Florida Department of Environmental Protection

Marjory Stoneman Douglas Building
3900 Commonwealth Boulevard
Tallahassee, Florida 32399-3000

Rick Scott
Governor

Carlos Lopez-Cantera
Lt. Governor

Jonathan P. Steverson
Secretary

December 19, 2016

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

RE: Long Key State Park (Lease #3672)
Curry Hammock State Park (Lease #3983)
Suwannee River State Park (Lease #3643)
Little Manatee River State Park (Lease #2806)

Dear Ms. Murray:

On **December 16, 2016**, the Acquisition and Restoration Council recommended approval of the above management plans. Therefore, the Division of State Lands, Office of Environmental Services, acting as agent for the Board of Trustees of the Internal Improvement Trust Fund, hereby approves the above mentioned management plans. The next management plan update for these plans is due December 16, 2026.

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

Sincerely,

Raymond V. Spaulding
Office of Environmental Services
Division of State Lands
Department of Environmental Protection

Long Key State Park

APPROVED
Unit Management Plan

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Division of Recreation and Parks
December 2016

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INTRODUCTION

Long Key State Park is located in Monroe County at Mile Marker 67.5, just south of the town of Layton on Long Key (see Vicinity Map). Access to the main entrance of Long Key State Park is from U.S. Highway 1, which bisects the park. There are approximately 80 acres on the Florida Bay side of the highway with the remaining acreage on the Atlantic Ocean side of the highway. The park encompasses more than half of the island of Long Key (see Reference Map). The Vicinity Map also reflects significant land and water resources existing near the park.

Long Key State Park was initially acquired in 1961 through a donation to the state. Currently the park comprises 983.65 acres. The Board of Trustees of the Internal Improvement Trust Fund (Trustees) hold fee simple title to the park and on January 23, 1968, the Trustees leased (Lease Number 2324) the property to the DRP under a 99-year lease. The current lease will expire on January 22, 2067.

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

Purpose and Significance of the Park

Long Key State Park was originally acquired through a donation from Monroe County in 1961 for the provision of excellent recreation opportunities for Florida residents and visitors and to aid in the conservation and protection of rare natural communities of statewide significance.

Park Significance

- The Keys cactus barren community at Long Key State Park is considered one of the best examples of this rare habitat type in Florida, in addition, other important natural communities include Keys tidal rock barren, rockland hammock, and mangrove swamp.

- Humans have used Long Key for many centuries. The Calusa people used a now eroded channel on Long Key to cross from Florida Bay into the Atlantic Ocean. Before being destroyed by the Labor Day Hurricane of 1935, Long Key was home to Henry Flagler's Long Key Fishing Camp, a luxurious resort that attracted the rich and famous from around the world.

- With around 60 campsites and several opportunities for exceptional fishing, snorkeling, paddling, hiking, wildlife viewing and birding, Long Key provides visitors with outstanding recreational opportunities.

- The unique natural communities in the park support 39 listed species including the rare white-crowned pigeon *(Patagioenas leucocephala)*, least tern *(Sterna antillarum)*, piping plover *(Charadrius melodus)*, and jumping cactus *(opuntia triacantha)*.

Long Key State Park is classified as a State Park in the DRP's unit classification system. In the management of a State Park, a balance is sought between the goals of maintaining and enhancing natural conditions and providing various recreational opportunities. Natural resource management activities are aimed at management of natural systems. Development in the park is directed toward providing public access to and within the park, and to providing recreational facilities, in a reasonable balance, that are both convenient and safe. Program emphasis is on interpretation on the park's natural, aesthetic and educational attributes.

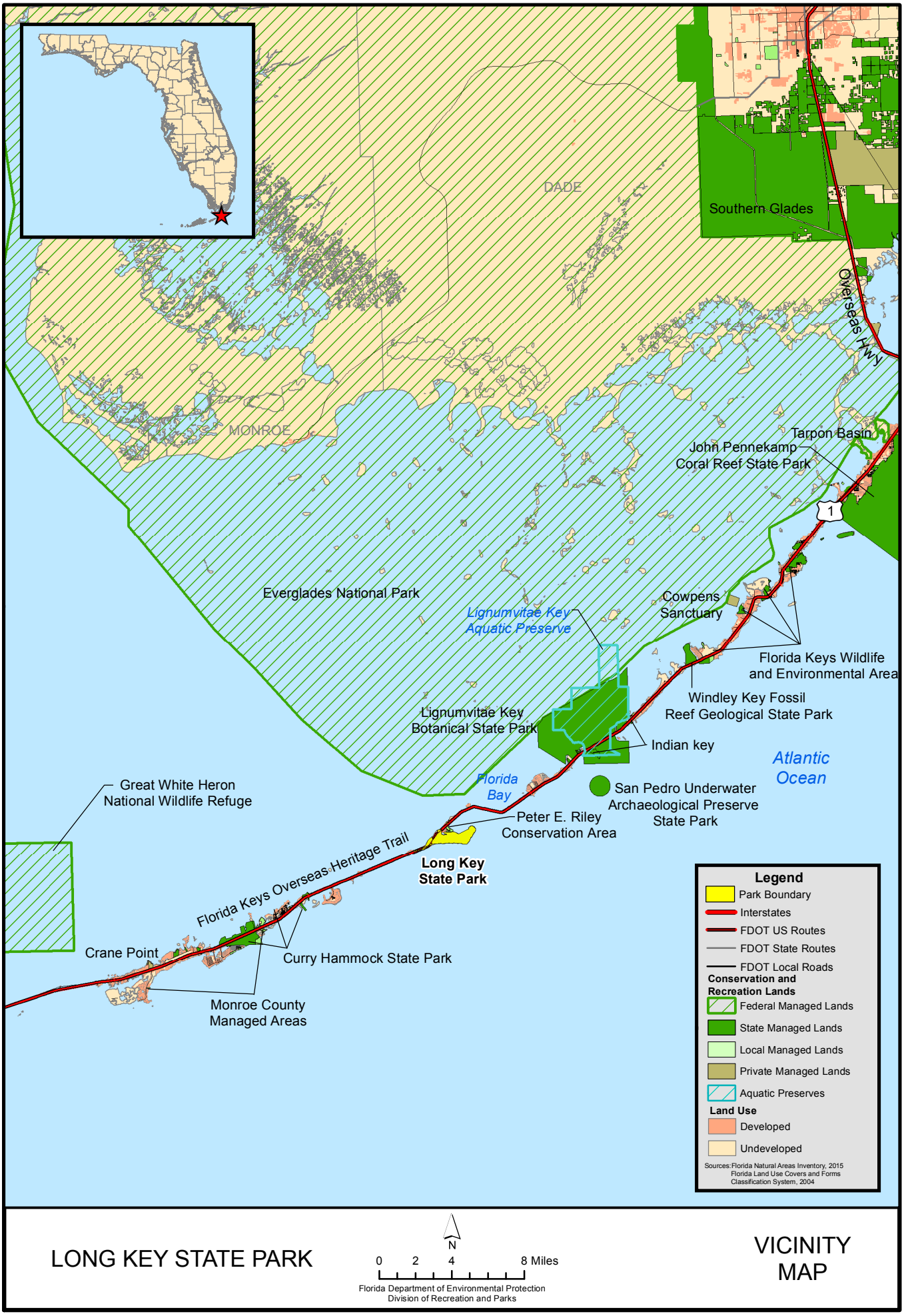
Purpose and Scope of the Plan

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

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

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

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


DADE
MONROE
Southern Glades
Overseas Hwy
Tarpon Basin
John Pennekamp
Coral Reef State Park
1
Everglades National Park
Lignumvitae Key
Aquatic Preserve
Cowpens
Sanctuary
Florida Keys Wildlife
and Environmental Area
Windley Key Fossil
Reef Geological State Park
Lignumvitae Key
Botanical State Park
Indian key
Atlantic
Ocean
Florida
Bay
San Pedro Underwater
Archaeological Preserve
State Park
Peter E. Riley
Conservation Area
Great White Heron
National Wildlife Refuge
Long Key
State Park
Florida Keys Overseas Heritage Trail
Crane Point
Curry Hammock State Park
Monroe County
Managed Areas
Legend
Park Boundary
Interstates
FDOT US Routes
FDOT State Routes
FDOT Local Roads
Conservation and
Recreation Lands
Federal Managed Lands
State Managed Lands
Local Managed Lands
Private Managed Lands
Aquatic Preserves
Land Use
Developed
Undeveloped
Sources:Florida Natural Areas Inventory, 2015
Florida Land Use Covers and Forms
Classification System, 2004
LONG KEY STATE PARK
N
0 2 4 8 Miles
Florida Department of Environmental Protection
Division of Recreation and Parks
VICINITY
MAP

LONG KEY
STATE PARK

N

0 0.75 1.5 3 Miles

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

REFERENCE MAP

timeframes for completing actions and objectives and (3) estimated costs to complete each action and objective.

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

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

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

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

Management Program Overview

Management Authority and Responsibility

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

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

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

Further enhancing the submerged resources at Long Key State Park may require the installation of swim buoys on the Oceanside and No Motor Zone buoys in Long Key Bight. These will enhance the protection of the shallow seagrass beds from damage due to boat groundings and propeller scarring.

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

Park Management Goals

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

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

Management Coordination

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

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

Public Participation

The DRP provided an opportunity for public input by conducting a public workshop and an Advisory Group meeting to present the draft management plan to the public. These meetings were held on June 9th and June 10th, 2016, respectively. Meeting notices were published in the Florida Administrative Register, Volume 42, Number 106, June 1, 2016, included on the Department Internet Calendar, posted in clear view at the park, and promoted locally. The purpose of the Advisory Group meeting is to provide the Advisory Group members an opportunity to discuss the draft management plan (see Addendum 2).

Other Designations

Long Key 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, administered by the Department's Office of Greenways and Trails.

All waters within the park have been designated as Outstanding Florida Waters, pursuant to Chapter 62-302, Florida Administrative Code. The Department also classifies surface waters in this park as Class III waters. This park is not within or adjacent to an aquatic preserve as designated under the Florida Aquatic Preserve Act of 1975 (Section 258.35, Florida Statutes). However, the park is within the Florida Keys National Marine Sanctuary.

RESOURCE MANAGEMENT COMPONENT

Introduction

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

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

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

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

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

Table 1: Long Key State Park Management Zones			
Management Zone	**Acreage**	**Managed with Prescribed Fire**	**Contains Known Cultural Resources**
LGK.01	3.39	N	N
LGK-02	15.01	N	Y
LGK-03	71.44	N	Y
LGK-04	126.86	N	N
LGK-05	296.04	N	N
LGK-06	21.83	N	Y
LGK-07	58.52	N	N
LGK-08	10.68	N	N
LGK-09	324.81	N	Y
LGK-10	80.88	N	N
LGK-11	3.28	N	N
LGK-12	1.23	N	N

RESOURCE DESCRIPTION AND ASSESSMENT

Natural Resources

Topography

Long Key State Park is part of the geographic region of high coral keys with maximum elevations reaching six to eight feet in the rockland hammock, then grading to sea level towards the shoreline. The edge of the continental shelf parallels the Keys approximately seven miles offshore. Some of the topography of the uplands has been altered by human activity specifically filling wetlands to create adequate elevation for park development. Topographic alteration is also a result of the construction of Flagler's railroad and the subsequent construction of U.S. Highway 1.

Solution holes are created by the dissolution of the limestone by rainfall and are a common component of the rockland hammocks in the Florida Keys and south Florida. Due to the small size of the solution holes in Long Key, they do not retain freshwater. Depth of the 400-foot management area of the submerged resources ranges from inches along the mangrove edge to approximately six feet at the 400-foot boundary.

