hyacinthoides*).

15). Over forty acres of hammock, coastal berm and mangroves were cleared for the development of Carysfort Yacht Club. This site was utilized as a campground with dredged borrow pits, one of which was turned into a marina with ocean access. Acquisition of this property took place during the early 1990s, and restoration of the site is underway. Most of this project is being funded through the Florida Keys Environmental Restoration Trust Fund. Restoration includes exotic removal, hammock revegetation, filling in the marina and borrow pit and restoring the natural mangrove shoreline. A large area of bowstring hemp is invading an undisturbed section of hammock to the south of the ruderal area, and a cultural site is found just north of this former campground.

16). North of Carysfort Yacht Club at power poles, 119 & 120 is the Madeira Village subdivision. One road loops through the subdivision and only four residential homes were built prior to acquisition of the remaining parcels by the State. Exotic infestation is severe here, particularly by lead tree, Brazilian pepper and Guinea grass (*Panicum maximum*).

17). Several survey transect trails and old roads can be found throughout Key Largo Hammock. One such trail is located at power pole 106.5 and cuts through the hammock into the ecotone, ending at a cultural site with a cistern and a foundation. Exotic species such as Madagascar rubber vine (*Cryptostegia madagascariensis*), portia, sapodilla, and lather leaf are invading both the ecotone and the hammock communities. Park staff, volunteers and park interns have been treating these infestations.

18). Another trail exists at the south end of old C-905 and extends through the hammock and the

ecotone, passing through a cultural site.

19). A former U.S. Army Nike Missile Radar Tracking Station consisting of a clearing, five buildings, four 40' to 60' radar towers and associated support facilities (some subterranean) is located on approximately 13 acres near the southern junction of C-905 and old C-905. It was cleared in 1965 by the U.S. Government as a military base following the Cuban Missile Crisis. The buildings are in poor condition and need to be removed, however there is asbestos present, making this task more costly. Due to the historic nature of this site, the structures will be documented prior to removal. Although some of this area is revegetating with pioneer native species, it is also impacted by exotic vegetation, most notably Brazilian pepper, lantana (*Lantana camara*), and copperpod (*Peltophorum adnatum*). Exotic removal work has been focused in this area of the park.

19). South of the Radar site and north of Card Sound Road are two access points to old C-905. The old C-905 and the abandoned portion of Card Sound provide a potential area for dumping, plant poaching, and exotic species infestation. Two sections of these roads that originally crossed Dispatch Slough were removed in 2000 to restore the natural flow through this shallow depression. This section of the park includes New Mahogany Hammocks, the original acquisition parcel of Key Largo Hammock. Abandoned lines and telephone poles remain in this area of the park and need to be removed.

20). The south portion of old C-905 has been a high priority for exotic removal of latherleaf, lead tree, Brazilian pepper, and bowstring hemp by park staff. At the intersection of old Card Sound Road and old C-905 is a dirt road known as Dynamite Trail, that leads to an area known as Dynamite Docks. This road ends at a cultural site and is another section of the park that has received intensive exotic removal work. Dynamite Docks was originally constructed by the military as a place to off-load dynamite from ships. It would then be transported by truck via Old Card Sound Road to the mainland. Although Dynamite Docks has been restored and most of the submerged community restored to its original topography, the island was not removed to provide least tern nesting habitat. However, the terns have not been able to successfully nest due to unauthorized access by boaters.

21). On approximately three acres south of the old telephone line is an abandoned skeet range. In 1995 lead pellets were removed and water and soil samples were taken that indicated little or no contamination. Exotic species have been removed and the area has been replanted with native hammock vegetation. In August 1997, as part of a mitigation project required by the Florida Game and Fresh Water Fish Commission (now the Florida Fish and Wildlife Conservation Commission), six rubble piles were scattered throughout the site to encourage woodrat nesting.

22). The tract that is located on the west side of C-905 is adjacent to the Angler's Club, which is a private community. Several issues have arisen as a result of boundary discrepancies including a sewage treatment plant built on park property. In addition, a mowed lawn and invasive exotic vegetation had been maintained on and adjacent to park property. This area was recently targeted for exotic removal. However, all boundary issues must be resolved with a boundary survey to prevent encroachment on park property.

Designated Species

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

Four federally endangered animals are found in Dagny Johnson Key Largo Hammock Botanical State Park. These are American crocodile, Key Largo woodrat, Key Largo cotton mouse, and Schaus swallowtail butterfly. The federally threatened eastern indigo snake (*Drymarchon corais*) is also found in the park. White crown pigeons are also listed species and are considered to be the keystone species for the rockland hammock plant community. Several listed plant species are found within the park including redberry stopper (*Eugenia confusa*), manchineel, mahogany mistletoe, Cuban clustervine, sea lavender, locust berry and white ironwood. Although protection and preservation of the habitat will help in the successful perpetuation of not only these species, but all designated plant and animal species found at this site, the population of the Key Largo woodrat has dramatically declined. Efforts by the U.S. Fish and Wildlife Service and Key Largo Hammock staff are underway to prevent this species from extinction.

The Division is working with researchers from the University of Florida to study the potential for reintroduction of Miami Blue butterflies to Key Largo Hammock. Reintroduction will be considered, based on the outcome of that research, and on the outcome of a lawsuit that has been brought by the Monroe County Mosquito Control District against reintroduction of the species to Everglades and Biscayne National Parks.

Special Natural Features

Mature sections of the rockland hammock are the special natural features at Key Largo Hammock. This site provides habitat critical to the survival of the four endangered animals; the Key Largo woodrat (endemic), Key Largo cotton mouse (endemic), American crocodile and the Schaus swallowtail butterfly. There are also four champion trees listed at this site. These are spicewood, white ironwood, Bahama strongbark and milkbark. Because of rapid development throughout the Keys, the hammocks on north Key Largo and on Lignumvitae Key are the best examples of this community. Key Largo Hammock is the largest, contiguous example of West Indian tropical hardwood hammock and must be considered endangered (FNAI, 1990). The coastal rock barren, listed as a rare community by FNAI is also a special natural feature at this site.

Cultural Resources

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

The Florida Master Site File (FMSF) lists nineteen within the unit (see Addendum 6).

Dagny Johnson Key Largo Hammock Botanical State Park has in the past been a rich environment for both pre-historic peoples and settlers from the historic period. Because of this, there is a wealth of cultural remains in the park. The prehistoric sites tend to be located near the water and are chiefly composed of shell middens. The historical remains are somewhat more widely distributed and more diverse. Unfortunately, very little historical research has been done at this site.

The north end of Key Largo has been populated by diverse ethnic groups including the Timucuan culture, the Caloosa, and settlers from the Bahamas prior to the influx of the

Europeans.

The early history of Key Largo Hammock shows that the Native American Indians inhabited the area between 1600 BC and 1200 AD. They capitalized on the rich seaside environment. Activities continued in the area until the mid-18th century, which corresponds to the arrival of the first European settlers. Cultural remains from the pre-historic period consist chiefly of Glades II and Glades III artifacts, indicating that this was the period of heaviest activity.

Early formal references to north Key Largo include Bernard Romans, an English cartographer who visited the area in 1776. He commented on an apparent link of Key Largo to the mainland of Florida, and tried unsuccessfully to find a passage behind Key Largo into Florida Bay.

Wrecking became a major industry as ships were plagued by the dangerous reef line. A lightship was therefore placed out at Carysfort Reef and became one of the most important navigational lights between St. Augustine and Key West. The lightship master, Captain John Walton, kept a farmhouse and a small garden with fruit trees at Garden Cove.

Another early settler was Edward Bell who was the Carysfort Lighthouse keeper (which replaced the lightship). He purchased 700 acres near Basin Hills on north Key Largo. There he maintained crops that included pineapple, sapodilla and Key lime as well as other tropical fruits. A hurricane in 1876 destroyed Bell's plantation as well as others that were settled in that area. Today old cisterns, foundations and remnants of the old fruit tree orchards are scattered throughout the hammock. Exotic vegetation, including species grown primarily for fiber such as sisal hemp (*Agave sisalana*) and bowstring hemp, is evidence of earlier settlement.

In 1985, an archaeological survey was conducted by members of the Archaeological Conservancy. However, this was only a preliminary survey and should not be considered to include all of the archaeological sites.

RESOURCE MANAGEMENT PROGRAM

Special Management Considerations

Timber Management Analysis

Chapters 253 and 259, Florida Statutes, require an assessment of the feasibility of managing timber in land management plans for parcels greater than 1,000 acres if the lead agency determines that timber management is not in conflict with the primary management objectives of the land. The feasibility of harvesting timber at this park during the period covered by this plan was considered in context of the Division's statutory responsibilities, and an analysis of the park's resource needs and values. The long-term management goal for forest communities in the state park system is to maintain or re-establish old-growth characteristics to the degree practicable, with the exception of early successional communities such as sand pine scrub and coastal strand.

During the development of this plan, an analysis was made regarding the feasibility of timber management activities for this park. It was then determined that the primary management objectives of the unit could be met without conducting timber management activities for this management plan cycle. Dagny Johnson Key Largo Hammock Botanical State Park was acquired for the protection and preservation of the last largest remaining rockland hammock in the United States, and therefore timber management is not considered a compatible use.

Additional Considerations

The boundary of Dagny Johnson Key Largo Hammock Botanical State Park is adjacent to the waters of John Pennekamp Coral Reef State Park. As a result, Key Largo Hammock does not

manage the 400 feet of submerged land because it falls within the jurisdiction of John Pennekamp Coral Reef State Park. The boundary of Key Largo Hammock extends only to the mean high water line of the marine tidal swamp.

Management of natural communities is often enhanced by physically restoring areas that have been disturbed or otherwise manipulated by people. Such management is often achieved in the course of hydrologic, scenic, or other restoration measures, such that two or more management goals can often be achieved simultaneously. Most of the disturbed sites of the park are large-scale and will require cooperation from other agencies to achieve restoration. Priority will be given to those sites that include the greatest biodiversity desirable for the long-term health of natural communities. Expansion of such sites will provide the necessary seed source for similar, adjacent natural communities that are currently degraded. The priority areas at Key Largo Hammock are Port Bougainville, Nike Missile Tracking Station, Carysfort Yacht Club, and Ocean Forest Estates. Major restoration is underway at Carysfort Yacht Club and Port Bougainville. The other ruderal and developed areas of the park also need to be restored through exotic vegetation and debris removal and replanting with native species. This restoration will expand the largest remaining West Indian hardwood hammock and provide a contiguous habitat that will protect the plant and animal life found in the park.

The feasibility of re-establishing the pine rockland habitat should be evaluated. Although there are no slash pine trees, there are pine rockland plant associates, some of which are very rare, and which will be lost if habitat succession continues. The location of the remaining pine stumps is being impacted by sea level rise and would not be a suitable site for consideration. However, there are other areas of higher elevation within the relict pine rockland habitat that can be investigated for the possibility of re-establishing this plant community.

Management Needs and Problems

1. Acquisition of all the original CARL project properties in order to protect and preserve the fragile ecosystems of North Key Largo.
2. Prevent threats to the resources such as development, free roaming and feral cats habitat fragmentation, exotic plants and animals, dumping of trash and vegetative debris, trespassing, drug smuggling, vandalism and poaching (for commercial, religious, or other purposes).
3. Secure and maintain all access points.
4. Investigate the feasibility of utilizing old C-905 as a bicycle trail.
5. All exotics must be removed in order to maintain the integrity of the native flora and fauna of the largest remaining West Indian tropical hardwood hammock (rockland hammock) in the continental U.S.
6. Restoration of those areas in improved subdivisions such as Ocean Reef Shores must be accomplished to provide wildlife corridors. This includes filling in dredged canals, borrow pits, and man-made lakes, removing fill to restore the natural topography, and restoring natural communities by replanting with native vegetation.

Management Objectives

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

1. Secure all access points to prevent unauthorized access and dumping.

2. Restore all developed and disturbed areas to their natural condition
3. Continue with exotic removal program.
4. Continue to monitor Monroe County mosquito control activities and its potential impacts on invertebrate populations in the park, especially the Schaus swallowtail butterfly and the Liguus tree snail.
5. Continue with Key Largo woodrat and Key Largo cotton mouse studies.
6. Obtain funding for research.

Management Measures for Natural Resources

Hydrology

Ground water management is applicable to this site. Where dredged canals bisect and drain the freshwater lens, tree canopy height is reduced and saltwater intrusion becomes a factor. Canals must be filled to retain rainwater in the landmass.

Management activities will include maintaining or improving the water quality at Key Largo Hammock. Measures will be taken to prevent soil erosion or other adverse impacts to the surrounding water resources at John Pennekamp Coral Reef State Park.

There is currently one Clivus Multrum composting toilet system on the nature trail at Port Bougainville. Use of this type of facility prevents adversely impacting the water quality at Key Largo Hammock and John Pennekamp Coral Reef State Park.

Prescribed Burning

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

There is a relict pine rockland located adjacent to Dispatch Slough at the north end of Dagny Johnson Key Largo Hammock Botanical State Park. At the present time prescribed burning is not a resource management tool. However, this habitat supports a variety of rare and unusual plant species for the upper Keys, including some that are fire dependent. Therefore, if the feasibility of re-establishing this pine rockland habitat is determined, then the use of prescribed burning will need to be evaluated as a resource management tool.

Designated Species Protection

The welfare of designated species is an important concern of the Division. In many cases, these species will benefit most from proper management of their natural communities. At times, however, additional management measures are needed because of the poor condition of some communities, or because of unusual circumstances which aggravate the particular problems of a species.

The designated species at this site require the protection of the habitat in order to ensure their survival. At Key Largo Hammock concerns regarding this protection include habitat fragmentation, protection from poaching, harvesting of tropical hardwoods, exotic, feral and/or free roaming animal threats, mosquito spraying (which adversely impacts invertebrate species), restoration of disturbed habitat, invasive exotic plant control, dumping, trespassing, potential fire in the hammock, and wildlife mortality due to the traffic on C-905.

All designated plant species in the park have been mapped using the Trimble GPS unit. Several listed species are also undergoing augmentation or monitoring projects. These projects include:

Mahogany mistletoe. All known historic locations of this species have been intensively surveyed for new populations. All surrounding areas were surveyed for appropriate habitat for outplanting seeds and potentially expanding the range of this species.

The current population is monitored monthly to track status of mistletoe individuals as well as the health of the host trees.

In 2001, seeds were collected on two occasions from three mistletoe individuals. A total of 38 seeds were outplanted on 18 host trees at 6 sites within the historic range of this species. In 2002, seeds were again collected from three mistletoe individuals and outplanted on 10 host trees at 6 sites within the historic range. These outplanted sites are monitored every three months.

During the November 2002 monitoring of the mistletoe population, we observed that one of the two host trees had seriously declined. In an emergency effort to save this species from potential extirpation, fruits were collected in December 2002 and outplanted on 75 young mahogany trees at 3 sites. Germination was observed on over twelve host trees in February 2003, although to date, only 6 of the germinated seeds remain viable.

We concluded from this event that the dry season is the appropriate time of the year to outplant mistletoe seeds to give them a chance to become established prior to the seeds being washed away by rainfall. Because no germination or signs of seed presence has been observed at any of the other outplanting sites, these sites were abandoned. Monitoring of the current outplanting project is conducted monthly. In July 2003, the one host tree that had been declining was dead as well as all of the mistletoe individuals. Another outplanting is scheduled for December 2003 provided that enough fruits are available on the remaining mistletoe plants.

Cuban clustervine. During survey work for mahogany mistletoe, several individuals of Cuban clustervine were observed in the coastal rock barren habitat between the rockland hammock and Dispatch Slough. Until this time, it was assumed that the population was limited to the edge of the rockland hammock on both sides of the three-way intersection. The hammock and the coastal rock barren edge to the north and south of this intersection were surveyed and close to 100 individuals were located and mapped.

Semaphore cactus. The endangered semaphore cactus was reintroduced to the park in 1996. Monitoring is conducted every three months. Data obtained from this monitoring includes, salinity tolerance, growth habits, habitat requirements, and vigor of individual genotypes.

Key Largo woodrat and Key Largo cotton mouse. Both of these species have been the target of several research monitoring projects over the past 10 years. All of this data has been and continues to be compiled by the USFWS, Key Largo Hammock Park staff and cooperating researchers. There is a captive breeding program in place at the Lowry Zoo in Tampa for the Key Largo woodrat as a result of the serious decline in the population distribution and size of this species. Trapping for both species is on a regular schedule in both Key Largo Hammock and the Crocodile National Wildlife Refuge.

Schaus swallowtail butterfly. Dr. Thomas Emmel from the University of Florida has conducted research in the park on this rare species. During the mid-1990's, swallowtail pupae were carefully placed on appropriate hammock species and monitored for successful emergence. Monitoring for population size and distribution occurs on an intermittent schedule.

Exotic Species Control

Exotic species are those plants or animals that are not native to Florida, but were introduced as a

result of human-related activities. Exotics have fewer natural enemies and may have a higher survival rate than do native species, as well. They may also harbor diseases or parasites that significantly impact non-resistant native species. Therefore, the policy of the Division is to remove exotic species from native natural communities.

The threat of exotic plant infestation at Key Largo Hammock comes from several sources; exotic species already found within the site, those spread by natural means (i.e. birds, wind, and water), those spread from neighboring developments and those that result from the dumping found throughout this site. The most serious exotic plant threats to Key Largo Hammock are lather leaf, Brazilian pepper, Australian pine, bowstring hemp, sapodilla, portia, lead tree. Where manual removal is not feasible or cost effective, herbicides are used to treat these and all exotic plant species within the park.

Key Largo Hammock has applied for and received numerous exotic removal grants through the Florida Keys Invasive Exotic Task Force from the Bureau of Invasive Plant Management. Several large areas of infestation have already been treated by contractors, park staff, volunteers, and park interns. The park will continue to apply for these grants until all exotic infestations have been reduced to maintenance level or removed.