Geology

The upper layer geologic formation of the Florida Keys from Soldier Key to Bahia Honda Key is Key Largo limestone. Built by the coral polyps of ancient coral reef formations, these fossilized remains are similar to the present living coral reefs offshore. Sea level has fluctuated over time and has been as much as twenty-five feet higher than today and as much as three hundred feet lower than today. Therefore, the land mass of South Florida has alternately been submerged and exposed above the level of the water. The last interglacial period occurred approximately 120,000 years ago, but it has been within the last 5,000-6,000 years

LONG KEY STATE PARK

N

0 0.25 0.5 1 Mile

MANAGEMENT ZONES MAP

Florida Department of Environmental Protection
Division of Recreation and Parks
Date of Aerial: 2010

ago that sea level dropped close to its present level, exposing the coral and allowing for the formation of the islands of the Florida Keys. When the area of the Keys is submerged, the limestone from ancient coral reefs provides the necessary substrate for new growth of coral formations and coral reefs. Subsequently, the Key Largo limestone is quite thick, as much as 145 feet in some areas of the upper Keys (Hoffmeister 1974).

Soils

Information published in the U.S. Department of Agriculture's (USDA) Classification and Correlation of the Soils of Monroe County keys Area Florida identifies nine soil types at Long Key State Park. They are Pennekamp gravelly muck, Matecumbe muck, Rock Outcrop-Tavernier complex, Islamorada muck, Keylargo muck, Udorthents-Urban complex, Rock Outcrop-Cudjoe complex, Bahiahonda fine sand, and Beaches (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 formed 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 that fill with accumulated marl soil. In addition to the Rock Outcrop-Tavernier complex, Islamorada muck and Keylargo muck and Rock Outcrop-Cudjoe complex are associated with mangrove tidal swamps. However, in the Rock Outcrop-Cudjoe complex most of the map unit consists of exposed bedrock. Udorthents-Urban land complex includes constructed upland areas where land has been altered by dredging and filling for development. The Bahiahonda fine sand complex is on the coastal strands and hardwood hammocks on the upland communities of Bahia Honda and Long Key. Flooding is rare in the map complex, which typically has elevations of four to seven feet above sea level. Bahiahonda map unit grades into Beaches soil complex, which is a mixture of approximately sixteen inches of sand over top of approximately forty-four inches of fine sand, muck or other soil. This soil complex is subjected to change by tides, erosion and wind, and is usually not vegetated (Natural Resources Conservation Service 1995). Addendum 3 contains detailed soil descriptions for the park.

Measures will be taken to prevent soil erosion or other adverse impacts to the surrounding resources of Long Key and the Florida Keys National Marine Sanctuary. These include techniques currently underway to minimize beach erosion in the campground, and the application of best management practices when considering beach nourishment including the use of native calcium carbonate material.

Minerals

Key Largo limestone is the major mineral deposit at Long Key. Minor mineral deposits in the park include calcite and halite.

Hydrology

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

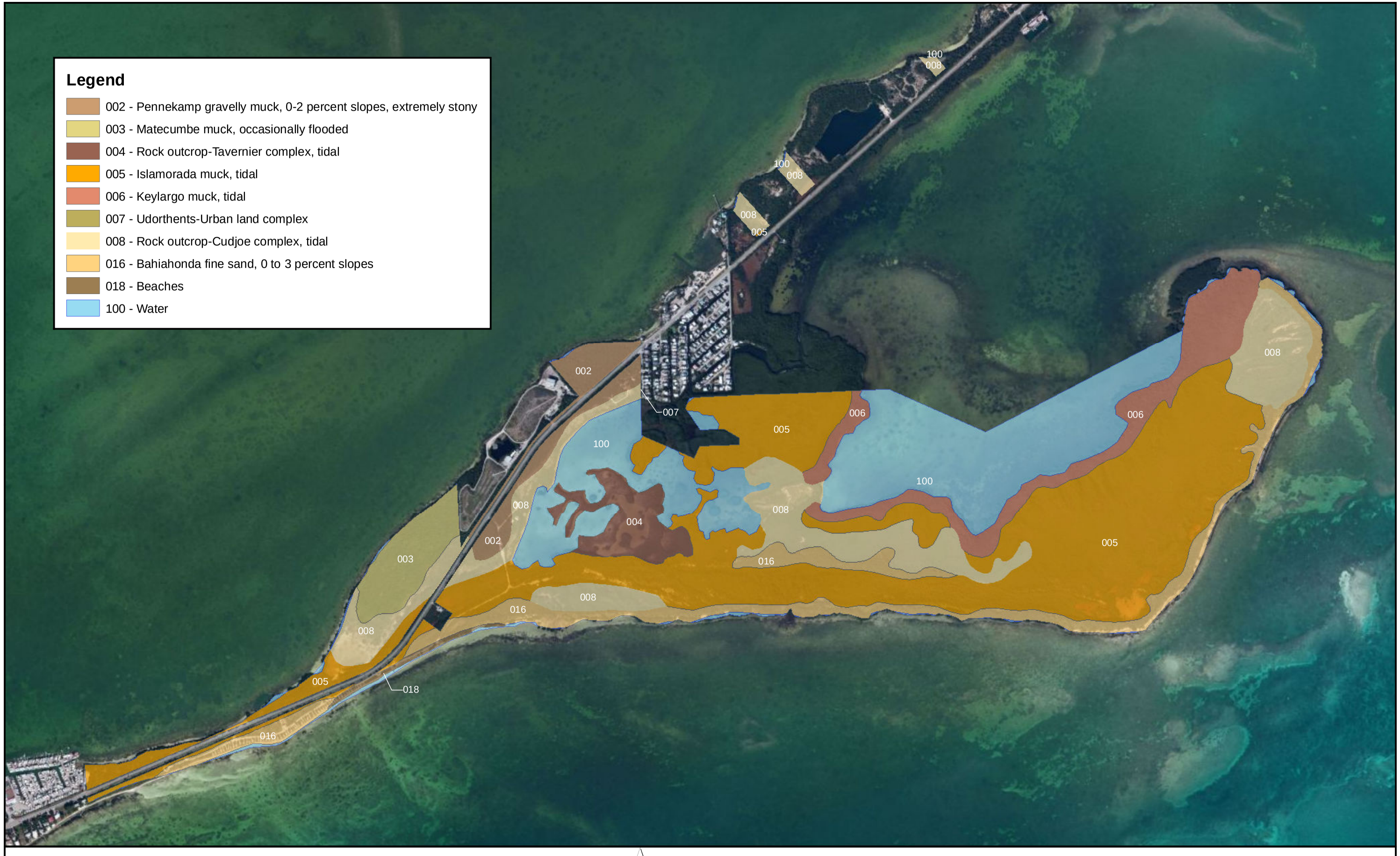
Natural Communities

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

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

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

The unique ecosystems of the Florida Keys often vary from one island to the next. This can be attributed to many factors including elevation, substrate, rainfall, proximity to water, and the geographic barriers inherent across the Florida Keys.



LONG KEY STATE PARK

N

0 0.25 0.5 1 Miles

SOILS MAP

Florida Department of Environmental Protection
Division of Recreation and Parks
Date of Aerial: 2010

These effects, over time, have shaped one of the most biologically diverse regions in the United States. Natural habitats in the Keys are either unique to the Keys or are rare throughout their limited distribution of the Keys and the southern tip of the mainland of Florida. These unique habitats support a suite of plant and animal species that can also be rare and limited throughout their range. The study of species abundance and distribution across island ecosystems, or island biogeography, influences resource management efforts throughout the Florida Keys.

Conservation lands in the Florida Keys provide a last stronghold for many plant and animal species that are found nowhere else either in the United States, or in the world. Within the state parks in the Keys, maintaining the uniqueness and diversity of the historical distributions of species is paramount to preserving the biological diversity of the natural communities. In an effort to facilitate the interpretation of the unique impacts of island biogeography throughout the Florida Keys, efforts to control the range of certain species may be undertaken. In instances of listed plant and animal species, efforts to manage populations will be evaluated on a case-by-case basis by park and district personnel.

The park contains seven distinct natural communities as well as altered landcover types (see Natural Communities Map). A list of known plants and animals occurring in the park is contained in Addendum 4.

Beach Dune

Desired future condition: A coastal mound or ridge of unconsolidated sediments found along shorelines with moderate to high energy waves. Vegetation will consist of herbaceous dune forming grass species such as sea oats (*Uniola paniculata*) and beach panicum (*Panicum amarum*). Other typical species may include sea rocket (*Cakile lanceolata*.), railroad vine (*Ipomea pes-caprae*), blue paspalum (*Paspalum caespitosum*), beach morning glory (*Ipomea imperati*), bay bean (*Canavalia rosea*), and sea purslane (*Sesuvium portulacastrum*). Occasionally shrubs such as beach elder (*Iva imbricata*), inkberry (*Scaevola plumieri*), bay cedar (*Suriana maritima*), and sea lavender (*Argusia gnaphalodes*) may be scattered within the herbaceous vegetation.

Description and assessment: The beach dune at Long Key occurs in a narrow strip that stretches from the west end of the park in zone LGK-06 and part of zone LGK-07 for approximately two miles where it transitions to mangrove swamp. The beach dune develops again in zone LGK-05 wrapping around Long Key point towards the east end of the park. Sea level rise and tropical storm events beginning with Hurricane Georges in 1998 have significantly eroded away much of the beach in zone LGK-06 particularly in the campground, which was constructed on the dunes when the park was developed. The coastal berm that once persisted at the west end of the island no longer exists due to the dynamics of beach erosion, and the habitat now consists of low dune with mostly herbaceous vegetation. Species here include sea oats, beach panicum, sea purslane and railroad vine. This had been an outplanting site for the imperiled Sargent's cherry palm (*Pseudophoenix sargentii*), but all individuals died due to loss of habitat.

A major attraction at Long Key is the campground which is located in zone LGK-06 and which once had more than fifty-feet of beach extending from the campground sites. Historically Australian pine (*Casuarina equisetifolia*) trees were a major vegetative component of the upland areas within the campground, particularly in the buffer zones between campsites. The shallow root system of Australian pines leads to erosion on beaches because their roots do not hold sediment in place. Australian pines outcompete native vegetation due to the chemical properties in their fallen branches which suppress germination, and results in a monoculture. Exotic removal projects in the late 1990s and mid-2000s removed all of the Australian pine trees and native dune species were planted as part of the restoration of this area. Despite the habitat restoration, other environmental factors including hurricanes, tropical storms, and strong winter storm events have contributed to the erosion of beach material and now there is little beach left within the campground facility. These impacts affect not only campground infrastructure, but also the ability of sea turtles to nest in this section of the park, and has limited the number of shorebirds that utilize the beach. Environmental and engineering consultants have evaluated the feasibility and potential impacts of a beach restoration project, specifically the impacts to the submerged seagrass community in the nearshore waters of the park. Taking into consideration the safety of the park visitors as well as the impacts to the habitat, management has addressed this issue by adjusting the campsites to better accommodate park visitation.

The beach dune in zone LGK-05, known as Long Key point, is wider than in zone LGK-06. The removal of Australian pines here had a greater impact on the ability of the beach to accrete sediment. Other exotic species, specifically beach naupaka (*Scaveola taccada*) and latherleaf (*Colubrina asiatica*) are still problematic and ongoing exotic removal projects are conducted by park staff. Native species found here include sea lavender, seven year apple (*Genipa clusiifolia*), seaside spurge (*Chamaesyce mesembryanthifolia*), southern sea rocket, nickerbean (*Caesalpania bonduc*) and coastal sandspur (*Cenchrus echinatus*). In both areas of beach dune sand is organic in nature, composed of calcium carbonate particles derived mostly from calcareous algae, with minor additions from corals and mollusks.

Sea turtle nesting is documented in the park but due to the limited access to Long Key point in zone LGK-05 daily monitoring is not always accomplished. Loggerhead turtles (*Caretta caretta*) nest at Long Key although hawksbill turtles (*Eretmochelys imbricata*) have been observed in park waters.

The beach at Long Key supports over twenty species of shorebirds that forage on the amphipods found in the wrack line or in the nearshore waters along the beach. Species documented at the park include reddish egret (*Dichromanassa rufescens*), willet (*Tringa semipalmatus*), ruddy turnstone (*Arenaria interpres*), laughing gull (*Leucophaeus atricilla*), least tern (*Sternulla antillarum*), and sanderling (*Calidris alba*).

General management measures: In order to achieve the desired future condition of the beach dune in zone LGK-05 the removal of exotic species must be a priority.

LONG KEY STATE PARK

N

0 0.25 0.5 1 Mile

Florida Department of Environmental Protection
Division of Recreation and Parks
Date of Aerial: 2010

NATURAL COMMUNITIES MAP

Seeds of beach naupaka and latherleaf float so consistent monitoring will be necessary in order to eliminate recruits germinating on the beach. Since access to this section of the park is by boat, impacts from human use are limited, but will still need to be managed in order to prevent the degradation of the ecosystem. Debris removal will need to be a regular management objective to remove material that is washed ashore during tidal events and storm surges.

The beach dune in zone LGK-06 may never reach its desired future condition without human intervention due to impacts of sea level rise and tropical storm events. Due to the dynamics of the beach dune in this management zone, it is subject to further impacts from tropical storm, hurricane, and strong winter storm events. Beach restoration must be carefully evaluated to ensure that adverse impacts from this activity do not adversely affect other resources in the park, particularly the submerged resources of the nearshore waters.

Coastal Berm

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

Description and assessment: A narrow coastal berm parallels a portion of the beach on Long Key point in zone LGK-05, extending around the point and persisting inshore of the mangrove swamp. This berm is characterized by a ridge of storm deposited sediment with the highest elevation on the northeast side of the peninsula recorded at twelve feet. The substrate is coarse calcareous sand and typical species found here include blackbead, Spanish stopper (*Eugenia foetida*), poisonwood, white indigo berry, and hog plum. Australian pines were removed from this habitat, mainly on the east side, but remnant stumps are still persisting. There is a narrow mangrove swale between the coastal berm and the beach dune. On the

northwest side the coastal berm grades into mangrove swamp. Where the coastal berm has developed around the point and behind the mangrove swamp, it is infested with latherleaf, Brazilian pepper, Australian pine and beach naupaka. In the early 1990s, the DRP in collaboration with staff from Fairchild Tropical Botanic Garden and Biscayne National Park, reintroduced Sargent's cherry palm to Long Key State Park. Seeds were collected from the remaining population on Elliott Key in Biscayne National Park and maintained in the nursery at Fairchild. They were outplanted at five sites within the park, three of which were the location of historic populations. This species had been extirpated from Long Key due to illegal poaching for landscape purposes, with the last individuals destroyed in 1960 when Hurricane Donna came ashore on Long Key (Deaton, A. 1991).

Two of the outplanting sites are on the coastal berm in zone LGK-05, one of which maintains the healthiest and largest individuals. However this site suffered mortality during hurricane activity in 2004/2005. The second outplanting site was thought to have been completely destroyed during the 2004/2005 hurricane season and inaccessible due to downed vegetation. However, during the 2011 monitoring, one individual was located and monitored for two years. It has not been observed since 2013.

A narrow coastal berm also occurs on a small stretch in zone LGK-10 on the Golden Orb nature trail. Most of this was damaged during Hurricane Georges in 1998, but a portion remains intact and extends east where the nature trail curves towards the north. Exotic species including bowstring hemp (*Sansevieria hyacinthoides*), Brazilian pepper, latherleaf and Portia (*Thespesia populnea*) have been problematic in this zone and exotic removal projects are ongoing. Native species found in this zone include seven-year apple, poisonwood, blackbead and joewood (*Jacquinia keyensis*).

Typical animal species found in the coastal berm include Silver argiope (*Argiope argentata*), spiny orb-weaver (*Gasteracantha cancriformis*), golden silk orbweaver (*Nephila clavipes*), green anole (*Anolis carolinensis),* six-lined racerunner (*Cnemidophorus sexlineatus sexlineatus*), southern black racer (*Coluber constrictor priapus*), white-crowned pigeon (*Patagioenas leucocephala*), mangrove cuckoo(*Coccyzus minor*), yellow-billed cuckoo (*Coccyzus americanus*) and palm warbler (*Setophaga palmarum*).

General management measures: In order to achieve the desired future condition of the coastal berm in zones LGK-05 and LGK-10, exotic removal projects need to be an ongoing resource management tool.

Keys Cactus Barren

Desired future condition: Keys cactus barren is an open, primarily herbaceous community with scattered shrubs on rocky areas of Key Largo limestone with little soil or leaf litter. The vegetation consists of a wide variety of herbaceous and succulent species that characteristically includes cacti, agave and several rare herbs. Such rare species include yellow hibiscus, skyblue clustervine, and Florida Keys indigo (*Indigofera mucronata* var. *keyensis*). These frequently occur with

grasses and sedges, such as green sprangletop (*Leptochloa dubia*), coral panicum (*Panicum chapmanii*) and royal flatsedge (*Cyperus elegans*). Spiny species, particularly the rare three-spined pricklypear, are characteristic but their abundance is variable. Other spiny species include false sisal (*Agave decipiens*), barbed-wire cactus (*Acanthocereus tetragonus*), and pricklypear cactus (*Opuntia stricta*). Scattered clumps of stunted trees may be present, including gumbo limbo, buttonwood, Spanish stopper and cat's claw (*Pithecellobium unguis-cati*). It is a habitat that is confined to the Florida Keys.

Description and assessment: Keys cactus barren is a rare community, occurring in scattered patches along a few shorelines in the Florida Keys. The substrate is exposed cap rock pitted with small solution holes, grading into a shoreline of jagged Key Largo limestone or as an ecotonal community between the rockland hammock and the mangrove swamp. At Long Key, Keys cactus barren occurs on the bayside of U.S. Highway 1 in zone LGK-03. It was first described by botanist George Avery, who named it "Conrad's Crazy Cactus Patch." This is one of only a few locations in the Florida Keys where the imperiled jumping cactus persists in the pitted limestone rock where detrital material accumulates. Population fluctuations are a result of competition with herbaceous vegetation during the rainy season. The species appears to rebound once the herbaceous vegetation becomes less dominant in the dryer winter months. Other imperiled species found in the Keys cactus barren include yellow hibiscus, creeping morning glory (*Evolvulus convolvuloides*), wild cotton (*Gossypium hirsutum*), wild hibiscus (*Hibiscus poeppigii*) and Cape Sable thoroughwort (*Chromolaena frustrata*).

There is a low-lying area found in association with the Keys cactus barren that is best described as an overwash plain or saltpan. This overwash plain has areas of exposed caprock with thick marl deposits and algal mats in the depressions. The soil over the Key Largo limestone is sandy marl mixed with shell debris and coral fragments. The higher ground is sparsely vegetated with salt tolerant shrubs, including saltwort, glasswort and dwarfed mangroves. Exotic species including Brazilian pepper (*Schinus terebinthifolius*) have been problematic in this zone and several exotic removal projects have been conducted by park and district staff. Most of the low-lying area is dotted with tidal ponds that serve as feeding grounds for wading birds including herons, egrets, spoonbills, and ibis. At high tide it is partially or totally inundated by saltwater. Due to hydrological disruption including topographic alteration from the construction of mosquito ditches and encroachment of hardwood species from the adjacent rockland hammock particularly on the northeast side of the zone has impacted this habitat. The construction of Flagler's railroad and the subsequent construction of U.S. Highway 1 bisected this section of the island where there once was a tidal creek. The loss of hydrological flow has been an additional factor attributing to the encroachment of hardwood species into the Keys cactus barren. Evidence of the low elevation can be observed during average rainfall events when flooding occurs on the oceanside from the U.S. Highway 1 right-of-way to zone LGK-06.

General management measures: In order to achieve the desired future condition of the Keys cactus rock barren, exotic species removal will need to be ongoing. Access

to this zone is limited to protect the fragile ecosystem and the populations of rare species. Hydrological restoration of this habitat will need to be evaluated as a management tool to prevent the continued encroachment of hardwood species from the adjacent rockland hammock. Park boundary signs need to be maintained along the edge of U.S. Highway 1.

In the management plan that was approved on September 1, 2004, this habitat was described as coastal rock barren. The 2010- Florida Natural Areas Inventory Guide to Natural Communities updated habitat descriptions and further defined coastal rock barren as either Keys tidal rock barren, which is tidally influenced, or as Keys C\cactus barren, which is an upland plant community that may only be influenced during extreme high tides or storm events.

Rockland Hammock

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

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

Description and assessment: The rockland hammock at Long Key is found in zones LGK-02, LGK-03 and LGK-07, LGK-08, and LGK-10. Zone LGK-02 occurs on the bayside of U.S. Highway 1 and is a small parcel northeast of the Layton transfer station. Elevation here is slightly lower than areas of rockland hammock on the Oceanside, so species composition differs slightly. Dominant species in this hammock include gumbo limbo (*Bursera simaruba*), poisonwood, pigeon plum, white stopper (*Eugenia axillaris*), Spanish stopper (*E. foetida*), Florida thatch palm (*Thrinax radiata*), and crabwood (*Gymnanthes lucida*). This hammock also supports a few individuals of Keys tree cactus (*Pilosocereus robinii*) although several individuals that had persisted in the ecotone are no longer present. The Layton Trail winds through a small portion of this hammock and out into the ecotone along the shoreline. Zone LGK-02 has minimal exotic plant infestations and although the

majority of it is in excellent condition, it has been subject to boundary encroachment from adjacent landowners.

The rockland hammock in zone LGK-03 is southwest of the transfer station and surrounds the Keys cactus barren habitat. This area is in good condition but has been subject to major disturbances including clearing for vehicular traffic, dumping, encroachment by adjacent landowners, and exotic plant infestations. Due to hydrological alterations from construction of the railroad and U.S. Highway 1, the functionality of the Keys cactus barren has been altered and hammock vegetation is encroaching beyond the historical boundaries of the rockland habitat.

The rockland hammock in zone LGK-07 north is located in the ranger residence compound and has been impacted by disturbance and exotic plant species infestations. Large sapodilla trees (*Manilkara zapota*) persist. Non-native landscape plants in the residence area and species that are native to the Keys but not historically found as far south as Long Key, will need to be treated. There is a narrow strip of rockland hammock in the southern section of zone LGK-07 on either side of the park drive. Except for a few exotic species, this habitat is in good condtion.

Zone LGK-08 is a narrow strip of rockland hammock adjacent to the Florida Keys Overseas Heritage Trail bike path. This hammock is in excellent condition with only scattered lead tree (*Leucaena leucocephala*) individuals along the edge of the trail. The portion of zone LGK-08 located by the front entrance is a larger parcel and contains imperiled species including lignum vitae (*Guajacum sanctum*) and milkbark (*Drypetes diversifolia*). Exotic removal projects to control the lead tree and other exotic species found along the bike path are ongoing.