The potential exotic animal threats established in the park include giant toad (*Bufo marinus*), Cuban tree frog (*Hyla septentrionalis*) feral and domestic cats, black rat (*Rattus rattus*), Cuban garden snail (*Zoerysia provisoria*), Cuban brown anole (*Anolis sagrei sagrei*), Indo-Pacific gecko (*Hemidactylus garnotii*), fire ants (*Solenopsis invicta*), and exotic parrots. Exotic animal removal methods will vary depending upon the species, but will include trapping and the use of approved pesticides (for fire ants).

Problem Species

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

There are no problem animal species at this site. However, there are several plant species that are of concern where the public is likely to encounter them due to their poisonous nature or sharp spines. These include poisonwood, manchineel, nickerbean and sweet acacia (*Acacia farnesiana*).

Management Measures for Cultural Resources

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

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

Archaeological sites are subject to vandalism, looting, and deterioration due to both natural and man-made activities. Many prehistoric sites are near the water and have already been impacted by storm wash. Standing wall remains are attacked by root growth as well as acids produced by decaying vegetation.

Illegal dumping has resulted in damage from vehicles driving over archaeological sites. Because of the known archaeological resources in the vicinity, management measures for cultural resources at Key Largo Hammock includes drafting a proposal for a Level II archaeological survey. Ground disturbing activities should be conducted in accordance with DHR guidelines.

Archaeological sites have been damaged by routine maintenance activities. One site is immediately adjacent to the C-905 right-of-way and the Florida Keys Electric Co-op powerline easement. The proximity of the site to a power pole has resulted in vehicular damage to the site.

Exotic removal also poses a potential threat to archaeological and cultural sites. Care must be implemented when removing exotic species.

Opportunities for interpretation are limited. Some archaeological sites are in sensitive habitat for designated animal species such as the Key Largo woodrat, Key Largo cotton mouse, and Schaus swallowtail butterfly. Access to cultural features is also limited because of their locations and the potential impacts to designated plant species, or to areas with rare, collectible species such as orchids, bromeliads and tree snails.

Research Needs

Natural Resources

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

A variety of research projects are ongoing at this site and are too numerous to mention. The biology office at the District 5 Administration Key Largo office maintains a complete file on permits and the results of research conducted in the park.

Additional research that is considered necessary at Dagny Johnson Key Largo Hammock Botanical State Park includes:

1. Continue to inventory Key Largo woodrat and Key Largo cotton mouse populations in conjunction with Crocodile Lake National Wildlife Refuge, taking the necessary steps to prevent the extinction of the woodrat and the decline of the cotton mouse.
2. Investigate the feasibility of re-establishing the pine rockland habitat.
3. Conduct research into the presence/absence of the rare beetle that is found only as a symbiont in woodrat nests.
4. Continue to map exotic species annually.
5. Continue to monitor restoration sites including recruitment of exotic species.
6. Continue conservation of endangered species work including mahogany mistletoe, Cuban clustervine, and semaphore cactus.
7. Inventory marine species in Dispatch Slough including freshwater crayfish species.
8. Impact of habitat fragmentation on both flora and fauna.
9. Inventory and identify species of shrew that was caught during woodrat research project.
10. Impact of exotic species such as black rat, marine toad, green iguanas, and fire ants.
11. Impact of feral and free roaming domestic cats.
12. Impact of Cuban ground snail on native flora.
13. Inventory land crab population.
14. Inventory reptile population.
15. Inventory Liguus tree snail population.
16. Survey for impacts of the exotic bromeliad weevil and its impacts on bromeliad populations in the park.

17. All listed plant species were mapped in 2001. Mapping will need to be conducted on a five-year schedule unless the park is subjected to a major disturbance. This would warrant re-mapping listed species populations for changes in size and distribution.

Cultural Resources

The primary research need for cultural resources at Key Largo Hammock is a Level II archaeological survey.

Resource Management Schedule

A priority schedule for conducting all management activities which is based on the purposes for which these lands were acquired, and to enhance the resource values, is contained in Addendum 7. Cost estimates for conducting priority management activities are based on the most cost effective methods and recommendations currently available (see Addendum 7).

Land Management Review

Section 259.036, Florida Statutes, established land management review teams to determine whether conservation, preservation, and recreation lands titled in the name of the Board of Trustees of the Internal Improvement Trust Fund (board) are being managed for the purposes for which they were acquired and in accordance with a land management plan adopted pursuant to s. 259.032, the board of trustees, acting through the Department of Environmental Protection (department). The managing agency shall consider the findings and recommendations of the land management review team in finalizing the required 10-year update of its management plan.

Dagny Johnson Key Largo Hammock Botanical State Park was subject to a land management review on July 25, 2000. 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, were in compliance with the management plan for this site.

LAND USE COMPONENT

INTRODUCTION

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

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

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

EXTERNAL CONDITIONS

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

Dagny Johnson Key Largo Hammock Botanical State Park is located within Monroe County, about 50 miles south of Miami in the southern part of the state. The populations of Monroe County and the adjacent Dade and Broward have grown 21 percent since 1990, and are projected to grow an additional 17 percent by 2010 (BEBR, University of Florida, 2000). As of 2000, 20.2 percent of residents in these counties were in the 0-14 age group, 43.4 percent in the 15-44 age group, 21.9 percent in the 45-64 age group, and 14.5 percent were aged 65 and over, which is more than the state average for the younger two groupings and lower for the 45 and older (BEBR, University of Florida, 2000). Nearly 2,631,000 people reside within 50 miles of the park, which includes the cities of Homestead, Florida City, Coral Gables, Miami, Hialeah, Miramar, Pembroke Pines, Hollywood, and Hallandale (Census, 2000).

Dagny Johnson Key Largo Hammock Botanical State Park recorded 23,755 visitors in 2002-2003 FY. This represents a net 70 percent increase over the last five years. By DRP estimates, these visitors contributed \$791,716 in direct economic impact and the equivalent of 15.8 jobs to the local economy (Florida Department of Environmental Protection, 2003).

Existing Use of Adjacent Lands

Dagny Johnson Key Largo Hammock Botanical State Park is located on North Key Largo, which is the northernmost island of the Florida Keys. The Keys are a major tourist destination and commercial developments supporting the tourist trade as well as residential communities are adjacent to the upland areas the park. The Atlantic Ocean and John

Pennekamp Coral Reef State Park border the park on the southeast, and the Crocodile Lakes National Wildlife Refuge borders the park on the northwest side of C-905. The northeastern boundary of the Key Largo Hammock Botanical State Park abuts the Ocean Reef Club, a private residential development. The southwestern boundary extends to Port Bougainville ¼ mile north of the intersection of US 1 and C-905. Millions of tourists pass through this area every year.

Due to the increase in development on surrounding uplands, the importance of Dagny Johnson Key Largo Hammock Botanical SP in protecting the sensitive surrounding water bodies, wetlands, and reefs is vital.

Other recreation opportunities in the vicinity are John Pennekamp Coral Reef State Park, Everglades National Park, and Biscayne National Park.

Planned Use of Adjacent Lands

The Future Land Use designations surrounding the park are Urban Residential, Resort, Sub Urban Commercial, Improved Subdivision and Native Area (Monroe County 2000). Given the demand for residential development in the Florida Keys and the popularity of the area among out-of-state visitors, development of lands to the north and south of the park should be anticipated, despite highly restrictive local and state development regulation.

Residential and commercial development supporting tourism will predominate.

Anticipated problems resulting from this development include increased congestion on U.S. Highway 1, higher demand for the parks resources, and water quality impacts.

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.

The primary values of the state botanical site as a public resource are the interpretive and environmental educational opportunities provided by the unique habitats it contains. The preservation, restoration and interpretation of the site's botanical resources are the primary goals of the Division's management of this property.

Land Area

The 2,000+ acres of Dagny Johnson Key Largo Hammock Botanical State Park contain a number of important features. It has the largest intact West Indian hardwood hammock in the continental United States. An extensive list of federal and state listed threatened and endangered plants and animals can be found. In addition, a very rare community, the coastal rock barren, is in good to excellent condition.

Shoreline

The shoreline, dominated by marine tidal swamp, is largely in excellent condition. Restoration of newly acquired ruderal and developed in-holdings is in progress.

Significant Wildlife Habitat

Mature sections of the West Indian tropical hardwood hammock are habitat for four endangered animals (Key Largo Woodrat, Key Largo cotton mouse, American crocodile and the Schaus swallowtail butterfly) and four champion trees.

Archaeological and Historical Features

Cultural sites, dating from prehistoric and early-historic era human habitation, are located within the hammock of the upper Keys.

Assessment of Use

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

Past Uses

Several areas within the Key Largo Hammocks State Botanical Site were subdivided and developed as residential communities prior to acquisition by the state. Residences acquired through the CARL program are now utilized for staff housing and the District 5 Administration Satellite Office. During the 1960s a NIKE Missile Site was established north and south of Card Sound Road. Derelict missile tracking and barracks facilities remain on the portion of the property managed by the Division. Carysfort Yacht Harbor was an operating recreational vehicle campground and reef access marina facility when acquired by the state in the early 1990s. The operation was closed to public access in 1992 and restoration of the natural communities is underway. A skeet range, located at the north end of the park, closed when the state acquired it in the early 1990s.

Recreational Uses

Activities available at Key Largo Hammock State Botanical Site include hiking, picnicking, guided nature walks, and educational programs. Park staff accommodates requests for guided interpretive tours throughout the year. Under the Department's Open Lands Initiative, the Port Bougainville portion of the site is open for self-guided nature hikes along a marked nature trail. A thirteen part lecture series titled "The Delicate Balance of Nature" attracts hundreds to each event. This is the 12th year of the successful lecture series.

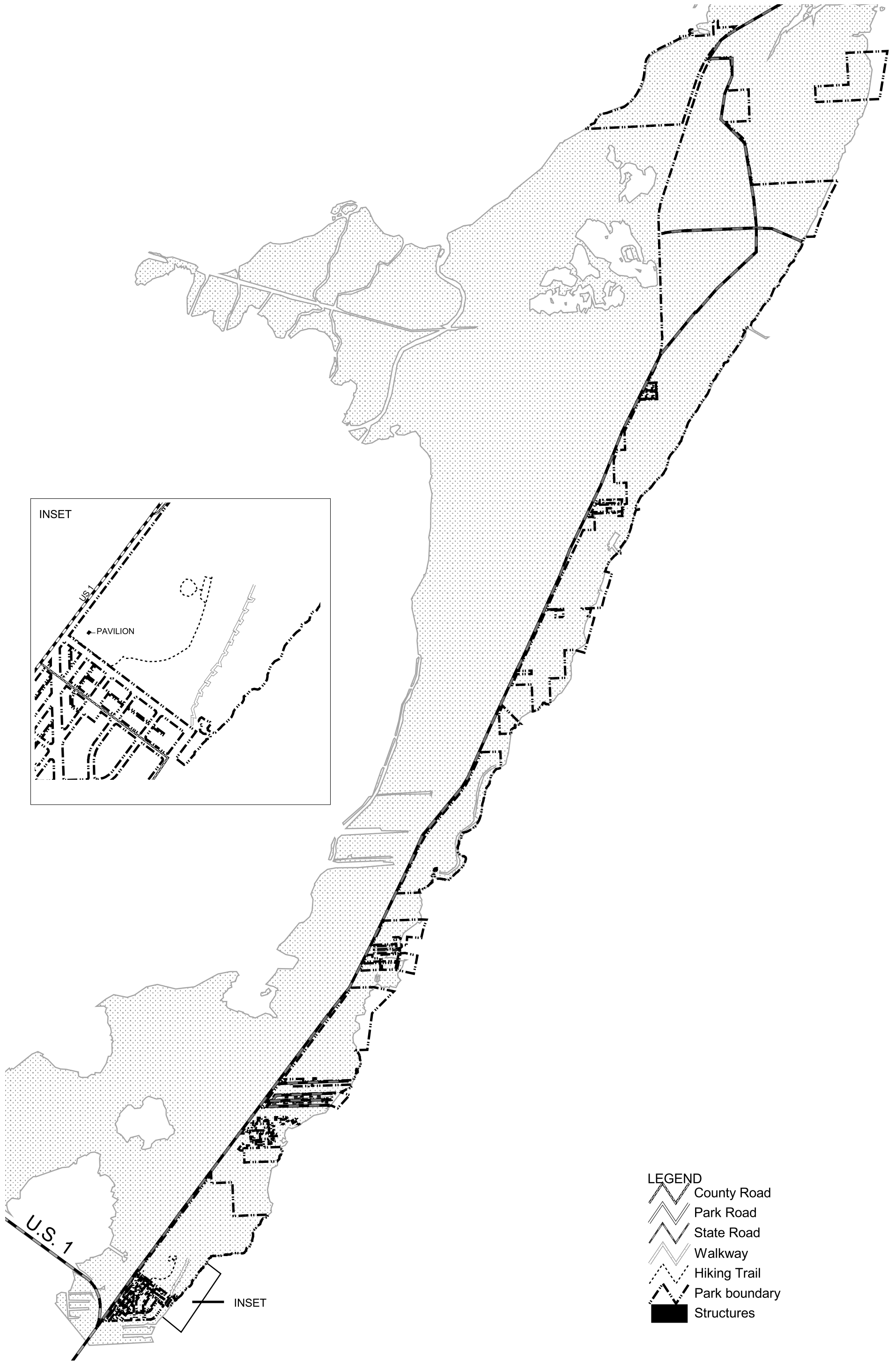
Other Uses

The Florida Keys Electric Cooperative (FKEC) holds an easement for power transmission lines adjacent to the eastern right of way of C-905 and has plans to build a substation on ROW lands. Additional power and communications line easements exist between the County Road and several residential properties within the state property.

Protected Zones

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

At the park all of the natural communities, with the exception of ruderal, have been designated as protected zones as delineated on the Conceptual Land Use Plan. This is consistent with the intent of the state botanical site classification, the importance of preserving and restoring the tropical hammock community, and the presence of a variety of state and federally listed plant and animal species.



- LEGEND**
-  County Road
 -  Park Road
 -  State Road
 -  Walkway
 -  Hiking Trail
 -  Park boundary
 -  Structures



**DAGNY JOHNSON KEY LARGO
HAMMOCK BOTANICAL STATE PARK**

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

BASE MAP

Existing Facilities

Recreation Facilities

Port Bougainville

Nature Trail (1.75 miles)
Picnic Shelter

Support Facilities

Port Bougainville

Parking (entrance) (10 spaces)
Composting Restroom

Residences (5)
District 5 Administrative Office

The following is a list of derelict buildings located at the former Missile Base and at Port Bougainville. Although some of these structures are used for incidental park support activities, they are not considered as part of the permanent infrastructure of the parks.

Missile Base

Generator Building
Associated Support Buildings (3)
Maintenance Shop
Main Barracks
Tracking Towers (3)
Guard Houses (2)

Port Bougainville

Pole Barn Storage Building
Tennis Complex
Residence (unused)
Condo Building (5) partially
constructed

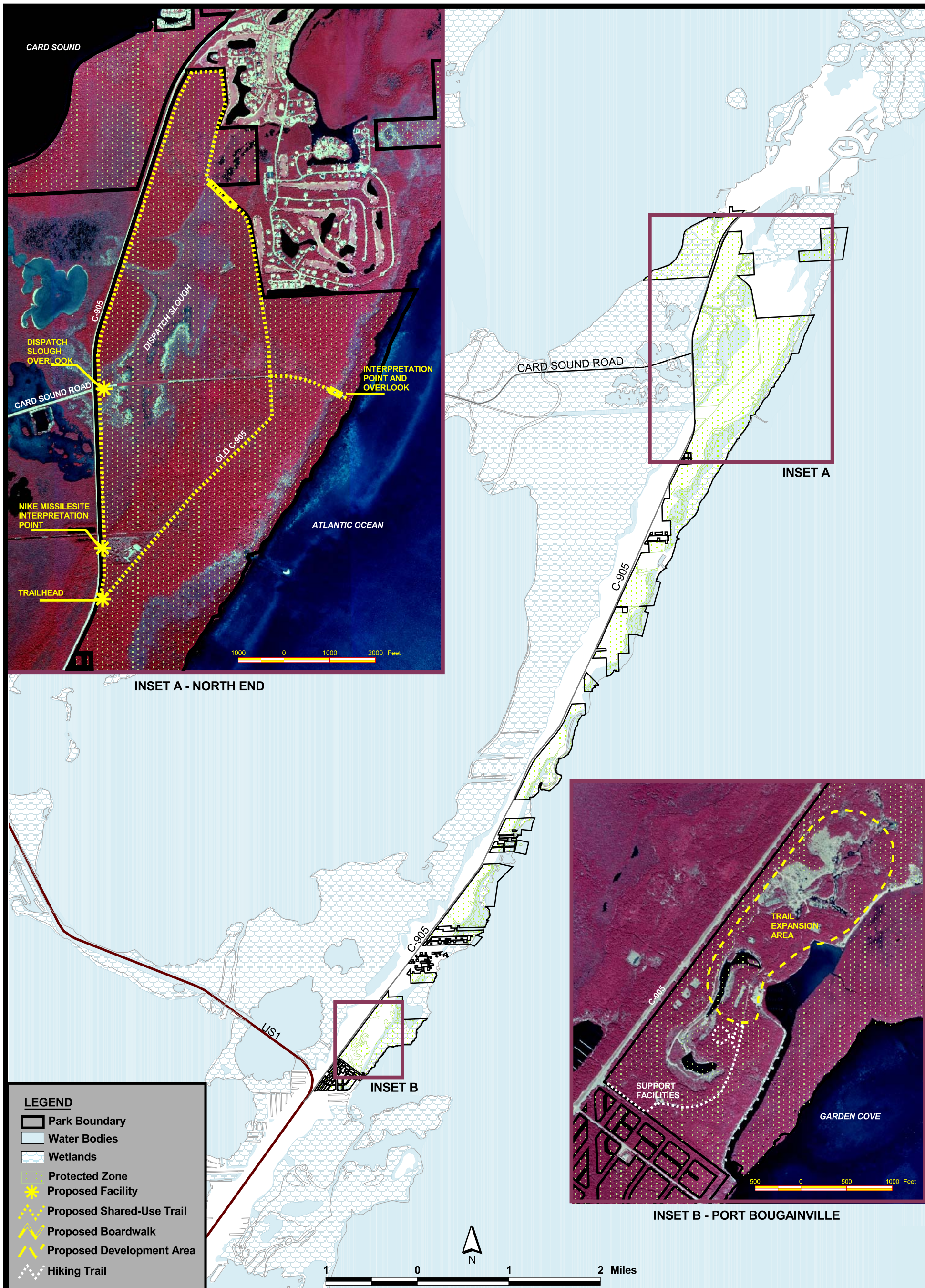
CONCEPTUAL LAND USE PLAN

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

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

Potential Uses and Proposed Facilities

In 1991, the Department of Natural Resources, Office of Land Use Planning and Biological Services published the results of the Key Largo Land Use Feasibility Study. The purpose of the study was to provide land use recommendations to the Governor and Cabinet for the upland and submerged land areas of John Pennekamp Coral Reef State Park, Key Largo Hammock Botanical State Park, and proposed additional state land acquisitions on north Key Largo.



CARD SOUND

DISPATCH
SLOUGH
OVERLOOK

C-905

DISPATCH
SLOUGH

OLD C-905

INTERPRETATION
POINT AND
OVERLOOK

NIKE MISSILE
SITE
INTERPRETATION
POINT

TRAILHEAD

ATLANTIC OCEAN

1000 0 1000 2000 Feet

INSET A - NORTH END

CARD SOUND ROAD

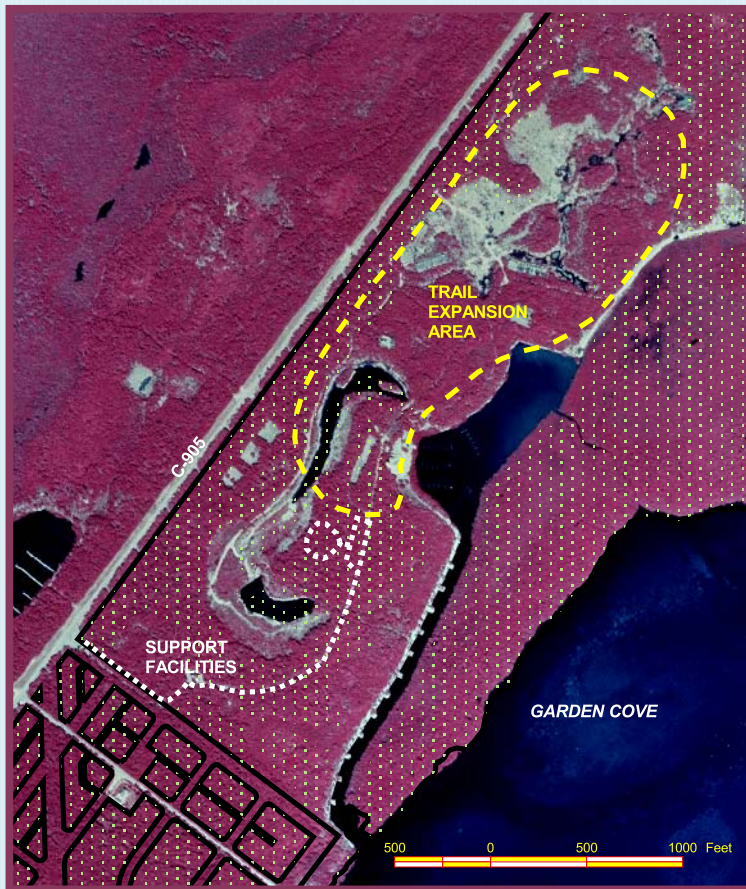
INSET A

C-905

C-905

US1

INSET B



INSET B - PORT BOUGAINVILLE

1 0 1 2 Miles



**DAGNY JOHNSON
KEY LARGO HAMMOCK
BOTANICAL STATE PARK**

**CONCEPTUAL
LAND USE PLAN**

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

Based on changes to the land ownership and the additional management experience accumulated by the Division since the completion of the Feasibility Study, several of the recommendations of the Feasibility Study are no longer considered relevant to the Division's management program for the state botanical site. The request by the Department of Health and Rehabilitative Services for use of the Missile Tracking Site as a juvenile facility has been abandoned. The artificial hill located in Port Bougainville will not be retained. The fill material is valuable in future efforts to restore excavated areas on the site.

The primary purpose and significance of the state botanical site is to protect the largest example of tropical hardwood hammock community in the United States, along with its significant list of threatened and endangered species, and to provide an upland buffer to the offshore ecosystem. Presently, public access to the state botanical site is provided through a range of guided tours and designated nature trail located at Port Bougainville. In keeping with the directives of the approved Land Use Feasibility Study, unsupervised public access to the area should be limited to the Port Bougainville facilities and a proposed shared-use trail at the north end.

A basic amenity package consisting of a composting toilet, parking and a small picnic pavilion with two tables has been installed at Port Bougainville. As discussed in the Land Use Feasibility Study, the existing trail system in this area should be expanded along some of the unimproved roads. The use would still be restricted to hiking.

The State of Florida Department of Transportation has signed a Quitclaim Deed for old State Road 905 (old C-905), Old Card Sound Road less the westerly 880 feet, and old Ocean to Bay Road (known in this management plan as Card Sound Road east extension), all located in the northern end of the park. The DEP now has the management authority over the abandoned roads and can open them as a shared-use trail for hiking and bicycling. Prior to opening to the public, the center ten-twelve feet should be cleared of brush, a trail head established, a boardwalk built over the removed section of old State Road 905, and a system determined for monitoring adverse impacts on the natural resources. A triangle of disturbed land at southern juncture of old State Road 905 and C-905 is the recommended trailhead location. Stabilized parking for 8-10 cars and a composting restroom will be provided. The parking lot within the footprint of the abandoned Missile Site should be the last of the Missile Site to be destroyed so that if there were any future need of expanded or special event parking for the trail this option would still exist. The shared-use trail would form a loop trail when connected with the recommended shared-use trail along the power easement of C-905. This section along C-905 would utilize the power easement where possible for an off-road experience. The trailhead for the Overseas Heritage Trail, planned for the intersection of US-1 and C-905, would provide parking for the southern end of the shared-use trail along C-905. Security should be addressed by improved security fencing between the residential developments and the state botanical site, and site monitoring actions by Division staff, the Monroe County Sheriffs Office, and the homeowners' association security staff.

A spur trail utilizing the abandoned roadbed of Card Sound Road east extension to the east of old State Road 905 should similarly become a shared use trail. It would terminate at an Atlantic Ocean overlook. The trail would cross a restoration area providing interpretation opportunities of the coastal rock barren, mangroves and the restoration processes at work. The section of removed roadbed would be replaced with a boardwalk.

As discussed in the Resource Management Component, the water flow of Dispatch Slough has been restored after the removal of two road sections. Restoring this water body to a

healthier system is attracting more wildlife, in particular birds. On the eastside of the intersection of Card Sound Road and C-905 there is a short section of remaining pavement presently used for wayside parking. This should be reconfigured to accommodate up to six cars and pedestrian access to a wildlife observation overlook. Care must be taken in designing the parking to protect the listed species (*Jacquemontia havanensis*) growing adjacent to the disturbed areas. A small observation platform, six feet in height, built at the end of the paved area will put the viewer above the surrounding brush. This perspective creates an ideal spot for interpretation of the flora and fauna and the restoration process of the rockland hammock and marine tidal swamp of Dispatch Slough.

An additional interpretation point should be provided as a pull off at the abandoned NIKE missile site. A kiosk installed will illustrate and explain the significance of the cold war historic site, the present restoration efforts, and the future vision for the land. Before removal of the existing structures, photos and a complete inventory should be taken to aid in future interpretation.

Facilities Development

Preliminary cost estimates for the following list of proposed facilities are provided in Addendum 7. These cost estimates are based on the most cost-effective construction standards available at this time. The preliminary estimates are provided to assist the Division in budgeting future park improvements, and may be revised as more information is collected through the planning and design processes.

Recreation Facilities

Port Bougainville

Nature Trail extension

North End

Shared Use Trail

Boardwalk

Observation Platform

Interpretive Kiosk (2)

Support Facilities

North End

Stabilized parking (8-10 cars)

Composting Restroom

Existing Use and Optimum Carrying Capacity

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

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

Table 1--Existing Use and Optimum Carrying Capacity

Activity/Facility	Existing Capacity		Proposed Additional Capacity		Estimated Optimum Capacity	
	One Time	Daily	One Time	Daily	One Time	Daily
Trails						
Shared Use			55	220	55	220
Hiking	35	140	15	60	50	200
Interpretation/Observation			15	60	15	60
TOTAL	35	140	85	340	120	480

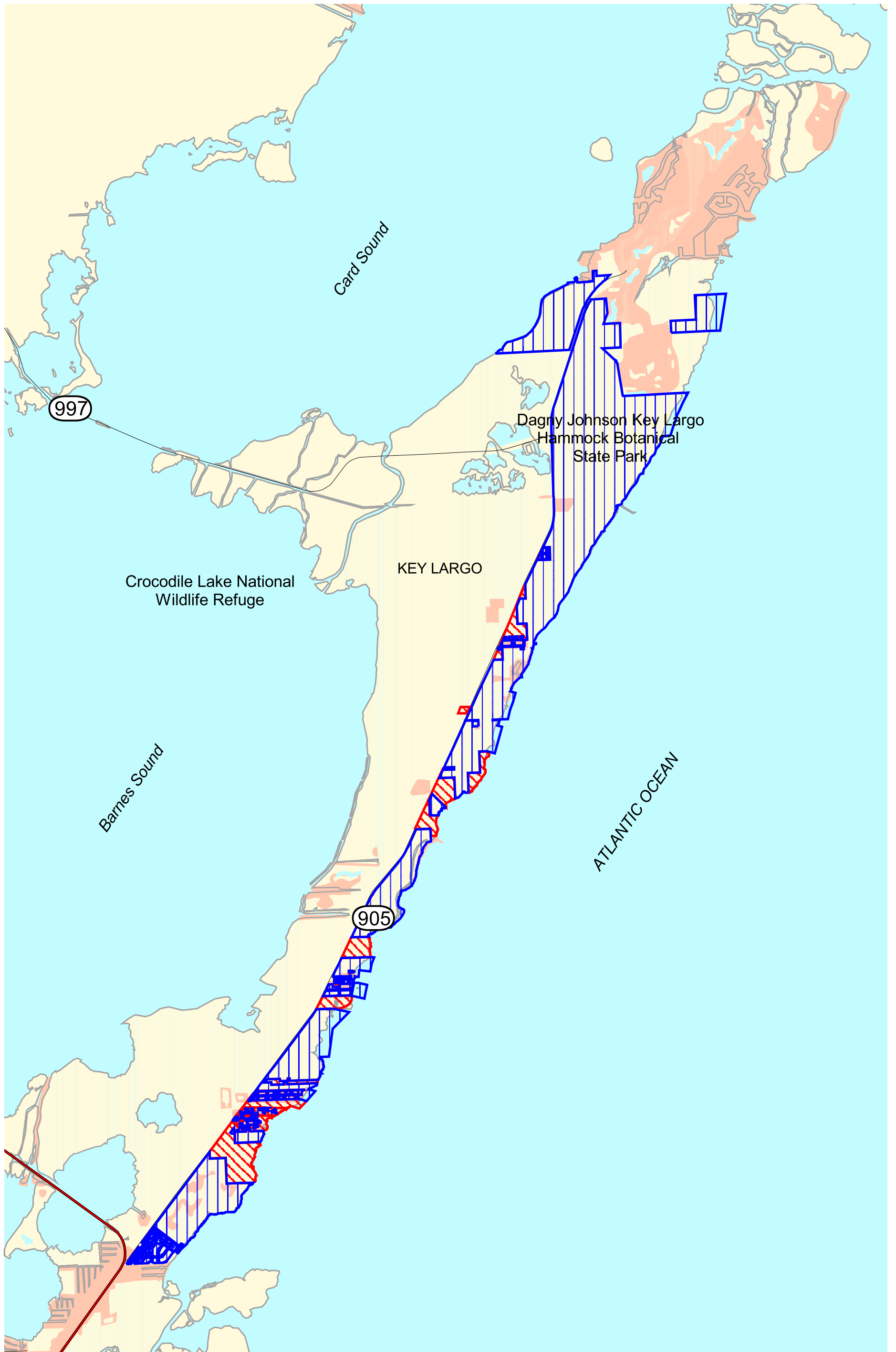
Optimum Boundary

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

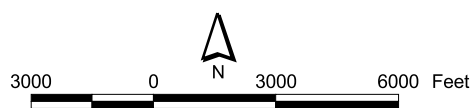
Identification of lands on the optimum boundary map is solely for planning purposes and not for regulatory purposes. A property's identification on the optimum boundary map is not for use by any party or other government body to reduce or restrict the lawful right of private landowners. Identification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

The optimum boundary map reflects lands identified for direct management by the Division as part of the park. These parcels may include public as well as privately owned lands that improve the continuity of existing park lands, provide additional natural and cultural resource protection, and/or allow for future expansion of recreational activities.



Numerous parcels have been identified for addition to Dagny Johnson Key Largo Hammock Botanical State Park. Acquisition of these lands will significantly enhance ownership cohesiveness, management goals relating to resource protection and recreation opportunities, and enhance the state's ability to protect environmentally unique and irreplaceable lands and the offshore nationally known coral reef system. Acquisition of developed parcels is not intended, unless for administrative or staff residence purposes. At this time, no lands are considered surplus to the needs of the park.



**DAGNY JOHNSON KEY LARGO
HAMMOCKS BOTANICAL STATE PARK**



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

LEGEND
 Park boundary
 Optimum boundary
**OPTIMUM BOUNDARY
MAP**

Addendum 1—Acquisition History and Advisory Group Information

**Dagny Johnson Key Largo Hammock Botanical State Park
Acquisition History**

Purpose and Sequence of Acquisition

The Board of Trustees of the Internal Improvement Trust Fund of the State of Florida (Trustees) acquired Dagny Johnson Key Largo Hammock Botanical State Park to develop, operate and maintain the property for outdoor recreational, park, conservation, historic and related purposes. The initial acquisition of the park took place on July 26, 1982, when the Trustees purchased a 43.90-acre property. The purchase was funded under the Land Acquisition Trust Fund program. Since this initial purchase, the Trustees have acquired additional parcels and added to them to the park. These additions were acquired under CARL and CARL/P2000 programs and by donation.

On November 16, 1982, the Trustees conveyed management authority of Dagny Johnson Key Largo Hammock Botanical State Park to the Division of Recreation and Parks (Division) under Lease No. 3627. This lease is for a period of thirty (30) years, and it will expire on November 15, 2012.

On September 13, 1993, the Division leased a 28.02-acre property from the United States Department of Interior, U.S. Fish and Wildlife Service (USFWS), to manage the property as part of Dagny Johnson Key Largo Botanical State Park. This lease is for a period of fifty (50) years, which will expire on September 12, 2043.

According to the Trustees and the USFWS leases, Division manages Dagny Johnson Key Largo Hammock Botanical State Park only for the development, conservation and protection of natural and cultural resources and to provide public outdoor recreation that is compatible with the conservation and protection of the property.

Title Interest

The Trustees and the USFWS each hold fee simple title to the Dagny Johnson Key Largo Hammock Botanical State Park.

Special Conditions On Use

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

Outstanding Reservations

Instrument:	Warranty Deed
Instrument Holder:	Prudential Home Mortgage Company, Inc.
Beginning Date:	July 13, 1994
Ending Date:	Forever
Outstanding Rights, Uses, Etc.:	The deed is subject to an easement allowing Florida Keys Electric Cooperative Association, Inc. to erect and maintain electric, telephone, and cable lines. The deed is also subject to a 30-foot waterway and a 25-foot waterway easements as recorded in plat book 6, page 75 and a Declaration of Restrictions recorded in O.R. Book 495, page 695.

**Dagny Johnson Key Largo Hammock Botanical State Park
Acquisition History**

Instrument: Indenture
Instrument Holder: Arthur Vintro and Anna Vintro
Beginning Date: January 26, 1994
Ending Date: Forever
Outstanding Rights, Uses, Etc.: The indenture is subject to a certain drainage easement, recorded in plat book 6, page 175.

Instrument: Quitclaim Deed
Instrument Holder: Key Largo Beach and Tennis Club
Beginning Date: April 14, 1992
Ending Date: Forever
Outstanding Rights, Uses, Etc.: The deed is subject to a certain utility easement to Florida Keys Electric Cooperative Association.

Instrument: Statutory Warranty Deed
Instrument Holder: Charles M. Valois and Doris R. Valois
Beginning Date: June 27, 1990
Ending Date: Forever
Outstanding Rights, Uses, Etc.: The deed is subject to a certain Restrictive Covenants as recorded in Official Records Book 495, Pages 695 through 697; Book 550, Pages 274 through 276; and certain utility easement for use by the Florida Keys Electric Cooperative Association, Inc.

Instrument: Indenture
Instrument Holder: Ocean Reef Shores
Beginning Date: June 27, 1990
Ending Date: Forever
Outstanding Rights, Uses, Etc.: The deed is subject to a utility easement to Florida Keys Electric Cooperative Association, Inc, a 20-foot berm maintenance easement, and utility easement by the use of The Elbow Light Club.