The largest rockland hammock in the park persists in LGK-10 on the oceanside of the island. Higher in elevation than the hammocks found on the bayside, this zone is in good condition and supports species including milkbark, blolly (*Guapira discolor*), Guiana plum (*Drypetes lateriflora*), poisonwood, torchwood (*Amyris elemifera*), fiddlewood (*Cithareylum spinosum*), and coffee colubrina (*Colubrina arborescens*). Impact and alerations from previous storm events are still evident, but exotic plant species infestations are minimal. The Golden Orb Nature Trail winds through the rockland hammock in this zone.

Three outplanting sites of the reintroduced Sargent's cherry palm are located in this zone, although one site, a narrow band of rockland hammock between two mangrove swamp habitats, has been impacted by saltwater inundation resulting in higher mortality.

The largest population of Keys tree cactus (*Pilosocereus robinii*) is located on the edge of the rockland hammock where it grades into mangrove swamp. This population is in excellent condition and is believed to be the largest concentration of Keys tree cactus in the Florida Keys. As a result of declining population throughout its historic range, a collaboration effort between the DRP, Fairchild Tropical Botanic Garden and the U.S. Fish and Wildlife Service (USFWS) is working towards

conserving this species. Goals of the project include monitoring populations on public land, collecting sufficent germplasm to ensure genetic diversity, and identifyng potential outplanting sites. Where current populations have seen decline in abundance, the population may be augmented to increase genetic diversity. Historic populations were documented for Windley Key Fossil Reef Geological State Park, so in 2012 and 2014, two reintroduction projects were conducted. In 2015 a third outplanting project was conducted at Crocodile Lakes National Wildlife Refuge in north Key Largo.

The rockland hammock supports a host of species that utilize the habitat on a seasonal or cyclical basis, provides an important food source for migrating birds as they head south through the Florida Keys, and as a way to replenish their resources on their northward journey. Hawk Watch International has been conducting migratory bird surveys at Long Key State Park since 2011 in conjunction with the surveys that are conducted at Curry Hammock State Park from mid-September through early-November (Galvaz, 2013).

In 2014, Hawk Watch staff observed a Key West Quail Dove (*Geotrygon chrysia*), a sulphur-bellied flycatcher (*Myiodnastes luteiventris*) and a Northern wheatear (*Oenanthe oenanthe*), all new records for the park. In the late 1800s and early 1900s, the Key West Quail dove was a common species, particularly in the Key West area. Unfortunately this species was hunted almost to extinction, and are now rarely seen in the Florida Keys. The last positive idenfication was of an individual observed in north Key Largo in 2007. The sulphur-bellied flycatcher breeds in Arizona and winters in central and south America, and is not typically found in Florida. The Northern wheatear is a species also not typically found in Florida and is abundant in Greenland, rarely migrating to eastern Canada. Although these three species are not considered imperiled, their prescence in south Florida and in Long Key State Park has tremendous significance. In addition, the imperiled white-crowned pigeon nests in the mangrove swamp, but feeds primarily on fruits found in the rockland hammock. Other hammock species include crab spider, golden orb spider, Florida tree snail (*Liguus fasciatus*), giant swallowtail butterfly (*Papilio cresphontes*), Chuck-will's-widow (*Caprimulgus carolinensis*), northern parula (*Parula americana*), mangrove cuckoo and great land crab (*Cardisoma guanhumi*).

General management measures: Exotic species removal is the primary resource management activity necessary to achieve or maintain the desired future condition of the rockland hammock at Long Key State Park. Boundary signs need to be installed and maintained on non-contiguous parcels to prevent unauthorized access and illegal dumping.

Keys Tidal Rock Barren

Desired future condition: Keys tidal rock barren is a flat rockland in the supratidal zone with much exposed and eroded limestone and a sparse cover of stunted halophytic herbs and shrubs, and it is inundated by salt water only during the extreme spring high tides. Patches of low, salt-tolerant herbaceous species include sea ox-eye daisy, perennial glasswort, saltwort, Keys grass (*Monanthochloe littoralis*), saltgrass and seashore dropseed. Buttonwood is the dominant woody

plant. It varies from stunted, sprawling, multi-stemmed shrubs to tree size. Other typical woody species are red mangrove, black mangrove, white mangrove and Christmas berry (*Lycium carolinianum*). At the transition to upland vegetation, buttonwood may be joined by a variety of shrubs and stunted trees of inland woody species including saffron plum, wild cotton (*Gossypium hirsutum*), blackbead, wild dilly (*Manilkara jaimiqui* ssp. *emarginata*), poisonwood and joewood.

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

Description and assessment: Keys tidal rock barren is a rare community, occurring in scattered patches along a few shorelines in the Florida Keys. The substrate is exposed cap rock pitted with small solution holes, grading into a shoreline of jagged Key Largo limestone, or as an ecotonal community between the rockland hammock and the mangroves. A high quality Keys tidal rock barren is found in zone LGK-01. The interior is mostly herbaceous groundcover scattered among the exposed limestone substrate. Species found here include Key grass, sand atriplex (*Atriplex pentandra*), buttonwood, mayten (*Maytenus phyllanthoides*), Christmas berry, and imperiled species including jumping cactus (*Opuntia triacantha*), sky blue morning glory (*Jacquemontia pentanthos*) and yellow hibiscus (*Cienfugosia yucatanensis*). Exotic species are not found in the interior of the zone but are present along the Florida Department of Transportation right-of-way. Most of the interior of this zone is subject to tidal fluctuations and grades into mangroves on both the northwest and southeast sides of the zone.

Keys tidal rock barren is found in zone LGK-12 and is in excellent condition. This parcel located on the bayside of the island north of the Long Key borrow pit is a recent addition to the park. Red and black mangroves line the northern border and the interior is a mixture of buttonwood canopy interspersed with open patches and minimal herbaceous groundcover including saltwort (*Batis maritima*), Key grass, and glass wort (*Salicornia* spp.).

General management measures: The Keys tidal rock barren habitats at Long Key have achieved their desired future condition. As such, regular surveys for exotic species will be necessary in order to ensure that the habitat remains in excellent condition. Park boundary signs need to be installed and maintained on these parcels to distinguish that they are part of Long Key State Park.

Prior to the 2010 update of the Florida Natural Areas Inventory Guide to Natural Communities, Keys tidal rock barren and Keys cactus rock barren were considered as one habitat, coastal rock barren. However, due to differences in habitat types in the Florida Keys, this classification was further refined, and although many of the environmental conditions are the same, the difference is the amount of tidal inundation that the habitat is subject to.

Mangrove Swamp

Desired future condition: Typically a dense forest occurring along relatively flat, low wave energy, marine and estuarine shorelines. The dominant overstory includes red mangrove (*Rhizophora mangle*), black mangrove (*Avicennia germinans*), white mangrove (*Laguncularia racemosa*), and buttonwood (*Conocarpus erectus*). These four species can occur either in mixed stands or often in differentiated, monospecific zones based on varying degrees of tidal influence, levels of salinity, and types of substrate. Red mangroves typically dominated the deepest water, followed by black mangrove in the intermediate zone, and white mangroves and buttonwood in the highest, least tidally influenced zone. Mangroves typically occur in dense stands (with little to no understory) but may be sparse, particularly in the upper tidal reaches where salt marsh species predominate. When present, shrub species can include seaside oxeye (*Borrichia arborescens, B. frutescens*), vines rubbervine (*Rhabdadenia biflora*), and herbaceous species such as saltwort (*Batis maritima*), Keys grass (*Monanthocloe littoralis*), perennial glasswort (*Sarcocornia perennis*), and giant leather fern (*Acrostichum danaeifolium*). Soils are generally anaerobic and are saturated with brackish water at all times, becoming inundated at high tides. Mangrove swamps occur on a wide variety of soils, ranging from sands and mud to solid limestone rock. Soils in South Florida are primarily calcareous marl muds or calcareous sands and along Central Florida coastlines, siliceous sands. In older mangrove swamps containing red mangroves, a layer of peat can build up over the soil from decaying plant material (primarily red and black mangrove roots).

Description and assessment: The mangrove swamp at Long Key is in excellent condition. It occurs along a portion of the shoreline in zone LGK-10, behind the coastal berm in zones LGK-05 and LGK-10, in zone LGK-09, in zone LGK-07, adjacent to the Keys cactus barren in zone LGK-03 and as a narrow fringe adjacent to the Keys tidal rock barren in zones LGK-01 and LGK-12. The mangrove swamp is an important community because it provides storm protection, stabilizes the shoreline and traps sediment. Typical species found on or around the roots of the red mangrove include tree oyster (*Isognomon alatus*), Goose-neck barnacles (*Lepas anatifera*), mangrove crabs (*Goniopsis cruentata*), fiddler crabs (*Uca pugilator*), Red sponge (*Haliclona rubens*), tulip snail (*Fasciolaria tulipa*), mosquitofish (*Gambusia affinis*) and snapper (*Lutjanus* spp.). Mangrove swamp provides an important nursery ground for many species of fish, shrimp, crab, and crustaceans, many of which are commercially and recreationally important to the Florida Keys. Larger animals found in the mangrove swamp include manatee, white-crowned pigeon, snowy egret (*Egretta thula*), green heron (*Butorides striatus*), brown pelican (*Pelecanus occidentalis*), white ibis (*Eudocimus albus*), and roseate spoonbill (*Platalea ajaja*).

The Golden Orb Nature Trail traverses through zones LGK-09 and LGK-10. There is a low-lying area found in association with the mangrove swamp along this nature trail that is best described as a saltpan or overwash plain. A similar overwash plain occurs in zone LGK-03 to the south of the Keys cactus barren. Saltpans are characterized by a minimal amount of marl soil over the Key Largo limestone so that no bare substrate is visible. They are inundated by spring tide events, retain

water after rain events, and are important feeding grounds for wading birds. Vegetation is sparse in the lowest-lying areas but surrounding vegetation includes glasswort, saltwort, joewood, inkberry (*Scaevola plumieri*), and buttonwood. Keys grass is also present in the overwash plain in zone LGK-03.

The small parcel on the bayside in zone LGK-11 is a recent addition to the park and is in excellent condition. It is a mixture of patchy black and white mangrove mixed with buttonwood trees to form the canopy with an understory of shrubs including mayten and saltwort. The open areas are similar to the habitat in zone LGK-09 on the Golden Orb Nature Trail. This area is also an overwash plain with an accumulation of marl soil over the Key Largo limestone. Vegetation consists mainly of Keys grass and glasswort. The southern portion of the parcel is a borrow pit that extends beyond the boundary of the parcel. The depth of this submerged habitat is unknown. Nearby is a small solution hole, which may be a remnant of former mosquito control practices.

A section of mangroves in zone LGK-10 were killed post Hurricane Georges in 1998. The storm surge pushed the wrack line up into the mangroves and deposited it onto the roots of the mangroves. Because this accumulated debris was not washed out by the storm or by subsequent tidal fluctuations, the thick layer of organic debris remained overtop of the mangrove roots as it decayed. This prevented the mangrove roots to function properly and limited their gas exchange, leading to the mortality of the individuals. Mangrove propagules are now recruiting into this location.

General management measures: The mangrove swamp at Long Key is in excellent condition, although some areas are impacted by invasive exotic species including Portia (*Thespesia populnea*), bowstring hemp (*Sansevieria hyacinthoides*), and latherleaf (*Colubrina asiatica*). Where mangroves are the shoreline vegetation, debris washed in by tides and storm events is an issue. In order to maintain the desired future condition, exotic species removal should be a high priority and regular debris removal will be necessary.