Instrument: Special Warranty Deed
Instrument Holder: Federal Deposit Insurance Corporation
Beginning Date: June 16, 1988
Ending Date: Forever
Outstanding Rights, Uses, Etc.: The deed is subject to Port Bougainville Hammock Preservation Covenant; conditions, dedications and easements set forth in Plat Book 7, Page 27; four 4-foot wide utility easements in certain specified areas; and rights of certain tenants in possession of certain lots.

Instrument: Easement
Instrument Holder: Nichols/ Hendrix/ Post Corp.
Beginning Date: August 31, 1987
Ending Date: No date is specifically given.
Outstanding Rights, Uses, Etc.: e easement allows for the Florida Keys Aqueduct Authority to construct, install, operate, repair, and maintain water transmission and distribution facilities.

Dagny Johnson Key Largo Hammock Botanical State Park

And

John Pennekamp Coral Reef State Park

Advisory Group List

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Commissioners
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John Pennekamp Coral Reef State Park
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Key Largo, FL 33043

Noble Hendrix, Chair
South Dade Soil and Water Conservation
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Mr. Randal Grau
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Ms. Rebecca Jetton
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Florida Keys National Marine Sanctuary
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Islamorada, FL 33036

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Homestead, FL 33034

Captain George Clark, President
Key Largo Fishing Guides Association
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Key Largo, FL 33037

Mr. Frank Woll
Florida Bay Outfitters
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Key Largo, FL 33037

David Ritz, Manager
Ocean Reef Club Citizens Association
24 Dockside Lane, # 505
Key Largo, FL 33037

Mr. Joe Clark
38 Exuma Road
Key Largo, FL 33037

Earl Daley, President
The Harborage Condominium Corporation
70 Ocean Drive
Key Largo, FL 33037

Dagny Johnson Key Largo Hammock Botanical State Park

And

John Pennekamp Coral Reef State Park

Advisory Group List

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Dagny Johnson Key Largo Hammock Botanical State Park

And

John Pennekamp Coral Reef State Park

Advisory Group Staff Report

The Advisory Group appointed to review the proposed unit management plan for John Pennekamp Coral Reef State Park (JPCR) and **Dagny Johnson Key Largo Hammock Botanical State Park (KLH)** met at the John Pennekamp State Park Visitor Center on December 4th, 2003. Mr. John Halas represented Mr. David Score and Ms. Monica Woll represented Mr. Frank Woll. Mr. Noble Hendrix, Mr. Randal Grau, Ms Rebecca Jetton, Mr. Steve Klett, Mr. Peter Henry, Ms Susan Sprunt, Captain George Clark, Mr. Joe Clark, and Mr. Earl Daley did not attend. All other appointed Advisory Group members were present. Attending staff were Mr. George Jones, Mr. Danny Jones, Mr. Eric Kiefer, Mr. Bob Bodner, Ms. Renate Skinner, Mr. David Boyd, Ms. Janice Duquesnel, Mr. Jim Duquesnel, Mr. Steve Eibl, and Ms. Carol Perfit. Also attending as public observers were Ms. Lenora Albury and Mr. Steve Gibbs.

Ms. Perfit began the meeting by explaining the purpose of the advisory group, reviewing the meeting procedures and providing a brief overview of the Division's planning process. She then asked the Advisory Group members to comment on the plan.

Summary Of Advisory Group Comments

Ms. Jeanette Hobbs, an environmental representative from the Florida Keys Environmental Restoration Trust Fund, questioned the designation of Egret Island in the JPCR plan as a primitive camping site along the canoe trail. Restoration of this island is in process and terns are using the disturbed site for nesting. She wanted to know if the primitive campsite would be closed during nesting season. Both Eric Kiefer and George Jones assured her the site would be closed if terns were nesting. Jim Duquesnel noted that raccoons are swimming out to the island and may interfere with nests and eventually vegetation growth will make it unsuitable for nesting. Ms. Hobbs said the rest of the plan looks compatible with resource management.

Mr. John Halas, representing Florida Keys National Marine Sanctuary, noted some language corrections in the JPCR plan and requested that the Florida Keys National Marine Sanctuary be added to the maps of both plans. He also wanted the coral disease concerns in the JPCR plan expanded to include water quality and threat of oil drilling. The Florida Keys National Marine Sanctuary has been cooperating with the State Park in buoy placement and maintenance. John expressed desire to continue this work. He noted the lack of information on the management of the three-mile boundary beyond Rodriguez Key. Problems exist when there are groundings and there is no clear indication on which agency should respond. George Jones explained that this is one of the issues being presented in the JPCR plan. The new boundary has been drawn to the three-mile point beyond Rodriguez and Dove Keys.

Ms. Joan Mowery Barrow, an environmental representative from the Upper Keys Citizens Association, questioned the beach health advisories posted on the JPCR swimming areas. If the new water treatment plant is working properly, what is the cause of the contamination? Eric Kiefer explained that the waters at Cannon and Far Beaches are tested every week. He has noticed the beach health advisories occur after a heavy rainstorm and usually only on Cannon Beach. This beach has less natural water circulation. When the water is tested two days later the advisory is lifted. The plan addresses water quality, storm water run-off and plans to study and mitigate the problem. There was also discussion about other pathogen

Dagny Johnson Key Largo Hammock Botanical State Park

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sources. Jim Duquesnel mentioned local bird rookeries in Largo Sound as a possible cause of higher E. coli levels at Cannon Beach.

Joan Barrow questioned the present status of the comprehensive exotic treatment plan. It was called for in the draft plan and the 1998 approved plan. George Jones explained that as District Bureau Chief he requested this plan for all 25 District Five parks. Philip Myers is writing them but is also responsible for exotic control throughout the district so has not had time to complete all the plans. Eric Kiefer said an exotic control plan is followed in park maintenance and the written one will be similar.

Joan Barrow noted that feral cats are listed as a problem species in the JPCR plan and as an exotic species in the **KLH** plan. Janice explained that problem species are native species that become a nuisance. The reference to feral cats will be moved to the exotic species section in the JPCR plan.

Aerial spraying is still occurring and Joan Barrow is concerned about its effect on native species. She would like the park to encourage ground rather than aerial spraying. Jim Duquesnel said the park has an agreement with the county and no aerial spraying takes place over the park but agreed that wind carries the spray and the problem needs addressing. Renate Skinner noted that she is reviewing the mosquito control plans now.

In reference to the biking and hiking trail expansion in the **KLH** plan, Joan Barrow suggested some changes. The Port Bougainville area is a disturbed area and she agrees with the trail expansion there. She agrees that people need paths away from the main roads. The north end trail along old C905, however, she would like delayed for five years until the wood rat population has recovered. She questioned if the trail along 905 is in the utility easement. The county is re-paving this road and wider pavement for a bike lane would encourage faster driving speeds. Carol Perfit said the plan calls for a path in the utility easement. Eric Kiefer and David Boyd said that the park reviews permits and can make comments but does not have a final vote. Joan Barrow mentioned that the re-paving of Card Sound Road should consider an adjacent bike path, separate from the road. This road has no homes and fewer animal crossings because of the existing canal on one side.

Joan Barrow questioned the potential of installing cameras to monitor illegal immigrant activity along the park boundaries. Eric Kiefer said they could be effective but the cost is prohibitive.

Mr. Don Bottomley, representing the recreational user group Florida Trail Association, would like to investigate the potential of connecting the Overseas Heritage Trail with the Florida National Scenic Trail using the trails at **KLH**. The trail presently uses US 1 but a better route would be through the park connecting over Card Sound Road. He said that old C905 is good for bikes but would like to see a more scenic and enclosed trail for hikers. Primitive camping within the park accessed by trail would also be a welcome addition for hikers. Also concerning trail development, Don Bottomley would like to see more emphasis on developing trails for not-motorized boats. Jim Duquesnel reported that one camping site accessible by water is being developed now.

Don Bottomley suggested using local students for facility development and planting. Jim

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Duquesnel mentioned that the park does use student groups as well as homeowner associations, The Nature Conservancy volunteers, and Americorp. Students are presently involved in re-vegetation. Plant identification classes are also held at the park. The limiting factor with volunteer labor is the need for park personnel to be involved and their time is limited.

Don Bottomley inquired about off road biking opportunities. There are no facilities south of Miami. Port Bougainville was discussed as the only potential area with enough disturbed ground but George Jones said it would be a challenge in management with the existing program of exotic removal and restoration. Jim Duquesnel brought up the conflicting atmosphere between off road biking and nature hiking. The park is getting more requests for expanded hiking opportunities than off-road biking. Don Bottomley said Florida Trails Association supports separate trail designations. Janice Duquesnel clarified that the purchase of the property was primarily for the preservation of habitat so we need to limit the development of high impact uses.

Don Bottomley said the rest of the plan meets with his approval.

Ms. Monica Woll, representing the recreational user group, Florida Bay Outfitters, requested some wording change to the JPCR plan to distinguish between primitive and car camping and power boating and paddling. She would like Goal A.1. under Recreational Goals to read primitive camping instead of tent camping. Goal A.2. to add paddling in addition to boating. She questioned how soon the canoe trail camping sites would be developed. Eric Kiefer explained the plan's ten-year time frame. The park develops facilities, as the money becomes available. As previously mentioned, one of the primitive campsites is being developed now.

Monica Woll echoed Joan Barrow's concern for the beach health advisories. She inquired if the marina may cause some of the contamination. Eric Kiefer said they may but we cannot control offsite issues.

Mr. David Ritz, representing the adjacent landowners and the Ocean Reef Community Association, expressed approval for the bike path in the northern section of **KLH** along CR 905. Their preference is for the trail to be located under the power lines separate from the road and to end at the intersection of 905 and 905A. However, they would not be opposed to it following the road up to the front gate of Ocean Reef. A concern was expressed for the proposed bike path running contiguous to the southern boundary of the Ocean Reef community. He stated that this route was discussed in the past and altered to a more southerly cut through. David Ritz reported that Ocean Reef Community Association raised the money for the road removal from Dispatch Slough with the understanding that this would discourage a bike path through here. He inquired about the location of the proposed 905 section of the path. Carol Perfit clarified that the plans were to use the utility ROW. Renate Skinner said the bike trail as proposed is part of the Key Largo Land Use Feasibility Study and the previously approved plan.

David Ritz agrees that the overlook at Dispatch Slough is a good idea and would like to see the roadway radius changed and curbing installed at this point.

He understands the need to protect the natural resource but feels that the park may be going

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too far with installation of fences and signs. The wilderness atmosphere should not be destroyed with protective measures. He also takes issue with the regulation on pruning mangroves and dock regulation in the bays and not in the canals. Have any studies been done to prove injury to mangroves through trimming? George Jones explained that mangrove pruning is a statewide issue and not one that a park can change. The bay waters are state park property and the canals are not. Renate Skinner said that dock regulations are for habitat preservation. JPCR owns up to the mean high water line and is responsible for the protection of that habitat.

David Ritz complimented the park on the work that has been done, especially in the Port Bougainville area and the work with children and re-vegetation with native plants. He reported that neighbors are pleased with the removal of the road to Egret Island. He does not believe it a good idea to put a primitive camping site on the island as called for in the JPCR plan. Previous island users were noisy and left a lot of trash. Monica Woll replied that primitive campers are quiet, bring little power with them, and clean up after themselves. David Ritz said that a meeting with the neighbors would allay some of these fears. George Jones reinforced the positive aspect of primitive campers and said the park will restrict the number of users.

The Honorable Murray Nelson, Mayor, Monroe County Board of County Commissioners, who arrived later, stated his support for the plan and would like the county to cooperate with the park wherever possible.

Ms. Perfit thanked everyone for participating and adjourned the meeting.

Staff Recommendation

Staff recommends approval of the proposed Dagny Johnson Key Largo Hammock Botanical State Park management plan as presented.

Ms. Barrow suggested that the plan should mandate delaying development of bicycle facilities on Old C905 until Wood Rat populations recover from current declines. The park management plan does not determine the schedule for funding improvements. That schedule evolves from an annual process determined by recreational demands and Division and Departmental priorities through development of the legislative budget request. If funding is provided, then the Division's site planning and design process will insure that unacceptable impact to any of the park's natural or cultural resources will not result from the proposed facilities or activities.

Furthermore, the Division of Recreation and Parks works in cooperation with the Florida Fish and Wildlife Conservation Commission and the US Fish and Wildlife Service in managing for the protection of all listed plant and animal species in the state parks. The resource management component of this management plan addresses the issues surrounding the woodrat, cotton mouse, tree snails, Schaus swallowtail butterfly and listed plants of the park, identifying the special management considerations and research needs necessary for their protection. These safeguards on the design of facilities and proactive management programs will provide the best possible protection of the listed species of the park.

Staff recommends approval of the proposed John Pennekamp Coral Reef State Park

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management plan as presented with the following changes:

The addition of primitive campsites along the canoe trail:

- Ocean Forest Estates - mid-point between Garden Cove and Ocean Reef Club
- Dove Key and Lower Sound Point on El Radabob Key - potential primitive campsite
- Rattlesnake Island - potential primitive campsite if property is acquired.

Feral cats discussion moved to the Exotic Species section of the Resource Management Component.

Addendum 2—References Cited

Dagny Johnson Key Largo Hammock Botanical State Park

References Cited

- Alexander, Taylor R., 1974. Evidence of recent sea level rise derived from ecological studies on Key Largo, Fl. Memoir 2:, Miami.
- Alexander, Taylor R, Plant succession on Key Largo, Florida, involving *Pinus caribaea* and *Quercus virginiana* The Quarterly Journal of the Florida Academy of Sciences, 16 (3), 133-138.
- Bureau of Economic and Business Research (BEBR), University of Florida. 2001. Florida Statistical Abstract 2001. Gainesville, Florida.
- Duquesnel, James G., 1996. Extinction of Translocated Populations, the Key Largo woodrat (*Neotoma floridana smalli*) and cotton mouse (*Peromyscus gossypinus allapaticola*), on Lignumvitae Key, Florida. Florida Department of Environmental Protection, Division of Recreation and Parks.
- Emmel, Thomas, Phd., 1997. Research Permit #5-97-25.
- Eyster, Irving R., 1982. Archaeological and historical survey of Port Bougainville Key Largo.
- Florida Department of Environmental Protection. 2003. Florida State Park System Economic Impact Assessment for Fiscal Year 2002/2003. Tallahassee, Florida.
- Florida Department of Natural Resources, 1991. Key Largo Land Use Feasibility Study.
- Florida Game and Fresh Water Fish Commission, 1996. Florida's Endangered Species, Threatened Species and Species of Special Concern.
- Florida Keys Environmental Mitigation Trust Fund, 1995. Carysfort Wetlands Restoration Project Implementation Plan.
- Florida Natural Areas Inventory and the Florida Department of Natural Resources, 1990. Guide to the Natural Communities of Florida.
- Florida Natural Areas Inventory, 1999. Tracking Lists of Special Plants and Lichens, Invertebrates, Vertebrates, and Natural Communities.
- Goggin, John M., 1941. Some Problems of the Glades Archaeological Area, Florida. Southeastern Archaeological Conference Newsletter 2(4): 24-26.
- Goggin, John M., 1944. Archaeological Investigations on the Upper Florida Keys. Tequesta 4:13-35.
- Hoffmeister, John E., 1974. Land from the Sea. University of Miami Press.
- Keith, Britt, 1997. Research permit #5-97-41.
- Kruer, Curtis, 1992. An Assessment of Florida's Remaining Coastal Upland Natural Communities.
- Long, R.W. and Lakela, O., 1978. A Flora of Tropical Florida. Miami, Florida: Banyan Books.
- Monroe County. 2000. Monroe County Future Land Use Plan 2010. Monroe County, Florida.
- Myers, R.L. and Ewel, J., 1990. Ecosystems of Florida. University Presses of Florida.

Dagny Johnson Key Largo Hammock Botanical State Park

References Cited

Nelson, Gil, 1994. The Trees of Florida. Sarasota, Florida: Pineapple Press, Inc.

Sasso, Christopher, 1997. Research permit #5-97-2.

United States Department of Agriculture, Natural Resources Conservation Service, 1995. Soil Survey of Monroe county, Keys area, Florida.

U. S. Department of Commerce, Bureau of the Census. 2000. U. S. Census 2000.

Addendum 3—Soils Descriptions

Dagny Johnson Key Largo Hammock Botanical State Park

Soil Descriptions

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 Geodetic 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 poorly 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.

Matecumbe muck, occasionally flooded - The Matecumbe series consists of moderately well drained soils that are very shallow to rippable coral or oolitic limestone bedrock. The depth to limestone or coral limestone bedrock is 2 to 9 inches. These soils formed in organic material in varying stages of decomposition. Slopes are 0 to 1 percent. The taxonomic class is Euic, isohyperthermic Lithic Tropofolists.

This soil is on tropical hammocks in the uplands throughout the keys. Individual areas are subject to occasional flooding from hurricanes and other tropical storms. Elevations are less than 15 feet above sea level, according to National Geodetic Vertical Datum of 1929. The mean annual temperature ranges from 74 to 78 degrees F, and the mean annual precipitation ranges from 50 to 65 inches.

The Matecumbe soil is dominant in this 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 Matecumbe soil are the well drained, mineral Keyvaca and

Dagny Johnson Key Largo Hammock Botanical State Park

Soil Descriptions

Pennekamp soils in the higher position on the landscape; the somewhat poorly drained, marly Saddlebunch soils in the landscape positions similar to those of the Matecumbe soil; and the poorly drained, marly Cudjoe, Keywest and Lignumvitae soils and very poorly drained, organic Islamorada, Keylargo, and Tavernier soils in the lower positions on the landscape.

The Matecumbe soil is moderately well drained. It has a seasonal high water table at a depth of 1.5 to 3.0 feet during the wet periods of most years. Permeability is 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 recreational use.

Characteristic vegetation for the soils in the survey area include; poisonwood, wild tamarind, mahogany, tree cactus, crabwood, thatch palm, satinleaf, paradise tree, and stopper.

Depth to bedrock, the flooding, and an excessive amount of humus are severe limitation affecting most uses of this soil, including most kinds of building site and recreational development.

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 soil and range from approximately 2 feet to more than 200 feet in diameter. The Tavernier soil is dominant in about 35 percent of his 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 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 limitations affecting most uses of this map unit, including most kinds of building site and recreational development.

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

Dagny Johnson Key Largo Hammock Botanical State Park

Soil Descriptions

50 inches. These soils formed in sapric 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 soil 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 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 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 areas 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.

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 this 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 soil are the very poorly drained, organic Islamorada and Tavernier soils in landscape positions similar to those of the Keylargo 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 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.

Dagny Johnson Key Largo Hammock Botanical State Park

Soil Descriptions

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.

Udorthents-Urban land complex - This map unit is in constructed upland areas adjacent to areas of water throughout the keys. Individual areas are subject to rare flooding from hurricanes and other tropical storms. Elevations vary, depending on the thickness of the fill material, but they are dominantly 3 to 10 feet above sea level, according to National Geodetic Vertical Datum of 1929.

The Udorthents dominantly consist of crushed oolitic limestone or coral bedrock that has been spread over the original soil material. They commonly are about 32 inches of extremely gravelly sand underlain by about 40 inches of marl. The marl is underlain by coral bedrock. Other areas of soils are underlain by muck and other soil material. Houses and other urban structures cover up to 40 percent of most areas of the Udorthents; however, the soils can still be observed.

Soils that are associated in this map unit are all of the other soils that are in the keys.

The Udorthents are moderately well drained. They have a seasonal high water table at a depth of 2 to 4 feet during the wet periods of most years. Permeability is variable.

This map unit generally supports no vegetation. The stones and droughtiness are severe limitations affecting any kind of landscaping activity. The Udorthents were developed for urban use, and many areas are being used for this purpose.

The stones, seepage, and the wetness are moderate or severe limitations affecting most uses of this map unit, including most kinds of building site and recreational development.

Addendum 4—Plant And Animal List

Dagny Johnson Key Largo Hammock Botanical State Park

Plants

Common Name	Scientific Name	Primary Habitat Codes (for designated species)
Indian mallow	<i>Abutilon permolle</i>	
cinnecord	<i>Acacia choriophylla</i> +	
sweet acacia	<i>Acacia farnesiana</i> +	
pineland acacia	<i>Acacia pinetorum</i>	
barb-wire cactus	<i>Acanthocereus tetragonus</i>	12
golden leather fern	<i>Acrostichum aureum</i>	12
giant leather fern	<i>Acrostichum danaeifolium</i>	
false foxglove	<i>Agalinis maritima</i>	
false sisal	<i>Agave decipiens</i>	
sisal hemp	<i>Agave sisalana</i> *	
woman's tongue	<i>Albizia lebbek</i> *	
aloe	<i>Aloe vera</i> *	
chaff flower	<i>Alternanthera flavescens</i>	
Alice-clover	<i>Alysicarpus vaginalis</i> *	
common ragweed	<i>Ambrosia artemisiifolia</i>	
torchwood	<i>Amyris elemifera</i>	
bushy bluestem	<i>Andropogon glomeratus</i> var. <i>pumilus</i>	
pond apple	<i>Annona glabra</i>	
marlberry	<i>Ardisia escallonioides</i>	
Mexican poppy	<i>Argemone mexicana</i>	
sea lavender	<i>Argusia gnaphalodes</i>	81
Hillsborough threeawn	<i>Aristida purpurascens</i> var. <i>tenuispica</i>	
Brace's aster	<i>Aster bracei</i>	
aster	<i>Aster subulatus</i>	
sand atriplex	<i>Atriplex pentandra</i>	
black mangrove	<i>Avicennia germinans</i>	
eyebright ayenia	<i>Ayenia euphrasiifolia</i>	
false willow	<i>Baccharis angustifolia</i>	
salt bush	<i>Baccharis halimifolia</i>	
water hyssop	<i>Bacopa monnieri</i>	
saltwort	<i>Batis maritima</i>	
Spanish needle	<i>Bidens alba</i> var. <i>radiata</i>	
green shrimp plant	<i>Blechnum pyramidatum</i> *	
samphire	<i>Blutaparon vermiculare</i>	
red spiderling	<i>Boerhavia diffusa</i>	
sea ox-eye daisy	<i>Borrichia arborescens</i>	
sea oxeye	<i>Borrichia frutescens</i>	
pitted bluestem	<i>Bothriochloa pertusa</i> *	
bougainvillea	<i>Bougainvillea glabra</i> *	
Bahama strong bark	<i>Bourreria succulenta</i>	
blueheart	<i>Buchnera americana</i>	
black olive	<i>Bucida bucera</i> x <i>B. spinosa</i> *	
gumbo limbo	<i>Bursera simaruba</i>	

* Non-native Species

+ Cultivated

Dagny Johnson Key Largo Hammock Botanical State Park

Plants

Common Name	Scientific Name	Primary Habitat Codes (for designated species)
locustberry	<i>Byrsonima lucida</i>	10, 81
gray nicker-bean	<i>Caesalpinia bonduc</i>	
beautyberry	<i>Callicarpa americana</i>	
basket plant	<i>Callisia fragrans</i> *	
sea daisy	<i>Calyptocarpus vialis</i> *	
spicewood	<i>Calyptranthes pallens</i>	12
myrtle of the river	<i>Calyptranthes zuzygium</i>	12
strapfern	<i>Campyloneurum phyllitidis</i>	
bay-bean	<i>Canavalia rosea</i>	
cinnamon bark	<i>Canella winterana</i>	12
Jamaica caper	<i>Capparis cynophallophora</i>	
limber caper	<i>Capparis flexuosa</i>	
goatweed	<i>Capraria biflora</i>	
balloon vine	<i>Cardiospermum corindum</i>	
papaya	<i>Carica papaya</i> *	
Australian pine	<i>Casuarina equisetifolia</i> *	
suckering Australian pine	<i>Casuarina glauca</i> *	
Madagascar periwinkle	<i>Catharanthus roseus</i> *	
southern sandbur	<i>Cenchrus echinatus</i>	
coastal sandbur	<i>Cenchrus incertus</i>	
bamboo palm	<i>Chamaedorea seifrizii</i> *	
Blodgett's spurge	<i>Chamaesyce blodgettii</i>	
Everglades Key sandmat	<i>Chamaesyce conferta</i> +	
hairy spurge	<i>Chamaesyce hirta</i>	
graceful sandmat	<i>Chamaesyce hypericifolia</i>	
Mendez's sandmat	<i>Chamaesyce mendezii</i>	
seaside spurge	<i>Chamaesyce mesembryanthemifolia</i>	
Florida hammock sandmat	<i>Chamaesyce ophthalmica</i>	
snowberry	<i>Chiococca alba</i>	
pineland snowberry	<i>Chiococca parvifolia</i>	
bitter bush	<i>Chromolaena odorata</i>	81
cocoplum	<i>Chrysobalanus icaco</i> +	
satinleaf	<i>Chrysophyllum oliviforme</i>	12
fiddlewood	<i>Citharexylum spinosum</i>	
Key lime	<i>Citrus aurantiifolia</i> *	
saw grass	<i>Cladium jamaicensis</i>	
pigeon plum	<i>Coccoloba diversifolia</i>	
seagrape	<i>Coccoloba uvifera</i>	
coconut palm	<i>Cocos nucifera</i> *	
croton	<i>Codiaeum variegatum</i> *	
latherleaf	<i>Colubrina asiatica</i> *	
soldierwood	<i>Colubrina elliptica</i>	12
buttonwood	<i>Conocarpus erecta</i>	

* Non-native Species

+ Cultivated

Dagny Johnson Key Largo Hammock Botanical State Park

Plants

Common Name	Scientific Name	Primary Habitat Codes (for designated species)
dwarf horseweed	<i>Conyza canadensis var. pusilla</i>	
jute	<i>Corchorus siliquosus</i>	
geiger tree	<i>Cordia sebestena</i> *	
christmas berry	<i>Crossopetalum ilicifolium</i>	4
rhacoma	<i>Crossopetalum rhacoma</i>	4, 10
rattlebox	<i>Crotalaria pumila</i>	
Madagascar rubber vine	<i>Cryptostegia madagascariensis</i> *	
milkweed	<i>Cynanchum angustifolium</i>	
leafless cynanchum	<i>Cynanchum scoparium</i>	
Bermuda grass	<i>Cynodon dactylon</i> *	
false saw grass	<i>Cyperus ligularis</i>	
umbrella sedge	<i>Cyperus planifolius</i>	
Egyptian grass	<i>Dactyloctenium aegyptium</i> *	
coin vine	<i>Dalbergia brownii</i>	4, 10, 12, 81
coin vine	<i>Dalbergia ecastophyllum</i>	
devil's trumpet	<i>Datura metal</i> *	
royal poinciana	<i>Delonix regia</i> *	
virgate mimosa	<i>Desmanthus virgatus</i>	
beggarweed	<i>Desmodium incanum</i>	
Florida begger weed	<i>Desmodium tortuosum</i> *	
false-mint	<i>Dicliptera sexangularis</i>	
Southern crabgrass	<i>Digitaria ciliaris</i>	
saltgrass	<i>Distichlis spicata</i>	
varnish leaf	<i>Dodonaea eleagnoides</i>	10, 81
varnish leaf	<i>Dodonaea viscosa</i> +	
red-edged Dracaena	<i>Dracaena marginata</i> *	
milkbark	<i>Drypetes diversifolia</i>	12
Guiana plum	<i>Drypetes lateriflora</i>	12
golden dewdrop	<i>Duranta erecta</i> *	
devil's potato	<i>Echites umbellata</i>	
goose grass	<i>Eleusine indica</i> *	
dollar orchid	<i>Encyclia boothiana var. erythronioides</i>	4, 10, 12
butterfly orchid	<i>Encyclia tampensis</i>	
gophertail lovegrass	<i>Eragrostis ciliaris</i> *	
lovegrass	<i>Eragrostis elliottii</i>	
black torch	<i>Erithalis fruticosa</i>	4, 81
Coker's beach creeper	<i>Ernodea cokeri</i>	4
beach creeper	<i>Ernodea littoralis</i>	
white stopper	<i>Eugenia axillaris</i>	
redberry stopper	<i>Eugenia confusa</i>	12
Spanish stopper	<i>Eugenia foetida</i>	
red stopper	<i>Eugenia rhombea</i>	12
dog fennel	<i>Eupatorium capillifolium</i>	

* Non-native Species

+ Cultivated

Dagny Johnson Key Largo Hammock Botanical State Park

Plants

Common Name	Scientific Name	Primary Habitat Codes (for designated species)
grassleaf spurge	<i>Euphorbia graminea</i> *	
finger grass	<i>Eustachys petraea</i>	
seaside gentian	<i>Eustoma exaltatum</i>	
princewood	<i>Exostema caribaeum</i>	12
inkwood	<i>Exothea paniculata</i>	
strangler fig	<i>Ficus aurea</i>	
weeping fig	<i>Ficus benjamina</i> *	
shortleaf fig	<i>Ficus citrifolia</i>	
laurel fig	<i>Ficus microcarpa</i> *	
hurricane grass	<i>Fimbristylis cymosa</i> *	
chestnut sedge	<i>Fimbristylis spadicea</i>	
yellowtop	<i>Flaveria linearis</i>	
stalkless yellowtop	<i>Flaveria trinervia</i>	
milk pea	<i>Galactia striata</i>	
southern gaura	<i>Gaura angustifolia</i>	
seven-year apple	<i>Genipa clusifolia</i> +	
wild cotton	<i>Gossypium hirsutum</i>	3, 4
chewstick	<i>Gouania lupuloides</i>	
lignum vitae	<i>Guaiacum sanctum</i>	12
blolly	<i>Guapira discolor</i>	
Everglades velvetseed	<i>Guettarda elliptica</i>	
rough velvetseed	<i>Guettarda scabra</i>	
crabwood	<i>Gymnanthes lucida</i>	
toothed habenaria	<i>Habenaria floribunda</i>	
firebush, scarletbush	<i>Hamelia patens</i>	
prickly apple cactus	<i>Harrisia simpsonii</i>	4
scorpion tail	<i>Heliotropium angiospermun</i>	
seaside heliotrope	<i>Heliotropium curassavicum</i>	
bladder mallow	<i>Herissantia crispa</i>	
hibiscus	<i>Hibiscus rosa-sinensis</i> var. <i>rosa-sinensis</i> *	
doctor vine	<i>Hippocratea volubilis</i>	
manchineel	<i>Hippomane mancinella</i>	3
spider lily	<i>Hymenocallis latifolia</i>	
Jaragua	<i>Hyparrhenia rufa</i> *	
white ironwood	<i>Hypelate trifoliata</i>	12
wild indigo	<i>Indigofera spicata</i> *	
morning glory	<i>Ipomoea indica</i> var. <i>acuminata</i>	
railroad vine	<i>Ipomoea pes-caprae</i> ssp. <i>brasiliensis</i>	
glades morning glory	<i>Ipomoea sagittata</i>	
morning glory	<i>Ipomoea triloba</i> *	
moonvine	<i>Ipomoea violaceae</i>	
ixora	<i>Ixora coccinea</i> *	
Cuban jacquemontia	<i>Jacquemontia havanensis</i>	4, 12, 81

* Non-native Species

+ Cultivated

Dagny Johnson Key Largo Hammock Botanical State Park

Plants

Common Name	Scientific Name	Primary Habitat Codes (for designated species)
joewood	<i>Jacquinia keyensis</i>	4
jasminum	<i>Jasminum</i> sp. *	
devil's backbone	<i>Kalanchoe daigremontiana</i> *	
life plant	<i>Kalanchoe pinnata</i> *	
black ironwood	<i>Krugiodendron ferreum</i>	
white mangrove	<i>Languncularia racemosa</i>	
lantana	<i>Lantana camara</i> *	
wild lantana	<i>Lantana involucrata</i>	
wild bamboo	<i>Lasiacis divaricata</i>	
wild lettuce	<i>Launaea intybacea</i> *	
ghost plant	<i>Leiphaimos parasitica</i>	12
peppergrass	<i>Lepidium virginicum</i>	
green sprangle top	<i>Leptochloa dubia</i>	
lead tree	<i>Leucaena leucocephala</i> *	
sea lavender	<i>Limonium carolinianum</i>	
Christmas berry	<i>Lycium carolinianum</i>	
wild tamarind	<i>Lysiloma latisiliquum</i>	
red jumbie bean	<i>Macroptilium lathyroides</i> *	
wild dilly	<i>Manilkara jaimiqui subsp. emarginata</i>	4
sapodilla	<i>Manilkara zapota</i> *	
bottlebrush	<i>Melaleuca vimenalis</i> *	
Spanish lime	<i>Melicoccus bijugatus</i> *	
marsh elder	<i>Melanthera nivea</i>	
white sweet clover	<i>Melilotus alba</i> *	
poisonwood	<i>Metopium toxiferum</i>	
clinging vine fern	<i>Microgramma heterophylla</i>	81
climbing hempvine	<i>Mikania scandens</i>	
cheeseweed	<i>Morinda royoc</i>	
muhly grass	<i>Muhlenbergia capillaris</i>	
wax myrtle	<i>Myrica cerifera</i>	
Jamaican weed	<i>Nama jamaicense</i> *	
Boston fern	<i>Nephrolepis multiflora</i> *	
sensitive plant	<i>Neptunia pubescens</i>	
Burma reed	<i>Neyraudia reynaudiana</i> *	
lancewood	<i>Ocotea coriacea</i>	
ground orchid	<i>Oeceoclades maculata</i> *	
Cochineal cactus	<i>Opuntia cochenillifera</i> *	
semaphore cactus	<i>Opuntia corallicola</i>	4
prickly-pear cactus	<i>Opuntia stricta</i>	3, 4
lady's sorrel	<i>Oxalis corniculata</i>	
Guinea grass	<i>Panicum maximum</i> *	
pellitory	<i>Parietaria floridana</i>	
virginia creeper	<i>Parthenocissus quinquefolia</i>	