Seagrass Bed

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

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

Seagrass beds provide important habitat for a host of commercially and recreationally important species including the Florida spiny lobster (*Panulirus argus*), queen conch (*Strombus gigas*) and shrimp. Many species rely on the seagrass grass bed for part or all of their life cycle. Larger predators such as the loggerhead turtle (*Caretta caretta*), green turtle (*Chelonia mydas*), hawksbill turtle (*Eretmochelys imbricata*), Florida manatee (*Trichechus manatus latirostris*), and bottlenose dolphin (*Tursiops truncatus*) utilize the seagrass beds.
Most species migrate between the coral reef, seagrass beds and mangrove communities on a diurnal, seasonal or life cycle pattern. Seagrass stabilize sediment, cycle nutrients, and the seagrass blades trap suspended sediment in the water allowing clear water to be transported to the offshore coral reefs during tidal movement.

Description and assessment: Long Key State Park manages submerged land from the mean high water mark to the 400-foot boundary. The majority of this submerged land is seagrass bed and most of this community is in good condition. The three species of seagrass found in the park are turtle grass, shoal grass, and manatee grass. Turtle grass is the climax species while shoal grass and manatee grass are the pioneer species and first to colonize into open and/or disturbed sites. Shoal grass has a greater tolerance for salinity and temperature fluctuations and is typically found in areas where extreme conditions occur nearshore and in areas of minimal water depth. The morphology of its root structure enables shoal grass to colonize open or disturbed areas stabilizing the sediment for the heavier rooted turtle grass. Manatee grass can be found in association with the other two species but is far less common in the park.

Macroalgae are found in association with the seagrass community although they are not as abundant in a climax seagrass bed that is predominantly a monoculture of turtle grass. These include shaving brush algae (*Penicillus* spp.), oatmeal algae (*Halimeda* spp.), fan algae (*Udotea* spp.), mermaid's wine cup (*Acetabularia calyculus*), fern algae (*Caulerpa* spp.), goniolithon (*Neogoniolithon strictum*), and *Batophora oerstedii.* Several non-reef building species of coral can be found in this habitat including finger coral (*Porites porites*, *P. furcata*, and *P. divaricata*), starlet coral (*Siderastrea radians*), and small colonies of the reef-building massive starlet coral (*S. siderea*). These species are adapted to the higher salinity and temperature conditions of a seagrass bed and are able to survive in water with higher suspended sediment than is typical of the offshore coral reef species. Other animals found in the seagrass include echinoderms, crustaceans, fish, worms, sponges, and epiphytic species that attach themselves to the turtle grass blades.

The seagrass beds make up approximately 71 acres, or 48 percent, of the 148 acres of submerged land found in the park. Most of this habitat is in good condition, although it has been impacted by damage from vessel groundings. Most are a result of impact from boat propellers which leaves scars and damages not only the seagrass blades but the substrate and underground root structures. It has been documented that it can take a damaged seagrass bed 10-60 years to recover (Engeman et al. 2007; Fonseca et al. 2004; Zieman 1976) to its climax community. Most areas do not have significant topographic damage, which eliminates the need

for major seagrass restoration. However, preventative measures should be taken such as closing seagrass beds that are four-feet or less in depth to motorized vessels, and conducting seagrass restoration at sites where natural recruitment is unable to quickly fill in scarred areas. This can be accomplished with bird stake installation and shoal grass planting unit installation. Seagrass restoration has been ongoing in the submerged resources at Lignumvitae Key Botanical State Park since 2005, so restoration protocols have been established. Applying these techniques to the seagrass beds at Long Key would be an easy transition.

General management measures: In order to achieve the desired future condition of all of the seagrass beds in the park, preventative measures including installation of No Motor Zone signs in shallow areas, seagrass restoration and increased educational opportunities within the park will be needed. Depending upon the nature of the damage, seagrass restoration may include topographic restoration, bird stake installation, and shoal grass planting unit installation.

Marine Unconsolidated Substrate

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

Description and assessment: The unconsolidated substrate in Long Key occurs in the shallow water in the interior of zone LGK-09; in association with the seagrass beds in zone LGK-04; and in association with seagrass beds in the 400ft submerged resources of the nearshore waters. Although this habitat type appears barren, it supports a diverse array of infaunal organisms including worms, mollusks, shrimp and crabs. Because of the presence of these organisms, the unconsolidated substrate is an important feeding ground for bottom-dwelling fish, invertebrates and wading birds.

Where boat groundings have occurred in the seagrass beds, loss of seagrass from the vessel damage creates areas of unnatural unconsolidated substrate. These areas are detrimental to the health of the seagrass community because of the loss of the vegetative components of the seagrass beds. Natural recovery is often long-term, resulting in the loss of habitat for the faunal organisms that the seagrass supports including fish, invertebrates, crustaceans and mollusks.

General management measures: The unconsolidated substrate at Long Key is in excellent condition. Sedimentation accumulation in some areas has minimized water flow thereby decreasing the presence of faunal organisms and altering the productivity of wading bird activity. In order to maintain the desired future

condition of the unconsolidated substrate it will be necessary to monitor for physical impacts and marine debris.

Clearing

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

Description and assessment: A recent addition to Long Key is a parcel on the southwest corner in zone LGK-02 adjacent to the Long Key Transfer station. An old diesel tank was removed but there are two concrete structures that are remnants of the former air defense radar station known as the Long Key Gap-Filler Annex. Part of the Nike Missile Site complexes found in other areas of south Florida, this site is significant because of its Cold War era association. These structures have been added to the Florida Master Site File.

This parcel is infested with invasive exotic vegetation including Portia, lead tree and Brazilian pepper. Exotic removal efforts by park and District staff are ongoing.

The west end of LGK-03 has had encroachment issues that were recently resolved. Debris, exotic species and a spoil pile were removed leaving this area barren except for a few herbaceous species that have naturally recruited into the site. The park planted hammock species, and other hardwood species have started to recruit into the site. Park and District staff continue to conduct exotic removal projects in this area.

General management measures: Exotic species projects have focused on these two parcels, but in order to achieve the desired future condition, eradication of exotics is necessary. Removal of the concrete structures in zone LGK-02 will depend upon management's decision on the cultural and historical significance of the site.

Developed

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

Description and assessment: The developed areas in Long Key include the ranger station and residences in zones LGK-07 and LGK-08; the campground and bathroom facilities in zone LGK-06; a parking lot and bathroom facility in zone LGK-07; and the shop in zone LGK-07. When the park was established, the shop was constructed in a wetland so it is subject to saltwater inundation during the extreme high tides of the spring and fall, as well during tropical storm events.

General management measures: Removal of exotic species including species that are planted in the residence areas that are not native to Long Key will be necessary in order to achieve the desired future condition of the developed areas of the park. Minimize impacts of light pollution from park facilities.

Imperiled Species

Imperiled species are those that are (1) tracked by FNAI as critically imperiled (G1, S1) or imperiled (G2, S2); or (2) listed by the U.S. Fish and Wildlife Service (USFWS), Florida Fish and Wildlife Conservation Commission (FWC) or the Florida Department of Agriculture and Consumer Services (FDACS) as endangered, threatened or of special concern. A portion of the park is designated critical habitat for the federally endangered elkhorn and staghorn coral.

Protection of the imperiled plant species relies on the successful treatment of invasive exotic plant species. Exotic removal projects are coordinated by park staff, District staff and the Keys Resource Management Team. All naturally occurring imperiled plant species have been mapped using a Trimble GPS unit. These were recorded either as individual occurrences, or as polygons occurring within a natural community. This information will be updated when significant alterations to the habitat occur such as tropical storm or hurricane events.

The occurrence of yellow hibiscus, jumping cactus and Florida Keys indigo in the park is significant because these species are limited in their range in the Florida Keys and south Florida. The jumping cactus is monitored on an informal level, and access to the habitat where these species are located is restricted.

There is a large population of the Keys tree cactus in the park. Due to the decline of this species throughout its range in the Florida Keys, DRP staff are working with researchers from Fairchild Tropical Botanic Garden and staff from USFWS to reintroduce and/or augment populations throughout its historic range. The project consists of identifying potential outplanting sites; monitoring known populations on public lands; collecting seeds for germination at the nursery at Fairchild's research station; and coordination with partners on best management conservation strategies. To date, three outplanting projects have been coordinated at Windley Key Fossil Reef Geologic State Park and Crocodile Lake National Wildlife Refuge.

Recent benthic surveys conducted in conjunction with the potential beach restoration project documented the abundance and distribution of massive starlet coral (*Siderastrea siderea*). This species will be monitored on an annual basis for condition, presence of coral disease and presence of coral bleaching. Regular sea turtle nesting surveys are conducted in the park to monitor for false crawls, nesting and hatchling emergence. The population of American crocodile has expanded throughout the Florida Keys. Two juveniles were recently observed on the beach in zone LGK-06. West Indian mahogany is a cultivated species at Long Key because it occurs outside of its historical distribution and needs to be removed from the park.

Sargent's cherry palm (*Pseudophoenix sargentii*), is a slow growing palm, that was reintroduced to Long Key State Park in the early 1990s through a cooperative

agreement with Biscayne National Park, Fairchild Tropical Botanic Garden and the Florida Park Service. The historical distribution for this species is Long Key, Elliott Key and Sands Key, the latter two islands now part of Biscayne National Park. Sargent's cherry palm had become very popular in the landscape industry, and was extirpated from Long Key due to a combination of illegal poaching and impacts from Hurricane Donna in 1960. After extensive surveys conducted on all three islands, fruits were collected in the late 1980s on Elliott Key, the only island to retain mature individuals. Seeds, seedlings and saplings were reintroduced in 1991, 1993 and 1994 at six sites in Long Key State Park both in coastal berm and rockland hammock habitats. Due to storm events and habitat alteration, forty-six of the one hundred and ninety that were outplanted are still persisting. These populations are monitored annually, and to as of the 2015 monitoring, none have become reproductively mature.

Provided that current cleared or developed areas in the park are not under any constraints by restoration permits and/or restoration funding sources, these areas may be considered for the enhancement or establishment of suitable shorebird nesting habitat.

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

Table 2: Imperiled Species Inventory

Common & *Scientific* name	**Imperiled species status**				**Management actions**	**Monitoring level**
	FWC	**USFWS**	**FDACS**	**FNAI**		
Sea lavender *Argusia gnaphalodes*			LE	G5, S3	2	Tier 3
Blodgett's silverbush *Argythamnia blodgettii*			LE	G2,S2	2	Tier 3
Garber's spurge *Chamaesyce garberi*		LT	LE	G1,S1	2	Tier 3
Yellow hibiscus *Cienfuegosia yucatanensis*			LE	G4?,S1	2	Tier 3
Rhacoma *Crossepetalum rhacoma*			LT	G5,S3	2	Tier 3
Milkbark *Drypetes diversifolia*			LE	G4, S2	2	Tier 3

Table 2: Imperiled Species Inventory						
Common & *Scientific* name	**Imperiled species status**				**Management actions**	**Monitoring level**
	FWC	**USFWS**	**FDACS**	**FNAI**		
Wild cotton *Gossypium hirsutum*			LE	G4G5, S3	2	Tier 3
Lignum vitae *Guajacum sanctum*			LE	G2, S1	2	Tier 3
Florida Keys' indigo *Indigofera mucronata* var. *keyensis*			LE	G5? T1Q, S1	2	Tier 3
Sky-blue morning glory *Jacquemontia pentanthos*			LE	G4G5, S2	2	Tier 3
Joewood *Jacquinia keyensis*			LT	G4,S3	2	Tier 3
Wild dilly *Manilkara jaimiqui* ssp. *emarginata*			LT	G4, S3	2	Tier 3
Jumping cactus *Opuntia triacantha*			LE	G2,G4 ,S1	2	Tier 3
Tree cactus *Pilosocereus robinii*		LE	LE	G1,S1	2	Tier 4
Florida boxwood *Schaefferia frutescens*			LE	G5,S2	2	Tier 3
West Indian mahogany *Swietenia mahagoni*			LT	G3G4, S3		
Key thatch palm *Thrinax morrisii*			LE	G4,G5 S3	2	Tier 3
Florida thatch palm *Thrinax radiata*			LE	G4,G5 ,S2	2	Tier 3
Banded wild pine *Tillandsia flexuosa*			LT	G5,G3	2	Tier 3
Sargent's cherry palm *Psuedophoenix sargentii*	E			G3G5, S1		Tier 4
Massive starlet coral *Siderastrea siderea*				G4,S2	10, 13	Tier 4
Loggerhead turtle *Carretta carretta*	LT	LT		G3, S3	13	Tier 2
Atlantic green turtle *Chelonia mydas*	FT	FT		G3, S2	13	Tier 1
Atlantic leatherback turtle *Dermochelys coriacea*	FE	FE		G3, S2	13	Tier 1

Table 2: Imperiled Species Inventory						
Common & *Scientific* name	**Imperiled species status**				**Management actions**	**Monitoring level**
	FWC	**USFWS**	**FDACS**	**FNAI**		
Kemp's ridley turtle *Lepidochelys kempii*	FE	FE		G3, S2	13	Tier 1
American crocodile *Crocodylus acutus*	LT	LE		G2,S2	13	Tier 1
Eastern indigo snake *Drymarchon corais cooperi*	LT	LT		G3, S3	13	Tier 1
Hawksbill turtle *Eretmochelys imbricata*	LE	LE		G3, S1	13	Tier 1
Key mud turtle *Kinosternon baurii baurii*	LE			G5T2Q, S2	13	Tier 1
Florida Keys mole skink *Eumeces egregious egregious*	SSC			G5T2, S2	13	Tier 1
Great white heron *Ardea heroidas occidentalis*				G5T2, S2	13	Tier 1
Short-tailed hawk *Buteo brachyurus*				G4G5, S1	13	Tier 1
Piping plover *Charadrius melodus*	FT	LT		G3,S2	13	Tier 1
Reddish egret *Egretta rufescens*				G4,S2	13	Tier 1
Peregrine falcon *Falco peregrinus*				G4,S2	13	Tier 1
Magnificent frigatebird *Fregata magnificens*				G5,S1	13	Tier 1
White-crowned pigeon *Patagioenas leucocephala*	LT			G3,S3	13	Tier 1
Roseate spoonbill *Platalea ajaja*				G5, S2	13	Tier 1
Louisiana waterthrush *Parkesia motacilla*				G5,S2	13	Tier 1
American redstart *Setophaga ruticilla*				G5,S2	13	Tier 1
Least tern *Sternulla antillarum*	LT			G4,S3	13	Tier 1
Florida manatee *Trichechus manatus latirostris*	LE	LE		G2, S2	13	Tier 2

Management Actions:

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

Monitoring Level:

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

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

Exotic and Nuisance Species

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

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

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

case basis in accordance with the DRP's Nuisance and Exotic Animal Removal Standard.

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

Numerous exotic removal projects have been conducted by contractors, park staff, district staff, exotic removal technicians, and the Keys Resource Management Team projects. Ongoing treatment and follow-up is critical in order to eradicate invasive exotic species from Long Key. Since the approval of the 2004 Management Plan approximately 75 acres have been treated at Long Key State Park.

Black rats are commonly observed in Long Key and are actively removed from the park. The population of green iguanas throughout the Florida Keys has significantly increased in the last five to ten years. The concern with this population explosion is the potential impacts on the native plant recruitment if iguanas eat flowers, thus preventing fruits from forming. This is especially a concern for the imperiled species in the park. Feral and domestic cats are also prevalent in the Florida Keys and impact songbirds and nesting birds. When these species are observed in the park, they are removed according to the protocols established in the Operations Manual. Lionfish have been observed in park waters, and an active removal program needs to be implemented. In 2015 staff observed an agama lizard (*Agama agama*) at the west end of the park past the campground. A second individual was observed in the same vicinity, and although one road kill has been documented, additional individuals have been observed near the shop. Since the approval of the 2004 Management plan, 1,389 exotic animals have been removed from Long Key State Park.

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

Table 3: Inventory of FLEPPC Category I and II Exotic Plant Species

Common and Scientific Name	FLEPPC Category	Distribution	Management zone(s)
PLANTS			
Sisal hemp *Agave sisalana*	II	2	LGK-10, LGK-07
Green shrimp plant *Blechum pyramidatum*	II	2	LGK-07
Mastwood *Calophyllum antillanum*	I	1	LGK-07

Table 3: Inventory of FLEPPC Category I and II Exotic Plant Species			
Common and Scientific Name	**FLEPPC Category**	**Distribution**	**Management zone(s)**
Australian pine *Casuarina equestifolia*	I	2	LGK-05, LGK-06
Latherleaf *Colubrina asiatica*	I	2	LGK-05, LGK-07, LGK-10
Egyptian grass *Dactyloctenium aegyptium*	II	2	LGK-06, LGK-03
Pothos *Epipremnum pinnatum*	II	2	LGK-07
Lead tree *Leucaena leucocephala*	II	2	LGK-08, LGK-02, LGK-03
Sapodilla *Manilkara zapota*	I	2	LGK-07
Mexican petunia *Ruellia brittoniana*	I	2	LGK-07
Guinea grass *Panicum maximum*	II	2	LGK-07, LGK-08, LGK-03, LGK-10
Bowstring hemp *Sansevieria hyacinthoides*	II	2	LGK-07, LGK-10
Beach naupaka *Scaevola taccada*	I	2	LGK-05, LGK-06
Brazilian pepper *Schinus terebinthifolius*	I	2	LGK-03, LGK-02, LGK-05
Portia *Thespesia populnea*	I	2	LGK-06, LGK-10, LGK-07
Mahoe *Taliparti tiliaceum*	II	0	
Oyster plan *Tradescantia spathacea*	II	2	LGK-02, LGK-07
Puncture vine *Tribulus cistoides*	II	2	LGK-07
Washington palm *Washingonia robusta*	II	1	LGK-07
ANIMALS			
Agama *Agama agama*			LGK-06, LGK-07
Brown anole *Anolis sagrei*			All
Green iguana *Iguana iguana*			All
Cuban tree frog *Osteopilus septentrionalis*			All

Table 3: Inventory of FLEPPC Category I and II Exotic Plant Species			
Common and Scientific Name	**FLEPPC Category**	**Distribution**	**Management zone(s)**
Lionfish *Pterois volitans*			Marine species
Black rat *Rattus rattus*			All
Fire ant *Solenopsis invicta*			All
Ghost ant *Tapinoma melanocephalum*			All
Cuban garden snail *Zachrysia provisoria*			All

Distribution Categories:

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

Special Natural Features

The Keys cactus barren is the special natural feature at Long Key State Park. This habitat supports several rare species including jumping cactus, wild cotton, Florida Keys indigo and yellow hibiscus. Keys cactus barren is a rare habitat in the Florida Keys and zone LGK-03 is considered by the Florida Natural Areas Inventory as one of the best examples of this habitat type in Florida.

Cultural Resources

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

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

Condition Assessment

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

Level of Significance

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

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

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

Prehistoric and Historic Archaeological Sites

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

Description: Originally the FMSF listed three sites within Long Key State Park, Long Key1 (8MO2088), Long Key Railroad Residence (8MO1474), and Long Key Side Track (8MO1473). Site 8MO3615 falls outside the boundaries of the park and is on a tract of land managed by the Monroe County Long Key Transfer Station.

In 2013, a predictive model was completed for Long Key State Park. A digital elevation model (DEM) was incorporated from aerial LiDAR data in order to determine the potential for additional cultural resources. Ground-truthing surveys were then conducted using GPS and camera equipment in order to determine prospective cultural resources.

Data were collected at each of the four previously recorded cultural sites. The analysis of LiDAR and ground-truthing updated one previously recorded site location and documented one new archaeological site (8MO2340). An archaeological sensitivity model was developed for Long Key State Park. This model included factors that took in a variety of environmental and cultural variables that account for the presence of sites through time and space and account for the variability of site types known to occur within the park as demonstrated through previous surveys or recordation of sites within the park vicinity. Matrix variables present in the park included coastal matrix factors, topography, areas of well- drained soils, and considerations of the NRHP and site significance. The sensitivity model was created for terrestrial site understanding only. The site model showed an occurrence of high cultural sensitivity areas for this park. The sensitivity model found that of the 797.36 acres within Long Key State Park, 190.69 acres or 23.92% were considered to be high sensitive areas for cultural resources. Zero acres were considered to be medium sensitive areas for cultural resources, and 606.67 acres or 76.08% were considered to be low sensitive areas for cultural resources (Collins, et al. 2013).

Long Key1 (8MO02088) is bisected by U.S. Highway 1 with the majority of the site located on the bayside of the island. It is in fair condition and consists of shell scatter approximately 3.3 acres in size and to a depth of 3-12 inches. Thousands of marine shell fragments from the Glades I period are dispersed throughout the rocky and marl substrate and in the mangrove swamp. According to Robert Carr who conducted archaeological surveys in the Middle Keys, 8MO02088 is of particular importance because it is believed to be a relict channel that had been used as an access point for canoes traversing between the Atlantic Ocean and Florida Bay during prehistoric times. This channel no longer exists (Carr, R. S. 1987). This resource should be an integral component of the park's interpretative program helping to inform the public of the large scale environmental changes made by the Calusa throughout southern Florida and their widespread use of channels.

Long Key Railroad Residence (8MO01474) is located at the western end of the park on the south side of U.S. Highway 1. It consists of diffuse scatter of bricks and other homestead artifacts including glass, pottery and metal. This site is located in a wetland.

Long Key Side Track (8MO01473) is located on the south side of U.S. Highway 1 near the day use area of the park. It consists of an intact Florida East Coast Railway

railroad sidetrack railroad segment. The segment is approximately 250 meters long. The railroad ties have been removed and the earthen sidetrack is all that remains.

Long Key Midden (8MO2340) is a new site that was discovered during the archeological predictive modeling conducted at Long Key in 2013. This site was previously identified by park staff but had not been documented to the FMSF. It consists of surface shell scatter and unfortunately has been subject to looting.

Condition Assessment: The four sites within Long Key State Park are in fair condition due to several factors including the construction of Flagler's railroad and the subsequent construction of U.S. Highway 1, looting and loss of archaeological resources, and artifact removal in the case of the railroad segment.

General management measures: Due to the degradation of the cultural sites, it will not be possible to bring them to their desired future condition. However, they can be preserved in their current state by protecting the sites from unauthorized access, educating the public on the importance of non-renewable cultural resources, preventing further looting, maintaining the sites in an exotic free condition, and protecting the earthen sidetrack from erosion.

Historic Structures

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

Description: The FMSF does not list any historic structure at Long Key State Park.

Collections

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

Description: There is a small exhibit in the Ranger Station with shells, hides and tools depicting Native American life in the Florida Keys.

Condition Assessment: The collection on display in the Ranger Station is housed in a climate controlled environment and is in good condition. The biggest threat is damage to the building itself from a tropical storm or hurricane event.

General Management Measures: In order to maintain the collections in their desired future condition, building integrity and maintenance will need to be a priority. This includes damage to the structure and/or roof that may result in water leaks.