* Non-native Species

+ Cultivated

Dagny Johnson Key Largo Hammock Botanical State Park

Plants

Common Name	Scientific Name	Primary Habitat Codes (for designated species)
tufted paspalum	<i>Paspalum blodgettii</i>	
blue paspalum	<i>Paspalum caespitosum</i>	
salt joint grass	<i>Paspalum setaceum</i>	
salt joint grass	<i>Paspalum vaginatum</i>	
passionflower	<i>Passiflora multiflora</i>	12, 81
corky-stemmed passionflower	<i>Passiflora suberosa</i>	
tea-blinkums	<i>Pectis glaucescens</i>	
copperpod	<i>Peltophorum pterocarpum</i> *	
napier grass	<i>Pennisetum purpureum</i> *	
wild allamanda	<i>Pentalinon luteum</i>	
golden polypody	<i>Phlebodium aureum</i>	
date palm	<i>Phoenix dactylifera</i> *	
senegal date palm	<i>Phoenix reclinata</i> *	
mahogany mistletoe	<i>Phoradendron rubrum</i>	4, 12
creeping charlie	<i>Phyla nodiflora</i>	
gale of wind	<i>Phyllanthus amarus</i> *	
Mascarene island leafflower	<i>Phyllanthus tenellus</i> *	
artillery plant	<i>Pilea microphylla</i>	
Jamaica dogwood	<i>Piscidia piscipula</i>	
cockspur	<i>Pisonia aculeata</i>	
cat claw	<i>Pithecellobium dulce</i> *	
blackbead	<i>Pithecellobium keyense</i>	
cat's claw	<i>Pithecellobium unguis-cati</i>	
resurrection fern	<i>Pleopeltis polypodioides</i> var. <i>michauxiana</i>	
bushy fleabane	<i>Pluchea carolinensis</i>	
marsh fleabane	<i>Pluchea odorata</i>	
rosy camphorweed	<i>Pluchea rosea</i>	
wild poinsettia	<i>Poinsettia cyathophora</i>	
wild poinsettia	<i>Poinsettia heterophylla</i>	
rustweed	<i>Polypremum procumbens</i>	
purslane	<i>Portulaca oleracea</i>	
velvet burr	<i>Priva lappulacea</i>	
whisk fern	<i>Psilotum nudum</i>	
Bahama wild coffee	<i>Psychotria ligustrifolia</i>	12
wild coffee	<i>Psychotria nervosa</i>	
bracken fern	<i>Pteridium aquilinum</i> var. <i>caudatum</i>	
brake fern	<i>Pteris vittata</i> *	
live oak	<i>Quercus virginiana</i>	
white indigo-berry	<i>Randia aculeata</i>	
myrsine	<i>Rapanea punctata</i>	
darling plum	<i>Reynosa septentrionalis</i>	4, 81
mangrove rubber vine	<i>Rhabdadenia biflora</i>	
red mangrove	<i>Rhizophora mangle</i>	

* Non-native Species

+ Cultivated

Dagny Johnson Key Largo Hammock Botanical State Park

Plants

Common Name	Scientific Name	Primary Habitat Codes (for designated species)
natal grass	<i>Rhynchelytrum repens</i> *	
least snoutbean	<i>Rhynchosia minima</i>	
Swartz's snoutbean	<i>Rhynchosia swartzii</i>	12
largeflower Mexican clover	<i>Richardia grandiflora</i> *	
rougeberry	<i>Rivina humilis</i>	
firecracker bush	<i>Russelia equisetiformis</i> *	
cabbage palm	<i>Sabal palmetto</i>	
rose-of-plymouth	<i>Sabatia stellaris</i>	
annual glasswort	<i>Salicornia bigelovii</i>	
woody glasswort	<i>Salicornia perennis</i>	
water pimpernel	<i>Samolus ebracteatus</i>	
bowstring hemp	<i>Sansevieria hyacinthoides</i> *	
soapberry	<i>Sapindus saponaria</i>	
milkweed vine	<i>Sarcostemma clausum</i>	
beach naupaka	<i>Scaevola sericea</i> *	
Florida boxwood	<i>Schaefferia frutescens</i>	12
Brazilian pepper	<i>Schinus terebinthifolius</i> *	
wire bluestem	<i>Schizachyrium gracile</i>	
bluestem	<i>Schizachyrium sanguineum</i>	
gulf graytwig	<i>Schoepfia chrysophylloides</i>	
Florida Keys nutrush	<i>Scleria lithosperma</i>	81
snake cactus	<i>Selenicereus pteranthus</i> *	
saw palmetto	<i>Serenoa repens</i>	
sea purslane	<i>Sesuvium portulacastrum</i>	
foxtail grass	<i>Setaria macrosperma</i>	
foxtail grass	<i>Setaria parviflora</i>	
broomweed	<i>Sida acuta</i>	
fringed fanpetals	<i>Sida ciliaris</i>	
saffron plum	<i>Sideroxylon celastrinum</i>	
mastic	<i>Sideroxylon foetidissimum</i>	
willow bustic	<i>Sideroxylon salicifolium</i>	
paradise tree	<i>Simarouba glauca</i>	
greenbrier	<i>Smilax havanensis</i>	
Bahama nightshade	<i>Solanum bahamense</i>	
potato tree	<i>Solanum erianthum</i>	
mullein nightshade	<i>Solanum verbascifolium</i>	
seaside goldenrod	<i>Solidago sempervirens</i>	
common sow thistle	<i>Sonchus asper</i> *	
necklace-pod	<i>Sophora tomentosa</i> var. <i>truncata</i>	
saltmeadow cordgrass	<i>Spartina patens</i>	
prickly cordgrass	<i>Spartina spartinae</i>	
large leaf buttonweed	<i>Spermacoce assurgens</i>	
buttonweed	<i>Spermacoce verticillata</i> *	

* Non-native Species

+ Cultivated

Dagny Johnson Key Largo Hammock Botanical State Park

Plants

Common Name	<i>Scientific Name</i>	Primary Habitat Codes (for designated species)
West Indian pinkroot	<i>Spigelia anthelmia</i>	
coral dropseed grass	<i>Sporobolus domingensis</i>	
dropseed	<i>Sporobolus indicus</i> var. <i>indicus</i> *	
West Indian dropseed	<i>Sporobolus indicus</i> var. <i>pyramidalis</i> *	
coastal dropseed	<i>Sporobolus virginicus</i>	
blue porterweed	<i>Stachytarpheta jamaicensis</i>	
St. Augustine grass	<i>Stenotaphrum secundatum</i> *	
pencil flower	<i>Stylosanthes hamata</i>	
sea blite	<i>Suaeda linearis</i>	
bay-cedar	<i>Suriana maritima</i>	
West Indian mahogany	<i>Swietenia mahagoni</i>	12
arrowhead vine	<i>Syngonium podophyllum</i> *	
tamarind	<i>Tamarindus indicus</i> *	
yellow elder	<i>Tecoma stans</i> *	
shield fern	<i>Thelypteris kunthii</i>	
portia	<i>Thespesia populnea</i> *	
Key thatch	<i>Thrinax morrisii</i>	4, 12
Florida thatch palm	<i>Thrinax radiata</i> +	
reflexed wild pine	<i>Tillandsia balbisiana</i>	4, 12
stiff-leaved wild pine	<i>Tillandsia fasciculata</i> var. <i>densispica</i>	4, 12
twisted air plant	<i>Tillandsia flexouosa</i>	4
silvery wild pine	<i>Tillandsia paucifolia</i>	
ball moss	<i>Tillandsia recurvata</i>	
Spanish moss	<i>Tillandsia usneoides</i>	
giant wild pine	<i>Tillandsia utriculata</i>	4, 12
soldier bush	<i>Tournefortia volubilis</i>	
oyster plant	<i>Tradescantia spathacea</i> *	
West Indian tremma	<i>Trema lamarckianum</i>	
Florida tremma	<i>Trema micrantha</i>	81
Mexican daisy	<i>Tridax procumbens</i> *	
yellow alder	<i>Turnera ulmifolia</i> *	
Dominican panicum	<i>Urochloa adspersa</i>	
signal grass	<i>Urochloa subquadriflora</i> *	
worm vine orchid	<i>Vanilla barbellata</i>	4
Christmas palm	<i>Veitchia merrillii</i> *	
ironweed	<i>Vernonia cinerea</i> *	
cow-pea	<i>Vigna luteola</i>	
simple chastetree	<i>Vitex trifolia</i> *	
muscadine grape	<i>Vitis rotundifolia</i>	
shoestring fern	<i>Vittaria lineata</i>	
waltheria	<i>Waltheria indica</i>	
wedelia	<i>Wedelia trilobata</i> *	
hog-plum	<i>Ximena americana</i>	

* Non-native Species

+ Cultivated

Dagny Johnson Key Largo Hammock Botanical State Park

Plants

Common Name	<i>Scientific Name</i>	Primary Habitat Codes (for designated species)
Spanish bayonet	<i>Yucca aloifolia</i>	
wild lime	<i>Zanthoxylum fagara</i>	
turf grass	<i>Zoysia tenuifolia</i> *	

* Non-native Species

+ Cultivated

Dagny Johnson Key Largo Hammock Botanical State Park

Animals

Common Name	Scientific Name	Primary Habitat Codes (for all species)
AMPHIBIANS		
Southern toad	<i>Bufo terrestris</i>	1,12
Green treefrog	<i>Hyla cinerea</i>	12
Cuban treefrog*	<i>Hyla septentrionalis</i>	12
REPTILES		
American crocodile	<i>Crocodylus acutus</i>	76
Striped mud turtle	<i>Kinosternon bauri</i>	76
Florida box turtle	<i>Terrapene carolina</i>	12
Green anole	<i>Anolis carolinensis</i>	12,81
Cuban brown anole*	<i>Anolis sagrei sagrei</i>	12,81
Six-lined racerunner	<i>Cnemidophorus sexlineatus</i>	12,81
Florida Keys mole skink	<i>Eumeces egregius egregius</i>	4,12,81
Southeastern five-lined skink	<i>Eumeces inexpectatus</i>	1,12
Tokey gecko*	<i>Gecko gecko</i>	12,81
Indo-Pacific gecko*	<i>Hemidactylus garnotii</i>	12,81
Reef gecko	<i>Sphaerodactylus notatus</i>	12,81
Florida cottonmouth	<i>Agkistrodon piscivorous conanti</i>	12
Southern black racer	<i>Coluber constrictor priapus</i>	12
Eastern diamondback rattlesnake	<i>Crotalus adamanteus</i>	12
Southern ringneck snake	<i>Diadophis punctatus punctatus</i>	12
Eastern indigo snake	<i>Drymarchon corais couperi</i>	10,12
Yellow rat snake	<i>Elaphe obsoleta deckerti</i>	12,81
Scarlet king snake	<i>Lampropeltis triangulum elapsiodes</i>	12
Eastern coachwhip	<i>Masticophis flagellum flagellum</i>	12
Eastern coral snake	<i>Micrurus fulvius fulvius</i>	12
Mangrove water snake	<i>Nerodia fasciata compressicauda</i>	76
Rough green snake	<i>Opheodrys aestivus</i>	12
BIRDS		
Common loon	<i>Gavia immer</i>	76
American white pelican	<i>Pelecanus erythrorhynchos</i>	76
Eastern brown pelican	<i>Pelecanus occidentalis</i>	76
Double-crested cormorant	<i>Phalacrocorax auritus</i>	76
Magnificent frigatebird	<i>Fregata magnificens</i>	Overflying
Great blue heron	<i>Ardea herodias</i>	76
Great white heron	<i>Ardea occidentalis</i>	76
Green heron	<i>Butorides virescens</i>	76
Cattle egret	<i>Bubulcus ibis</i>	76,81
Great egret	<i>Casmerodius albus</i>	76
Little blue heron	<i>Egretta caerulea</i>	76
Reddish egret	<i>Egretta rufescens</i>	76
Snowy egret	<i>Egretta thula</i>	76

* Non-native Species

+ Cultivated

Dagny Johnson Key Largo Hammock Botanical State Park

Animals

Common Name	Scientific Name	Primary Habitat Codes (for all species)
Tricolored heron	<i>Egretta tricolor</i>	76
Yellow-crowned night heron	<i>Nycticorax violaceus</i>	76
Least bittern	<i>Ixobrychus exilis</i>	76
Roseate spoonbill	<i>Ajaia ajaja</i>	76
White ibis	<i>Eudocimus albus</i>	76
Woodstork	<i>Mycteria americana</i>	76
Red-breasted merganser	<i>Mergus serrator</i>	Offshore
Ruddy duck	<i>Oxyura jamaicensis</i>	76
Turkey vulture	<i>Cathartes aura</i>	All types
Black vulture	<i>Coragyps atratus</i>	All types
Sharp-shinned hawk	<i>Accipiter striatus</i>	12,81
Red-tailed hawk	<i>Buteo jamaicensis</i>	12,81
Red-shouldered hawk	<i>Buteo lineatus</i>	12,81
Broad-winged hawk	<i>Buteo platypterus platypterus</i>	12,81
Northern harrier	<i>Circus cyaneus</i>	81
Swallow-tailed kite	<i>Elanoides forficatus</i>	Overflying
Bald eagle	<i>Haliaeetus leucocephalus</i>	10,12,81
Osprey	<i>Pandion haliaetus</i>	76
Peregrine falcon	<i>Falco peregrinus</i>	12,81
American kestrel	<i>Falco sparverius</i>	81
American coot	<i>Fulica americana</i>	76
Clapper rail	<i>Rallus longirostris</i>	76
Piping plover	<i>Charadrius melodus</i>	4,76
Semi-palmated plover	<i>Charadrius semipalmatus</i>	4,76
Killdeer	<i>Charadrius vociferus</i>	4,76,81
Black-bellied plover	<i>Pluvialis squatarola</i>	4,76
Ruddy turnstone	<i>Arenaria interpres</i>	4,76
Spotted sandpiper	<i>Actitis macularia</i>	4,76
Willet	<i>Catoptrophorus semipalmatus</i>	4,76
Sanderling	<i>Calidris alba</i>	4,76
Western sandpiper	<i>Calidris mauri</i>	4,76
Least sandpiper	<i>Calidris minutilla</i>	4,76
Semi-palmated sandpiper	<i>Calidris pusilla</i>	4,76
Dowitcher	<i>Limnodromus griseus</i>	4,76
Solitary sandpiper	<i>Tringa solitaria</i>	4,76
Black-necked stilt	<i>Himantopus mexicanus</i>	76
Avocet	<i>Recurvirostra americana</i>	76
Herring gull	<i>Larus argentatus</i>	4,76
Laughing gull	<i>Larus atricilla</i>	4,76
Ring-billed gull	<i>Larus delawarensis</i>	4,76
Black skimmer	<i>Rynchops niger</i>	76
Least tern	<i>Sterna antillarum</i>	4,76
Caspian tern	<i>Sterna caspia</i>	4,76

* Non-native Species

+ Cultivated

Dagny Johnson Key Largo Hammock Botanical State Park

Animals

Common Name	<i>Scientific Name</i>	Primary Habitat Codes (for all species)
Roseate tern	<i>Sterna dougallii</i>	4,76
Sooty tern	<i>Sterna fuscata</i>	4,76
Common tern	<i>Sterna hirundo</i>	4,76
Royal tern	<i>Sterna maxima</i>	4,76
Sandwich tern	<i>Sterna sandvicensis</i>	4,76
Eurasian collared-dove*	<i>Streptopelia decaocto</i>	All
White-crowned pigeon	<i>Columba leucocephala</i>	12,76
Common ground-dove	<i>Columbina passerina</i>	81
Key West quail dove	<i>Geotrygon chrysia</i>	81
Zenaida dove	<i>Zenaida aurita</i>	81
Mourning dove	<i>Zenaida macroura</i>	81
Mangrove cuckoo	<i>Coccyzus minor</i>	12,76
Burrowing owl	<i>Athene cunicularia</i>	81
Eastern screech-owl	<i>Otus asio</i>	12,81
Barn owl	<i>Tyto alba</i>	12
Chuck-will's-widow	<i>Caprimulgus carolinensis</i>	12
Common nighthawk	<i>Chordeiles minor</i>	Overflying
Belted kingfisher	<i>Ceryle alcyon</i>	76,64
Red-bellied woodpecker	<i>Melanerpes carolinus</i>	12
Yellow-bellied sapsucker	<i>Sphyrapicus varius</i>	12
Great crested flycatcher	<i>Myiarchus crinitus</i>	12
La Sagra flycatcher	<i>Myiarchus sagrae</i>	12
Gray kingbird	<i>Tyrannus dominicensis</i>	12, 81
Eastern kingbird	<i>Tyrannus tyrannus</i>	12
Barn swallow	<i>Hirundo rustica</i>	Overflying
Fish crow	<i>Corvus ossifragus</i>	All types
Gray catbird	<i>Dumetella carolinensis</i>	12, 81
Bahama mockingbird	<i>Mimus gundlachii</i>	12,81
Northern mockingbird	<i>Mimus polyglottos</i>	12,81
Brown thrasher	<i>Toxostoma rufum</i>	12, 81
Loggerhead shrike	<i>Lanius ludovicianus</i>	81
Blue-gray gnatcatcher	<i>Polioptila caerulea</i>	12, 81
Black-whiskered vireo	<i>Vireo altiloquus</i>	12,76
White-eyed vireo	<i>Vireo griseus</i>	12,76
Black-throated blue warbler	<i>Dendroica caerulescens</i>	12
Yellow-rumped warbler	<i>Dendroica coronata</i>	12,76
Prairie warbler	<i>Dendroica discolor</i>	76, 81
Yellow-throated warbler	<i>Dendroica dominica</i>	12
Kirtland's warbler	<i>Dendroica dirtlandii</i>	12
Palm warbler	<i>Dendroica palmarum</i>	12,76,81
Blackpoll warbler	<i>Dendroica striata</i>	12,76
Bobolink	<i>Dolichonyx oryzivorus</i>	76,81
Worm-eating warbler	<i>Helminthos vermivorus</i>	12

* Non-native Species

+ Cultivated

Dagny Johnson Key Largo Hammock Botanical State Park

Animals

Common Name	Scientific Name	Primary Habitat Codes (for all species)
Black and white warbler	<i>Mniotilta varia</i>	12
Eastern cowbird	<i>Molothrus ater ater</i>	12
Northern parula	<i>Parula americana</i>	12
Ovenbird	<i>Seiurus aurocapillus</i>	12
American redstart	<i>Setophaga ruticilla</i>	12
Red-winged blackbird	<i>Agelaius phoeniceus</i>	76
Boat-tailed grackle	<i>Quiscalus major</i>	76,81
Common grackle	<i>Quiscalus quiscula</i>	76,81
Northern cardinal	<i>Cardinalis cardinalis</i>	12, 81
Rufous-sided towhee	<i>Pipilo erythrophthalmus</i>	12, 81
American goldfinch	<i>Carduelis tristis</i>	12
Indigo bunting	<i>Passerina cyanea</i>	81