Detailed management goals, objectives and actions for the management of cultural resources in this park are discussed in the Cultural Resource Management Program

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

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

Site Name & FMSF #	Culture / Period	Description	Significance	Condition	Treatment
Long Key1 8MO02088	Glades I	Prehistoric shell midden	NR	F	P
Long Key Railroad Residence 8MO01474	American 20th Century	Diffuse brick scatter	NS	F	P
Long Key Side Track 8MO01473	American 20th Century	FEC railroad sidetrack segment	LS	F	P
Long Key midden 8MO2340	Glades I	Prehistoric shell midden	LS	F	P

Significance:

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

Condition

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

Recommended Treatment:

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

RESOURCE MANAGEMENT PROGRAM

Management Goals, Objectives and Actions

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

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

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

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

Natural Resource Management

Hydrological Management

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

The natural hydrology of most state parks was impaired prior to acquisition to one degree or another. Florida's native habitats are precisely adapted to natural drainage patterns and seasonal water level fluctuations, and variations in these factors frequently determine the types of natural communities that occur on a particular site. Even minor changes to natural hydrology can result in the loss of plant and animal species from a landscape. Restoring state park lands to original

natural conditions often depends on returning natural hydrological processes and conditions to the park. This is done primarily by filling or plugging ditches, removing obstructions to surface water "sheet flow," installing culverts or low-water crossings on roads, and installing water control structures to manage water levels.

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

Action 1 Conduct a hydrological assessment of the Keys cactus barren habitat.

Impacts to the Keys cactus barren in zone LGK-03 is a result of the construction of the Flagler railroad in the early 1900's and the subsequent construction of U.S. Highway 1. Tidal inundation influences this habitat from the north side but only during storm events or extreme high tides. This has altered the functionality of the Keys cactus barren. A hydrological assessment will be necessary in order to determine the feasibility of restoring this tidal connection and improving the habitat.

Objective: Restore natural hydrological conditions and functions to approximately 25 acres of Keys cactus barren habitat.

Action 1 Determine the best management practice to restore natural water flow to the Keys cactus barren.

Action 2 Conduct restoration to restore approximately 25 acres of the Keys cactus barren in zone LGK-03.

If the result of the hydrological assessment in zone LGK-03 determines that the site can be restored, then it will be a management goal to coordinate with Florida Department of Transportation in order to determine whether hydrological restoration can be conducted, and then to proceed with securing the necessary permits and funding source to conduct the restoration.

Natural Communities Management

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

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

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

wildfire hazards by reducing these wild land fuels. There are no fire-dependent natural communities at Long Key State Park.

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

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

Following are the natural community/habitat restoration and maintenance actions recommended to create the desired future conditions in the seagrass bed community at Long Key State Park.

Objective: Determine the restoration needs of the seagrass bed habitats in the nearshore waters of the park.

Action 1	Develop site specific restoration plan.
Action 2	Implement restoration plan.

The extent of seagrass damage has been evaluated to a degree in conjunction with the potential beach restoration project. However, it will be necessary to evaluate the amount of damage to this habitat within the four hundred foot submerged managed area along the Oceanside as well as in Long Key bight. Seagrass restoration has been ongoing in Lignumvitae Key Submerged Land Managed Area since 2005 so protocols are established within DEP/DRP. If restoration is deemed necessary, a seagrass restoration plan for the park will be developed and priorities and funding sources identified.

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

The natural communities at Long Key do not require habitat manipulation or vegetative management in order to reach their desired future goals. Instead, the

park will focus on restoration and exotic removal in order to achieve the desired future condition for these communities.

Imperiled Species Management

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

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

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

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

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

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

Action 1 Implement monitoring protocols to conduct monitoring for least tern, loggerhead turtle, piping plover, and great white heron.
Action 2 Continue to conduct USFWS annual piping plover surveys.
Action 3 Continue to conduct nesting shorebird surveys.
Action 4 Continue to conduct sea turtle nesting surveys on all beaches.

Monitor the imperiled massive starlet coral annually for presence/absence, overall condition, disease, physical impacts, and bleaching. Monitoring will be conducted by park staff knowledgeable in the identification of Caribbean coral species and coral diseases.

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

Action 1 Implement monitoring protocols to conduct monitoring of imperiled plant species.
Action 2 Conduct specific conservation monitoring on selected imperiled plant species.

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

Conduct regular monitoring of the Keys cactus barren habitat in zone LGK-03 for changes over time, presence of exotic plant species, and status of imperiled species including jumping cactus, yellow hibiscus and wild cotton.

Continue to collaborate with researches from Fairchild Tropical Botanic Garden and USFWS on the conservation of the Keys tree cactus throughout the Florida Keys. At this time, there are no plans to conduct an augmentation project at Long Key, but the population in the park is a significant aspect of this conservation project.

Continue monitoring the population of the reintroduced Sargent's cherry palm and coordinate efforts with researchers from Fairchild Tropical Botanic Garden on the larger conservation efforts of this species in south Florida.

Exotic Species Management

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

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

Objective: Annually treat 10.5 acres of exotic plant species in the park.

Action 1 Annually develop/update exotic plant management plan.
Action 2 Implement annual management plan by annually treating 10.5 acres.

Park staff, district staff and the Keys Resource Management Team will continue to conduct exotic removal projects at Long Key treating all EPPC Category I and II species as the first priority.

Objective: Implement control measures on five exotic animal species in the park.

Action 1 Implement exotic animal removal control measures for lionfish, agama, black rats, green iguanas, and free roaming cats.

When black rats, green iguanas, agama, and feral or free roaming cats are observed in the park, they will be removed according to the guidelines outlined in the Operations Manual. Regular surveys for lionfish in the nearshore waters need to be conducted to minimize the spread of this invasive marine exotic species throughout the Florida Keys and the Caribbean basin.

Cultural Resource Management

Cultural Resource Management

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

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

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

Objective: Assess and evaluate one of four recorded cultural resources in the park.

Action 1 Complete one evaluation of an archeological site.

Site 8MO02088 consists of scattered fragments over a large area of the park on both sides of U.S. Highway I. It is not feasible to assess the condition due to the lack of material to evaluate. It will, however, be necessary to ensure the protection

of fragments that are buried beneath the surface when conducting any type of ground disturbance in the vicinity of the known cultural site. The protection of the Keys cactus barren in zone LKG-03 will provide for the protection of any fragments found in this zone.

Site 8MO01474 consists of diffuse brick scatter and is not feasible to assess due to the type of scatter. However, this site will be protected when any surface or ground disturbance is conducted.

Site 8MO01473 is an earthen railroad sidetrack segment that can be evaluated particularly in conjunction with evaluation of the beach in this section of the park. This site is subject to impacts from beach erosion.

Site 8MO2340 is consists of surface shell scatter. Measures need to be taken to ensure that no additional looting occurs.

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

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

Due to the changes of sea level over time, many cultural sites are believed to be in the submerged resources of the park. Therefore it will be necessary that damage assessments conducted after any physical disturbances to seagrass beds, composite substrate or unconsolidated substrate, or prior to restoration of seagrass, include the potential for unearthing archaeological or cultural resources. If a site is found, the State Archaeologist will be notified and the site will remain undisturbed until such time that it can be inspected by an expert.

A predictive model study of Long Key State Park was completed in 2013 and one new site was documented and added to the FMSF. In addition, a sensitivity model was completed which indicated areas within the park that were documented as having a high and low probability for archaeological resources.

The cultural resources in the park consist mostly of scattered fragments over a large area and it is difficult to bring these resources into good condition. The earthen sidetrack segment is subject to damaging environmental conditions, particularly impacts from beach erosion. The integrity of these sites will be preserved to the extent possible by being cognizant of activities in the vicinity of these culture sites, preventing looting of fragments, and by having a certified Archaeological Resource Manager present during any ground disturbing activities.

Special Management Considerations

Timber Management Analysis

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

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

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

Coastal/Beach Management

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

Long Key supports 2.2 miles of beach on the Atlantic Ocean in zones LGK-06 and LGK-05. The beach in the campground in zone LGK-06 provides a popular tourist destination so visitor use is heavy. Since many campgrounds in the Florida Keys closed in the mid-2000s, camping has become a premium commodity putting more pressure on remaining campgrounds. This heavy use impacts natural resources including shorebird disturbance, damage to dune buffer vegetation, damage to seagrass beds, and unauthorized collection of marine organisms. Offshore issues include incompatible visitor use such as boating and kite surfing that can impact the park visitors' ability to safely enjoy the nearshore waters. Erosion is a major problem in the campground and beach loss has accelerated over the last 25-years on this one-mile stretch. More than 50 feet of beach has eroded due to a combination of natural environmental conditions and an increase in storm activity beginning in 1998 with Hurricane Georges. The extensive damage that resulted from this hurricane event, and the inability for the beach to accrete new material, has left the beach vulnerable to additional erosion from winter storms, strong rain events and more recent tropical storm and hurricane events in the mid-2000s. To mitigate for the loss of beach, campsites have been relocated closer to the park road.

The beach at Long Key point in zone LGK-05 has accreted due to the removal of exotic species particularly Australian pine. The beaches at Long Key particularly in zone LGK-05 support nesting sea turtles and shorebirds, although recent erosion has limited the amount of available nesting material in zone LGK-06.

In addition to management of the beach at Long Key, the park also manages the submerged land from the mean high water mark to the 400-foot boundary. This is most important on the ocean side of the park and in zone LGK-04 where impacts from boat access has the potential to damage the submerged resources of the park, particularly the seagrass beds in the nearshore waters. Establishing "No Motor Zone" signs would minimize or eliminate damage from vessels.

Arthropod Control Plan

All DRP lands are designated as "environmentally sensitive and biologically highly productive" in accordance with Ch. 388.4111, Florida Statutes. If a local mosquito control district proposes treatment, the DRP works with them to adopt a mutually agreeable plan. Treatment methods including larviciding and ground adulticiding (truck spraying in public use areas) are typically allowed. Aerial adulticiding can be allowed through an agreed upon control plan. DRP policy also allows park managers to request typical truck spraying (adulticide fogging) in public use areas even in the absence of a treatment plan. The DRP does not authorize new physical alterations of marshes through ditching or water control structures. Mosquito control plans temporarily may be set aside under declared threats to public or animal health, or during a Governor's Emergency Proclamation.

Mosquito control for treatment of adult mosquitoes is applied in the park by ground spraying and under the park manager's discretion. Approved areas for application are the park shop, campground, and residence areas. Aerial application of larvacide is applied in approved areas where standing water is not tidally influenced. Aerial spraying occurs throughout the Florida Keys so incidental drift does occur on state lands and over state waters. An Arthropod Control Plan has been developed for Long Key State Park.

Sea Level Rise

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

RESOURCE MANAGEMENT SCHEDULE

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

Land Management Review

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

Long Key State Park was last subject to a land management review on November 19, 2015. The review team made the following determinations:

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

LAND USE COMPONENT

Introduction

Land use planning and park development decisions for the state park system are based on the dual responsibilities of the Florida Department of Environmental Protection (DEP), Division of Recreation and Parks (DRP) 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 and park operation and management. Additional input is received through public workshops, and through environmental and recreational-user groups. With this approach, the DRP objective is to provide quality development for resource-based recreation throughout the state with a high level of sensitivity to the natural and cultural resources at each park.

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

External Conditions

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

Long Key State Park surrounds the community of Layton and is located within unincorporated Monroe County, about 14 miles southwest of Islamorada and about 16 miles northeast of Marathon in the Florida Keys. Approximately 23,800 people live within 30 miles of the park (Census 2013).

The population of Monroe County is relatively diverse in terms of demographic characteristics. According to the U.S. Census Data (Census 2013), approximately 32% of residents in the county identify as black, Hispanic or Latino, or another minority group. Over one-third (39%) of residents can be

described as youth or seniors (Census 2013). 71% of the population is of working age (16 to 65) (Census 2013). Monroe County ranked 3rd statewide in per capita personal income at $57,829 (above the statewide average of $41,497) (U.S. Bureau of Economic Analysis 2014).