INVERTEBRATES

Maesites hairstreak	<i>Chlorostrymon maesites maesites</i>	12,81
Florida purplewing	<i>Eunica tatila tatilista</i>	12,81
Miami blue butterfly	<i>Hemiargus thomasi bethunebakeri</i>	12,81
Schaus swallowtail butterfly	<i>Heraclides aristodemus</i>	12,81
Liguus tree snail	<i>Liguus fasciatus</i>	12
Banded tree snail	<i>Orthalicus floridensis</i>	12
Florida Keys tree snail	<i>Orthalicus reses nesodryas</i>	12
Cuban garden snail*	<i>Zacrysis provisoria</i>	12,81
Mangrove crab	<i>Aratus pisonii</i>	76
Land crab	<i>Cardisoma guanhumi</i>	3,12,81
Land hermit crab	<i>Coenobita clypeatus</i>	3,12,81
Crab spider	<i>Gasteracantha cancriformis</i>	All
Mangrove crab	<i>Goniopsis cruentata</i>	76
Golden orb spider	<i>Nephila clavipes</i>	All
Fire ants*	<i>Solenopsis invicta</i>	All
Fiddler crab	<i>Uca pugilator</i>	76

BEETLES

Prioninae	<i>Stenodontes chevrolatis</i>	12
Macrotomini	<i>Stenodontes dasytomus dasytomus</i>	12
Mallaspini	<i>Derancitrus scabrosus</i>	12
Cerambycidae	<i>Ataxia spinicauda</i>	12
	<i>Euryscelis suturalis</i>	12
	<i>Hippopsis lemniscata</i>	12
	<i>Methis pusilla</i>	12
	<i>Neoclytus cordifer</i>	12
	<i>Placosternus difficilis</i>	12
	<i>Psyrassa pertenuis</i>	12
	<i>Styloleptus biustus biustus</i>	12

* Non-native Species

+ Cultivated

Dagny Johnson Key Largo Hammock Botanical State Park

Animals

Common Name	Scientific Name	Primary Habitat Codes (for all species)
Methiini	<i>Oeme rigida rigida</i>	12
Eburiini	<i>Eburia stigma</i>	12
	<i>Eburia stroheckeri</i>	12
Elaphidionini	<i>Anelaphus inermis</i>	12
	<i>Anelaphus subtropicus</i>	12
	<i>Customerus flavus</i>	12
	<i>Elaphidion cryptum</i>	12
	<i>Elaphidion irroratum</i>	12
	<i>Elaphidion mucronatum</i>	12
	<i>Linsleyonides albomaculatus</i>	12
Iribionini	<i>Heterachthes sablensis</i>	12
Curini	<i>Plectromerus dentipes</i>	12
Obrini	<i>Obrium glabrum</i>	12
	<i>Obrium malculatum</i>	12
Callichromatini	<i>Plinthocoelium suaveolens suaveolens</i>	12
Clytini	<i>Neoclytus cordifer</i>	12
Herteropsini	<i>Heterops dimidiata</i>	12
Laminiiae	<i>Ataxiini Ataxia falli</i>	12
Pogonocherini	<i>Egyus dasycerus floridanus</i>	12
Onciderini	<i>Oncideres cingulata</i>	12
Hippopsini	<i>Hippopsis lemniscata</i>	12
	<i>Spalacopsis filum costulatum</i>	12
Acanthocinini	<i>Alcicion umbraticum</i>	12
	<i>Lagocheirus araneiformis stroheckeri</i>	12
	<i>Leptostylopsis albofasciatus</i>	12
	<i>Leptostylopsis argentatus</i>	12
	<i>Leptostylopsis planidorsus</i>	12
	<i>Leptostylopsis terraecolor</i>	12
	<i>Sternidus schwarzi</i>	12
	<i>Styloleptus minuens minuens</i>	12
	<i>Urgleptes kissingeri</i>	12
Cicindelidae	<i>Cicindela marginata</i>	12
Carabidae	<i>Calasoma splendidum</i>	12
	<i>Panagaeus crucigerus</i>	12
	<i>Pesimachus subsalcatus</i>	12
	<i>Plochionus amadus</i>	12
Buprestidae	<i>Acmaeodera confusa</i>	12
	<i>Acmaeodera margine notata</i>	12
	<i>Actenodes auronotata</i>	12
	<i>Chrypobothris tranquebarica</i>	12
	<i>Chrypobothris sexfasciata</i>	12
	<i>Polycesta abdita</i>	12
	<i>Polycesta angulosa</i>	12

* Non-native Species

+ Cultivated

Dagny Johnson Key Largo Hammock Botanical State Park

Animals

Common Name	Scientific Name	Primary Habitat Codes (for all species)	
Elateridae	<i>Poratyndoris suturelis</i>	12	
	<i>Dicrepidius rannicormis</i>	12	
	<i>Hapsodrilus phyppodermus</i>	12	
	<i>Lacon mexicanus</i>	12	
	<i>Neotricophorus carolinensis</i>	12	
Cleridae	<i>Lecontella brunnea</i>	12	
	<i>Monophylla terminata</i>	12	
	<i>Neorthopleura thoracica</i>	12	
	<i>Tarostenus univittatus</i>	12	
Meloidae	<i>Nemognatha punctulata</i>	12	
Oedemeridae	<i>Oxycopsis floridana</i>	12	
	<i>Oxycopsis vittata</i>	12	
Lampyridae	<i>Lampyrus pinelli</i>	12	
Lycidae	<i>Lycus lateralis</i>	12	
Scarabacidae	<i>Euphoria limbalis</i>	12	
	<i>Pelidnota lutea</i>	12	
	<i>Phileurus castaneus</i>	12	
	<i>Rutela formosa</i>	12	
	Chrysomelidae	<i>Anomoea laticlaira angustata</i>	12
		<i>Ciriburius equestris</i>	12
Anthibidae	<i>Ischnocerus infuscatus</i>	12	
	<i>Toxonotus fasciculatus</i>	12	
Curalionidae	<i>Myrimax dichnous</i>	12	
	<i>Pachnoaus litus</i>	12	
Histeridae	<i>Acritus ignobilis</i>	12	
	<i>Onalodes ruficlavis</i>	12	
	<i>Teretriosoma virens</i>	12	
Laemophloeidae	<i>Laemophloeus lecontei</i>	12	
	<i>Lathropus vernalis</i>	12	
	<i>Placonotus politissimus</i>	12	
Passandridae	<i>Catogenus rufus</i>	12	
Silvanidae	<i>Ahasverus rectus</i>	12	
Wasps	<i>Adelencyrtus odonaspidis</i>	12	
	<i>Aenasius spp.</i>	12	
	<i>Aeptencyrtus bruchi</i>	12	
	<i>Ageniaspis sp.</i>	12	
	<i>Ameromyzobia bulginskayae</i> *	12	
	<i>Anagyrus spp.</i>	12	
	<i>Apoanagyrus ?diversicornis</i>	12	
	<i>Blepyrus sp.</i>	12	
	<i>Cheiloneurus spp.</i>	12	
	<i>Copidosoma spp.</i>	12	
	<i>Helegonatopus pseudophanes</i>	12	

* Non-native Species

+ Cultivated

Dagny Johnson Key Largo Hammock Botanical State Park

Animals

Common Name	Scientific Name	Primary Habitat Codes (for all species)
	<i>Meromyzobia sp.</i>	12
	<i>Metaphycus spp.</i>	12
	<i>Neodusmetia sangwani</i>	12
	<i>Ooencyrtus spp.</i>	12
	<i>Pseudaphycus sp.</i>	12
	<i>Psyllaephagus yaseeni</i> *	12
	<i>Syrphophagus aphidivorus</i>	12
	<i>Syrphophagus sp.</i>	12
Plant Lice	<i>Aphaloxoida masonici</i>	12
	<i>Hetropsylla cubana</i>	12
	<i>Heteropsyllae quassiae</i>	12
	<i>Pseudophaeopteron sp.</i>	12
	<i>Trioza sp.</i>	12
MAMMALS		
Virginia opossum	<i>Didelphis virginiana</i>	12, 81
Marsh rabbit	<i>Sylvilagus palustris</i>	76,81
Key Largo woodrat	<i>Neotoma floridana smalli</i>	12
Key Largo cotton mouse	<i>Peromyscus gossypinus allapaticola</i>	12
Gray squirrel	<i>Sciurus carolinensis</i>	12,81
Hispid cotton rat	<i>Sigmodon hispidus</i>	12
Black rat*	<i>Rattus rattus</i>	12, 81
House mouse*	<i>Mus musculus</i>	12, 81
Bobcat	<i>Lynx rufus</i>	All types
Raccoon	<i>Procyon lotor</i>	All types
Gray fox	<i>Urocyon cinereoargenteus</i>	All types

* Non-native Species

+ Cultivated

Habitat Codes

Terrestrial

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

Palustrine

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

Lacustrine

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

Lacustrine

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

Riverine

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

Estuarine

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

Marine

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

Subterranean

- 79** Aquatic Cave
- 80** Terrestrial Cave

Miscellaneous

- 81** Ruderal
- 82** Developed
- MTC** Many Types
Of Communities
- OF** Overflying

Addendum 5—Designated Species List

Dagny Johnson Key Largo Hammock Botanical State Park

Designated Species

Plants

Common Name/ Scientific Name	Designated Species Status		
	FDA	USFWS	FNAI
Barb-wire cactus <i>Acanthocereus tetragonus</i>	T		
Golden leather fern <i>Acrostichum aureum</i>	T		G5,S3
Sea lavender <i>Argusia gnaphalodes</i>	E		G4,S3
Locustberry <i>Byrsonima lucida</i>	T		G3,S3
Spicewood <i>Calypttranthes pallens</i>	T		
Myrtle-of-the-river <i>Calypttranthes zuzygium</i>	E		G4,S2
Wild cinnamon <i>Canella winterana</i>	E		G4G5,S2
Bitterbush <i>Chromolaena odorata</i>	E		
Satinleaf <i>Chrysophyllum oliviforme</i>	T		
Soldierwood <i>Colubrina elliptica</i>	E		
Christmasberry <i>Crossopetalum ilicifolium</i>	T		G2,S2
Rhacoma <i>Crossopetalum rhacoma</i>	T		G5,S3
Coinvine <i>Dalbergia brownii</i>	E		
Varnish leaf <i>Dodonaea elaeagnoides</i>	E		G3G5,S1
Milkbark <i>Drypetes diversifolia</i>	E		G3G4,S2
Guiana plum <i>Drypetes lateriflora</i>	T		
Dollar orchid <i>Encyclia boothiana</i>	E		G4T4,S1
Black torch <i>Erithalis fruticosa</i>	T		
Coker's beach creeper <i>Ernodea cokeri</i>	E		G4,S1
Redberry stopper <i>Eugenia confusa</i>	E		G4G5,S2S3
Red stopper <i>Eugenia rhombea</i>	E		G3G5,S1
Princewood <i>Exostema caribaeum</i>	E		

Dagny Johnson Key Largo Hammock Botanical State Park

Designated Species

Plants

Common Name/ Scientific Name	Designated Species Status		
	FDA	USFWS	FNAI
Wild cotton <i>Gossypium hirsutum</i>	E		G4G5,S3?
Lignum vitae <i>Guaiacum sanctum</i>	E		G4G5,S2
Prickly apple cactus <i>Harrisia simpsonii</i>	E		G2Q,S2
Manchineel <i>Hippomane mancinella</i>	E		G5,S2
White ironwood <i>Hypelate trifoliata</i>	E		G3G5,S1
Cuban Jacquemontia <i>Jacquemontia havanensis</i>	E		G5,S1
Joewood <i>Jacquinia keyensis</i>	T		G4,S3
Ghost plant <i>Leiphaimos parasitica</i>	E		G4,S2
Wild dilly <i>Manilkara jaimiqui</i>	T		G4Q,S3
Climbing vine fern <i>Microgramma heterophylla</i>	E		G4G5,S2S3
Semaphore cactus <i>Opuntia corallicola</i>	E		G3,S1
Prickly pear cactus <i>Opuntia stricta</i>	T		
Passionflower <i>Passiflora multiflora</i>	E		G4,S1
Mahogany mistletoe <i>Phoradendron rubrum</i>	E		G3G5,SX
Wild coffee <i>Psychotria ligustifolia</i>	E		G3G5,S1
Darling plum <i>Reynosia septentrionalis</i>	T		
Swartz's snoutbean <i>Rhynchosia swartzii</i>	E		G3,S1
Florida boxwood <i>Schaefferia frutescens</i>	E		G5,S2
Florida keys nutrush <i>Scleria lithosperma</i>	E		
West Indian mahogany <i>Swietenia mahagoni</i>	E		G3G4,S2
Key thatch palm <i>Thrinax morrisii</i>	E		G4G5,S3
Medusahead air plant <i>Tillandsia balbisiana</i>	T		

Dagny Johnson Key Largo Hammock Botanical State Park

Designated Species

Plants

Common Name/ Scientific Name	<u>Designated Species Status</u>		
	FDA	USFWS	FNAI
Common wild pine <i>Tillandsia fasciculata</i>	E		
Twisted air plant <i>Tillandsia flexouosa</i>	T		G4,S3
Giant wild pine <i>Tillandsia utriculata</i>	E		
West Indian trema <i>Trema lamarckianum</i>	E		G5,S2
Worm vine orchid <i>Vanilla barbellata</i>	E		G4G5,S2

Dagny Johnson Key Largo Hammock Botanical State Park

Designated Species

Plants

**Common Name/
*Scientific Name***

Designated Species Status
FDA USFWS FNAI

Dagny Johnson Key Largo Hammock Botanical State Park

Designated Species

Animals

Common Name/ Scientific Name	Designated Species Status		
	FFWCC	USFWS	FNAI
INVERTEBRATES			
Maesites hairstreak <i>Chorostrymon maesites maesites</i>			G1,S?
Florida purplewing <i>Eunica tatila tatilista</i>			G4T2,S1
Miami blue butterfly <i>Hemiargus thomasi bethunebakeri</i>	E		G3T2,S2
Schaus swallowtail butterfly <i>Heraclides aristodemus</i>	E	E	G4T1,S1
Banded tree snail <i>Orthalicus floridensis</i>			G3,S3
Florida Keys tree snail <i>Orthalicus reses nesodryas</i>			G2T2,S2
Scarab beetle <i>Rutela formosa</i>			G?,S?
REPTILES			
American crocodile <i>Crocodylus acutus</i>	E	E	G2,S1
Eastern diamondback rattlesnake <i>Crotalus adamanteus</i>			G5,S3
Eastern indigo snake <i>Drymarchon corais</i>	T	T	G4T3,S3
Florida Keys mole skink <i>Eumeces egregius egregius</i>			G4T2,S2
Striped mud turtle <i>Kinosternon bauri</i>	E		G5T2Q,S2
BIRDS			
Roseate spoonbill <i>Ajaia ajaja</i>			G5,S2S3
Great white heron <i>Ardea occidentalis</i>			G5T2,S2
Burrowing owl <i>Athene cunicularia</i>			G4T3,S3
Great egret <i>Casmerodius albus</i>			G5,S4
Mangrove cuckoo <i>Coccyzus minor</i>			G4,S3
White-crowned pigeon <i>Columba leucocephala</i>	T		G3,S3
Little blue heron <i>Egretta caerulea</i>			G5,S4

Dagny Johnson Key Largo Hammock Botanical State Park

Designated Species

Animals

Common Name/ Scientific Name	Designated Species Status		
	FFWCC	USFWS	FNAI
Reddish egret <i>Egretta rufescens</i>			G4,S2
Snowy egret <i>Egretta thula</i>			G5,S4
Tricolored heron <i>Egretta tricolor</i>			G5,S4
Swallow-tailed kite <i>Elanoides forficatus</i>			G5,S2S3
White ibis <i>Eudocimus albus</i>			G5,S4
Merlin <i>Falco columbarius</i>			G4,SU
American kestrel <i>Falco sparverius</i>	T		G5T3T4,S3?
Magnificent frigatebird <i>Fregata magnificens</i>			G5,S1
Key West quail dove <i>Geotrygon chrysis</i>			G3,SX
Southern bald eagle <i>Haliaeetus leucocephalus</i>	T	T	G4,S3
Least bittern <i>Ixobrychus exilis</i>			G5,S4
Woodstork <i>Mycteria americana</i>	E	E	G4,S2
Yellow-crowned night heron <i>Nycticorax violaceus</i>			G5,S3?
Osprey <i>Pandion haliaetus</i>			G5,S3S4
Eastern brown pelican <i>Pelecanus occidentalis</i>			G4,S3
American redstart <i>Setophaga ruticilla</i>			G5,S3
Least tern <i>Sterna antillarum</i>	T		G4,S3
Roseate tern <i>Sterna dougallii</i>	T	T	G5,S1
Royal tern <i>Sterna maxima</i>			G5,S3
Black-whiskered vireo <i>Vireo altiloquus</i>			G5,S3
Zenaida dove <i>Zenaida aurita</i>			G5,SX

Dagny Johnson Key Largo Hammock Botanical State Park

Designated Species

Animals

Common Name/ Scientific Name	<u>Designated Species Status</u>		
	FFWCC	USFWS	FNAI
MAMMALS			
Key Largo woodrat <i>Neotoma floridana smalli</i>	E	E	G5T1,S1
Key Largo cotton mouse <i>Peromyscus gossypinus allapaticola</i>	E	E	G5T1Q,S1

Dagny Johnson Key Largo Hammock Botanical State Park

Designated Species

Animals

**Common Name/
*Scientific Name***

Designated Species Status

FFWCC USFWS FNAI

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

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

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

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

FNAI GLOBAL RANK DEFINITIONS

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

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

LEGAL STATUS

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

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

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

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

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

PT = Proposed for listing as Threatened Species.

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

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

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

STATE

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

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

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

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

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

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

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

Addendum 6—FMSF List of Cultural Sites

Dagny Johnson Key Largo Hammock Botanical State Park
FMSF List Of Cultural Sites

There are nineteen sites located within the park boundary, and several others in the vicinity of the park. These are as follows:

FMSF No.	T/R/Sec.	Site Name	Type	In Park?
Mo127	59S/40E/025	Dynamite Rock	Shell midden; Glades 1 & 2	Yes
Mo1341	60S/40E/029	Round Container	19th-20th century homesite	Yes
Mo1342	60S/40E/021	Stacked Rock	19th-20th century homesite	Yes
Mo1965	60S/40E/032	Port Bougainville 1	Shell midden; Glades 1&2	Yes
Mo1971	60S/40E/032	Celt	Aceramic prehistoric; single artifact	Yes
Mo1972	60S/40E/032	Laura	Am. post-Reconstruction; Spanish-American War; single artifact	Yes
Mo1973	60S/40E/032	Frag	Aceramic prehistoric; single artifact	Yes
Mo1974	60S/40E/032	Busycon Adze	Aceramic prehistoric; single artifact	Yes
Mo1975	60S/40E/032	Columella	Prehistoric; single artifact	Yes
Mo2050	59S/40E/025	Barbara	Indeterminate historic; scatter, historic shipwreck	Yes
Mo2051	59S/40E/025	Card Sound Road	Shell midden, Glades 2	Yes
Mo2053	60S/40E/002	Carys Fort	Am. post-Reconstruction; Spanish-American War; cistern	Yes
Mo2054	59S/40E/025	Jeffreys	Am. Civil War, post-Reconstruction; Spanish-American War; historic refuse; road	Yes
Mo2055	59S/40E/025	Goodie	Prehistoric campsite; midden	Yes
Mo2056	59S/40E/025	Norman	Indeterminate, shell midden	Yes
Mo2064	59S/40E/035	North Largo	20th century American; house site; cistern	Yes
Mo2071	60S/40E/021	McClellan	American post-Reconstruction; Reconstruction; Spanish-American War; WW1 & aftermath; housesite	Yes
Mo2072	60S/40E/021	Sunland South	American boom; depression; post-Reconstruction; Spanish-American War, WW1 & aftermath; house site	Yes
Mo2073	60S/40E/028	Gulfstream	Indeterminate; shell midden & scatter	Yes

**Dagny Johnson Key Largo Hammock Botanical State Park
FMSF List Of Cultural Sites**

FMSF No.	T/R/Sec.	Site Name	Type	In Park?
Mo25	60S/40E/029	Key Largo I	Shell midden, Late Archaic Glades 1&2	No
Mo128	60S/40E/029	Atlantic	Midden, Glades 3	No
Mo1966	90S/40E/031	Port Bougainville 2	Shell midden, mound; Glades 1&2	No
Mo1967	90S/40E/031	Heart Hammock	Indeterminate; surface scatter	No
Mo1968	90S/40E/031	Sherd Site	Indeterminate; surface scatter	No
Mo1969	60S/40E/032	Adze	Aceramic prehistoric; single artifact	No
Mo2069	90S/40E/031	Camp Key Largo	Spanish American War; railroad	No

Addendum 7—Priority Schedule And Cost Estimates

Dagny Johnson Key Largo Hammock Botanical State Park

Priority Schedule And Cost Estimates

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

Resource Management

1. Remove existing trash dumps and implement measures that will discourage future dumping (0-10 years). **Estimated Cost: \$100,000.**
2. Remove all structures associated with previous development attempts (0-10 years). **Estimated Cost: \$2,000,000.**
3. Restore natural topography (0-10 years). **Estimated Cost: \$1,000,000.**
4. Restore natural communities (0-10 years). **Estimated Cost: \$200,000.**
5. Restore natural hydrology (0-10 years). **Estimated Cost: \$500,000.**
6. Continue to apply for grants to remove exotic species (0-10 years). **Estimated Cost: \$500,000.**
7. Continue to monitor plant and animal species (0-10 years). **Estimated Cost: \$60,000**
8. Conduct Level II archaeological survey (0-10years). **Estimated Cost: \$10,000**
9. Survey for cultural and archaeological sites and protect from degradation (0-10 years). **Estimated Cost: \$20,000**
10. Fund research on species specific projects such as inventory of marine species in Dispatch Slough, presence of rare beetle found in woodrat nests, Liguus tree snail population, herpetological survey, impacts of exotic species on native flora and fauna, and impacts of Cuban garden snail (0-10 years). **Estimated Cost: \$60,000**

TOTAL ESTIMATED COST:

\$4,450,00.00

Dagny Johnson Key Largo Hammock Botanical State Park

Capital Improvements

Item	Quantity	Unit	Unit Price	Multiplier	Amount
Recreation Facilities - North End					
6 Ft. Elevated Boardwalk	1110.000	LF	\$165.00	1.50	\$274,725.00
Interpretive Display / Kiosk	2.000	ea.	\$20,000.00	1.50	\$60,000.00
Observation Deck	1.000	ea.	\$30,000.00	1.50	\$45,000.00
Recreation Facilities - Port Bougainville					
Nature Trail	8000.000	LF	\$2.00	1.50	\$24,000.00
Support Facilities - North End					
Composting (Clivus) Restroom	1.000	ea.	\$20,000.00	1.50	\$30,000.00
Stabilized Parking (10 Car)	1.000	per 10	\$2,500.00	1.50	\$3,750.00
				Sub-Total	<u>\$437,475.00</u>
				20 Percent Design, Permitting and Contingency Fee	<u>\$87,495.00</u>
				Total	\$524,970.00

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

Descriptions Of Natural Communities Developed By FNAI

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

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

The levels of the hierarchy are:

Natural Community Category - defined by hydrology and vegetation.

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

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

TERRESTRIAL COMMUNITIES

XERIC UPLANDS
COASTAL UPLANDS
MESIC UPLANDS
ROCKLANDS
MESIC FLATLANDS

PALUSTRINE COMMUNITIES

WET FLATLANDS
SEEPAGE WETLANDS
FLOODPLAIN WETLANDS
BASIN WETLANDS

LACUSTRINE COMMUNITIES

RIVERINE COMMUNITIES
SUBTERRANEAN COMMUNITIES
MARINE/ESTUARINE COMMUNITIES

Definitions of Terms Used in Natural Community Descriptions

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

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

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

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

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

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

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

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

Descriptions Of Natural Communities Developed By FNAI

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Mesic Flatwoods - flatland with sand substrate; mesic; subtropical or temperate; frequent fire; slash

Descriptions Of Natural Communities Developed By FNAI

pine and/or longleaf pine with saw palmetto, gallberry and/or wiregrass or cutthroat grass understory.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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high mineral content (sodium, chloride).

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

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

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

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

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

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

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

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

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

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

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

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

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

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of organic detritus and low energy systems.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

DEFINITIONS OF TERMS Terrestrial and Palustrine Natural Communities

Physiography

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

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

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

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

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

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

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

Hydrology

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

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

usually inundated - surface water present except during droughts

Climatic Affinity of the Flora

tropical - community generally occurs in practically frost-free areas

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

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

Fire

annual fire - burns about every 1-2 years

frequent fire - burns about every 3-7 years

occasional fire - burns about every 8-25 years

rare fire - burns about every 26-100 years

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

Descriptions Of Natural Communities Developed By FNAI

LATIN NAMES OF PLANTS MENTIONED IN NATURAL COMMUNITY DESCRIPTIONS

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

**Management Procedures For
Archaeological And Historical Sites And Properties
On State -- Owned Or Controlled Lands
(Revised August, 1995)**

A. GENERAL DISCUSSION

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

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

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

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

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

B. STATUTORY AUTHORITY

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

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

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

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

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

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

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

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- transferred, sold, demolished, substantially altered, or allowed to deteriorate significantly.
4. Each state agency of the executive branch shall assume responsibility for the preservation of historic resources that are owned or controlled by such agency. Prior to acquiring, constructing, or leasing buildings for the purpose of carrying out agency responsibilities, the agency shall use, to the maximum extent feasible, historic properties available to the agency. Each agency shall undertake, consistent with preservation of such properties, the mission of the agency, and the professional standards established pursuant to paragraph (3)(k), any preservation actions necessary to carry out the intent of this paragraph.
 5. Each state agency of the executive branch, in seeking to acquire additional space through new construction or lease, shall give preference to the acquisition or use of historic properties when such acquisition or use is determined to be feasible and prudent compared with available alternatives. The acquisition or use of historic properties is considered feasible and prudent if the cost of purchase or lease, the cost of rehabilitation, remodeling, or altering the building to meet compliance standards and the agency's needs, and the projected costs of maintaining the building and providing utilities and other services is less than or equal to the same costs for available alternatives. The agency shall request the division to assist in determining if the acquisition or use of a historic property is feasible and prudent. Within 60 days after making a determination that additional space is needed, the agency shall request the division to assist in identifying buildings within the appropriate geographic area that are historic properties suitable for acquisition or lease by the agency, whether or not such properties are in need of repair, alteration, or addition.
 6. Consistent with the agency's mission and authority, all state agencies of the executive branch shall carry out agency programs and projects, including those under which any state assistance is provided, in a manner which is generally sensitive to the preservation of historic properties and shall give consideration to programs and projects which will further the purposes of this section.

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

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

C. MANAGEMENT POLICY

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

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

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

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

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

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occur sufficiently in advance to avoid project construction delays. If these services are to be contracted by the state agency, the selected consultant will need to obtain an Archaeological Research Permit from the Division of Historical Resources, Bureau of Archaeological Research (see 267.12, F.S. and Rules 1A-32 and 1A-46 F.A.C.).

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

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

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

1. A property shall be used for its historic purpose or be placed in a new use that requires minimal change to the defining characteristics of the building and its site and environment.
2. The historic character of a property shall be retained and preserved. The removal of historic materials or alterations of features and spaces that characterize a property shall be avoided.
3. Each property shall be recognized as a physical record of its time, place and use. Changes that create a false sense of historical development, such as adding conjectural features or architectural elements from other buildings, shall not be undertaken.
4. Most properties change over time; those changes that have acquired historic significance in their own right shall be retained and preserved.
5. Distinctive features, finishes, and construction techniques or examples of craftsmanship that characterize a historic property shall be preserved.
6. Deteriorated historic features shall be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature shall match the old in design, color, texture, and other visual qualities and, where possible, materials. Replacement of

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- missing features shall be substantiated by documentary, physical, or pictorial evidence.
7. Chemical or physical treatments, such as sandblasting, that cause damage to historic materials shall not be used. The surface cleaning of structures, if appropriate, shall be undertaken using the gentlest means possible.
 8. Significant archaeological resources affected by a project shall be protected and preserved. If such resources must be disturbed, mitigation measures shall be undertaken.
 9. New additions, exterior alterations, or related new construction shall not destroy materials that characterize the property. The new work shall be differentiated from the old and shall be compatible with the massing, size, scale, and architectural features to protect the historic integrity of the property and its environment.
 10. New additions and adjacent or related new construction shall be undertaken in such a manner that if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired. (see Secretary of the Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings [Revised 1990]).

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

D. MANAGEMENT IMPLEMENTATION

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

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

A. Historic Sites

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

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- (c) Number, type, and location of outbuildings, as well as date(s) of construction;
- (d) Notation if property has been moved;
- (e) Notation of known alterations to building.

B. Archaeological Sites

- (1) Site location (written narrative and mapped location).
 - (2) Cultural affiliation and period.
 - (3) Site type (midden, burial mound, artifact scatter, building rubble, etc.).
 - (4) Threats to site (deterioration, vandalism, etc.).
 - (5) Site size (acreage, square meters, etc.).
 - (6) Artifacts observed on ground surface (pottery, bone, glass, etc.).
 - (7) Description of surrounding environment.
7. No land disturbing activities should be undertaken in areas of known archaeological or historic sites or areas of high site probability without prior review by the Division early in the project planning.
 8. Ground disturbing activities may proceed elsewhere but land managers should stop disturbance in the immediate vicinity of artifact finds and notifies the Division if previously unknown archaeological or historic remains are uncovered. The provisions of Chapter 872, F.S., must be followed when human remains are encountered.
 9. Excavation and collection of archaeological and historic sites on state lands without a permit from the Division are a violation of state law and shall be reported to a law enforcement officer. The use of metal detectors to search for historic artifacts shall be prohibited on state lands except when authorized in a 1A-32, F.A.C., research permit from the Division.
 10. Interpretation and visitation which will increase public understanding and enjoyment of archaeological and historic sites without site destruction or vandalism is strongly encouraged.
 11. Development of interpretive programs including trails, signage, kiosks, and exhibits is encouraged and should be coordinated with the Division.
 12. Artifacts found or collected on state lands are by law the property of the Division. Land managers shall contact the Division whenever such material is found so that arrangements may be made for recording and conservation. This material, if taken to Tallahassee, can be returned for public display on a long term loan.

E. ADMINISTERING AGENCY

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

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

Contact Person:

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

Land Management Review of Key Largo Hammock State Botanical Site

Monroe County (Lease No. 3267): July 25, 2000

Prepared by Division of State Lands Staff

William Howell, OMC Manager
John Barrow, Environmental Specialist II
Ginny Morris, Administrative Assistant

For

the Key Largo Hammock State Botanical Site Management Review Team

Final Report September 29, 2000

Land Manager:	<u>DRP</u>
Area:	<u>2339 acres</u>
County:	<u>Monroe County</u>
Mngt. Plan Revised:	<u>3/20/1998</u>
Mngt. Plan Update Due:	<u>3/20/2003</u>

Land Management Review of Key Largo Hammock State Botanical Site

Management Review Team Members

Agency Represented	Team member Appointed	Team member in attendance
DEP/DRP DEP South District	Ms. Renate Skinner	Ms. Renate Skinner
DACS/DOF FWCC Soil and Water Conservation	Mr. Bill Korn Mr. Robert Guerra	Mr. Bill Korn Mr. Robert Guerra
County Commission Conservation Organization	Mr. Mark Rosch	Mr. Mark Rosch
Private Land Manager	Ms. Carol Ellis	Ms. Carol Ellis

Process for Implementing Regional Management Review Teams

Legislative Intent and Guidance:

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

Review Site

The management review of Key Largo Hammock State Botanical Site considered approximately 2339 acres in Monroe County that are managed by the Division of Recreation and Parks. The team evaluated the extent to which current management actions are sufficient, whether the land is being managed for the purpose for which it was acquired, and whether actual management practices, including public access, are in compliance with the management plan. The Division of Recreation and Parks revised the management plan on March 20, 1998, and the management plan update is due on March 20, 2003.

Land Management Review of Key Largo Hammock State Botanical Site

Review Team Determination

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

Commendations to the Managing Agency

- 1.** The team commends the Division of Recreation and Parks for the scale of efforts to monitor and control a complex variety of invasive exotic plants.
- 2.** The team commends the Division of Recreation and Parks for their extraordinary efforts to restore hydrologic function, natural topography, and disturbed natural communities made possible through the support and funding provided by the Florida Audubon Society d/b/a the Florida Keys Environmental Restoration Trust Fund.

Exceptional Management Actions

The following items received high scores on the review team checklist which indicates that management actions exceeded expectations.

- 1.** Natural community protection and maintenance for coastal rock barren
- 2.** Natural community protection and maintenance for rockland hammock
- 3.** Restoration of rockland hammock
- 4.** Restoration of marine tidal swamp
- 5.** Control of non-native invasive & problem species of plants
- 6.** Hydro-alteration work for marinas
- 7.** Hydro-alteration work for canals

Recommendations and Checklist Findings

- 1.** The team recommends that the Division of State Lands complete the original C.A.R.L. acquisition project as soon as possible with emphasis on acquiring all coastal parcels (especially 112), and the optimum boundary map needs to be updated in the unit management plan.

Manager's Response: Agree. The Division supports the purchase of the remaining properties within the CARL project boundary.

- 2.** The team recommends that the Division of Recreation and Parks take steps to declare the site environmentally sensitive and biologically highly productive and follow through. The team recommends that the Division of Recreation and Parks initiate joint efforts with neighboring developments and the USFWS to promote the

Land Management Review of Key Largo Hammock State Botanical Site

control of feral cats through homeowner education and increased law enforcement so as to protect the endangered mouse and rat populations, and other species.

Manager's Response: Agree. The park staff is working to better educate park neighbors and management will meet with Law Enforcement to discuss the problem.

3. The team recommends that the with the County mosquito control district to develop an arthropod control plan that ensures protection of the endangered species and natural communities.

Manager's Response: Agree. The area has already been declared environmentally sensitive and biologically highly productive. The Division is awaiting the submittal of a proposed arthropod control plan from Monroe County Mosquito Control. Any acceptable control plan must ensure maximum protection for the natural resources of the park.

4. Division of Recreation and Parks pursue efforts with FDOT and the USFWS to restore hydrologic functions and facilitate crocodile movement under State Road 905 at Dispatch Slough.

Manager's Response: Agree. The Division staff has contacted these agencies and is actively involved in efforts to achieve this goal.

Checklist Findings

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

1. Uses proposed – missile site parking area (**p**)

Manager's Response: Agree. Although this is already addressed, more details will be provided in the next updated plan.

2. Management resources – staff (**f**)

Manager's Response: Agree. Recently John Pennekamp Coral Reef State Park and Key Largo Hammocks State Botanical Site were given the designation Key Largo Islands GeoPark. This designation will aid in accomplishing tasks at the Botanical Site as Pennekamp staff can be scheduled for projects at the Botanical Site augmenting the current staff. However, both staffs are limited by their heavy workload as they attempt to provide quality public service and responsible resource management. Management will continue efforts to secure additional staff. However, staffing allocations are contingent on the Division and DEP budget resources and priorities and also on legislative action.