The park is located in the Southeast Vacation Region, which includes Broward, Miami-Dade, Monroe, and Palm Beach counties (Visit Florida 2013). According to the 2013 Florida Visitor Survey, approximately 17.3% of domestic visitors to Florida visited this region. Roughly 87% visitors to the region traveled to the Southeast for leisure purposes. The top activities for domestic visitors were beach/waterfront and culinary/dining experiences. Summer was the most popular travel season, but visitation was generally spread throughout the year. Most visitors traveled by air (60%), reporting an average of 4.4 nights and spending an average of $186 per person per day (Visit Florida 2013).

The table below identifies significant resource-based recreation opportunities within 15 miles of Long Key State Park.

Table 5. Resource-Based Recreational Opportunities Near Long Key State Park

Name	Biking	Hiking	Swim / Beach Access	Boating / Paddling	Fishing	Wildlife Viewing	Overnight Accommodations
Curry Hammock State Park (FDEP)	✓	✓	✓	✓	✓	✓	✓
Everglades National Park (NPS)	✓	✓	✓	✓	✓	✓	✓
Florida Keys National Marine Sanctuary (NOAA)			✓	✓	✓	✓	
Florida Keys Overseas Heritage Trail (FDEP)	✓				✓	✓	

Table 5. Resource-Based Recreational Opportunities Near Long Key State Park							
Name	**Biking**	**Hiking**	**Swim / Beach Access**	**Boating / Paddling**	**Fishing**	**Wildlife Viewing**	**Overnight Accommodations**
Indian Key Historic State Park (FDEP)		✓	✓	✓	✓	✓	
Lignumvitae Key Botanical State Park (FDEP)			✓	✓	✓	✓	
San Pedro Underwater Archaeological Preserve State Park (FDEP)			✓	✓		✓	

Florida's Statewide Comprehensive Outdoor Recreation Plan (SCORP) indicates that participation rates in this region for saltwater beach activities, visiting archaeological and historic sites, nature study, picnicking, and bicycle riding are higher than the state average with demand for additional facilities increasing through 2020 (FDEP 2013).

Existing Use of Adjacent Lands

Long Key State Park is located in unincorporated Monroe County and surrounds the incorporated community of Layton, which has a population of around 170 (Census 2013). The key itself lies between the larger communities of Islamorada and Marathon separated from each by channels and, like most of the inhabited Keys, connected only by the Overseas Highway. On the northeast and southwest sections of the island, small resort communities lie adjacent to the park boundary, which consist of variations of residential and commercial zoning. A Monroe County landfill and waste transfer station is located along the Overseas Highway across from the main park entrance. As part of unincorporated Monroe County, Long Key has been assigned a Tier I

designation, which is meant to discourage future development through the competitive point allocation system as part of the rate of growth ordinance that manages growth throughout Monroe County.

Planned Use of Adjacent Lands

Monroe County is a relatively small county in terms of population in Florida with around 74,000 residents (BEBR). With the inherent environmental limitations on growth present in the Florida Keys, multiple environmental and social conflicts arise when increasing demand for development places a heavy burden on limited land. The vulnerability of the Florida Keys to tropical storm events has encouraged officials to address evacuation efforts throughout Monroe County. By managing growth in Monroe County and thereby preventing too much pressure on the Overseas Highway as the main means of evacuation, officials hope to ensure safe evacuation times for County residents and visitors when threatened by a tropical storm event. County officials have adopted a series of land use regulations that aim to focus growth in areas that are in a better position to support more development. In addition, these regulations deter future growth from occurring in sensitive natural areas that protect numerous listed plant and animal species. This approach also supports efforts to maintain and enhance water quality throughout the Florida Keys National Marine Sanctuary (Monroe County 2000).

In light of the unique balancing act between development and conservation that permeates daily life in the Florida Keys, future growth adjacent to Long Key State Park should be expected to meet maximum allowable densities within the near future, if they have not already. The Monroe County future land use map indicates a change in land use from the current designation of native area to residential conservation along the Overseas Highway to the northeast of Layton; however, the Tier I designation is not expected to change.

Greenways and Trails

Florida Greenways and Trails System (FGTS)

The Florida Greenways and Trails System (FGTS) is made up of existing, planned, and conceptual non-motorized trails and ecological greenways that form a connected, integrated statewide network. The FGTS serves as a green infrastructure plan for Florida, tying together the greenways and trails plans and planning activities of communities, agencies, and non-profit organizations throughout Florida. Trails include paddling, hiking, biking, multi-use, and equestrian trails. The Office of Greenways and Trails maintains a priority trails map and gap analysis for the FGTS to focus attention and resources on closing key gaps in the system.

In some cases, existing or planned priority trails run through or are adjacent to state parks, or they may be in close proximity and can be connected by a spur

trail. State parks can often serve as trailheads, points-of-interest, and offer amenities such as camping, showers, and laundry, providing valuable services for trail users while increasing state park visitation.

Long Key State Park is a designated component of the Florida Greenways and Trails System, administered by the Department's Office of Greenways and Trails.

Florida Keys Overseas Heritage Trail

The Florida Keys Overseas Heritage Trail (FKOHT) is a multi-use trail that extends from MM 106.5 in Key Largo to MM 0 in Key West parallel to the Overseas Highway. The majority of the trail is located in FDOT right-of-way while the trail is routed across the Florida Keys Historic Bridges, originally constructed by Henry Flagler as part of the East Coast Railroad in the early 1900s, when possible.

The FKOHT is the southernmost segment of the East Coast Greenway, with the northern terminus located in Calais, Maine and the southern terminus in Key West, Florida. The FKOHT passes by numerous exceptional and unique natural communities including rockland hammock, mangroves, Keys tidal rock barren and lagoons. The FKOHT is managed by the DRP in partnership with the FDOT and Monroe County, in addition to each community through which the trail passes.

The FKOHT is a critical component of local transportation infrastructure, and is still in development. Additions, expansions, trail widening projects, and bridge rehabilitation efforts are currently underway. Where there in the trail, the trail then merges with the Overseas Highway shoulder.

Other Designated Trail Networks

In addition, the park is also located along the Florida Circumnavigational Saltwater Paddling Trail that traverses the entire Florida coastline from Perdido Key State Park in Escambia County on the Gulf coast to Fort Clinch State Park in Fernandina Beach on the Atlantic coast.

Property Analysis

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

Recreational Resource Elements

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

Land Area

The majority of Long Key State Park consists of mangrove swamp and other sensitive wetlands that limit access for passive recreation opportunities. There are relatively small sections of rockland hammock that do support exceptional hiking and wildlife viewing along existing nature trails in addition to a campground in between the shoreline and the Overseas Highway at the southern end of the park. There is potential for improving the connection between the park and the FKOHT and thereby allowing additional bicycling opportunities for park visitors.

Water Area

Long Key State Park is adjacent to the Atlantic Ocean to the south and the Florida Bay to the north. Opportunities for saltwater passive recreation activities are prevalent such as snorkeling, swimming, and paddling. Paddling is a popular activity on waters around the park, which contain a segment of the Florida Circumnavigational Saltwater Paddling Trail.

Shoreline

Thin coastal berm and beach dune communities are accessible for passive recreation activities like hiking and wildlife viewing. The sandy beach areas of the park are popular beach access areas; however, they are receding due to a variety of factors that have induced significant coastal erosion. As a result, mitigation efforts are underway to stabilize the existing campground adjacent to the shoreline.

Natural Scenery

Scenic resources are generally elements of the landscape and built environment that are visually pleasing as determined by visitor preferences and consensus. The range of scenic resources in Florida state parks is wide and varied. Scenic views include such features as topography and landform; vegetation and natural communities; water bodies (oceans, estuaries, lakes, rivers, and springs); historic and cultural features (buildings, archaeological sites, and working landscapes); travel corridors (roads, rivers, and trails); or any combination of these. Views can be distant, proximate, panoramic or discrete. A

scenic resource may be an individual view, as from a single overlook, or a sequence of views as experienced from a trail, river or road. Both the Atlantic Ocean and the Florida Bay offer attractive views of the horizon to park visitors. In addition, visitors to the Keys are often impressed by night skies with limited light pollution as is common on the mainland.

Significant Habitat

The park contains excellent examples of rare Keys tidal rock barren, Keys cactus barren, rockland hammock, mangrove swamp, and seagrass bed natural communities. These communities create valuable opportunities for wildlife viewing and nature study. Care will need to be taken to prevent excessive pressure from visitor use in these sensitive areas and to prevent the adverse impacts of light pollution from park facilities.

Archaeological and Historical Features

Prior to the Labor Day Hurricane of 1935, Long Key was home to Henry Flagler's Long Key Fishing Camp, a luxurious resort that attracted the rich and famous from around the world. If interpreted, Long Key's history would provide a valuable educational experience for park visitors.

Assessment of Use

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

Past Uses

The native Calusa people originally used a now-eroded channel across Long Key as a means to travel to the Atlantic Ocean from their communities in and around Florida Bay. The passage provided a safe and direct path to fishing waters in the Atlantic. Towards the end of the 18th century, Long Key was home to several coconut tree groves. Henry Flagler's East Coast Railroad passed through Long Key on its way to Key West. On Long Key, Flagler established a fashionable and successful fishing camp that attracted the rich and famous from around the world. The Labor Day Hurricane of 1935 destroyed the railroad and fishing camp. After which, Long Key became home to the small community of Layton and in 1969, the majority of the Key became Long Key State Park.

Future Land Use and Zoning

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

The park has been designated as Tier I by Monroe County. Future land use categories assigned to the park include residential conservation and recreation. The current zoning designations that apply to Long Key State Park include native area and park and refuge (Monroe County 2000).

Current land use regulations discourage future development at Long Key State Park, which inhibits the DRP from providing needed park support facilities for Long Key State Park. The DRP is currently discussing issues related to permitting with Monroe County in an effort to provide needed support facilities for the park to continue to function efficiently.

The City of Layton has recently been in conversation with the DRP to annex Long Key State Park as part of an effort to increase the ratio of developable land to undevelopable land for credits within the FEMA Community Rating System. Discussions are currently underway to determine the best course of action for Florida residents and park visitors.

Current Recreational Use and Visitor Programs

The primary recreational uses at the park are camping and use of the beaches south of U.S. Highway 1. Fishing throughout the near-shore waters around the park is also a popular activity. Kayak rentals are available at the Ranger Station. Opportunities for recreation at the park include overnight camping, swimming, snorkeling, wildlife viewing, fishing, paddling, hiking, and picnicking. The nature trails at the park provide exceptional wildlife viewing opportunities and the park's status as part of the Great Florida Birding and Wildlife Trail attracts many visitors. The FKOHT passes through the park alongside U.S. Highway 1 and will continue to bring visitors to the park by bicycle.

Long Key State Park recorded 152,388 visitors in FY 2014/2015. By DRP estimates, the FY 2014/2015 visitors contributed $13,537,794 in direct economic impact, the equivalent of adding 217 jobs to the local economy (FDEP 2015).

Other Uses

The right of way of U.S. Highway 1, which includes the FKOHT, bisects the boundary of the park.

Protected Zones

A protected zone is an area of high sensitivity or outstanding character from which most types of development are excluded as a protective measure. Generally, facilities requiring extensive land alteration or resulting in intensive resource use, such as parking lots, camping areas, shops or maintenance areas, are not permitted in protected zones. Facilities with minimal resource impacts,

such as trails, interpretive signs and boardwalks are generally allowed. All decisions involving the use of protected zones are made on a case-by-case basis after careful site planning and analysis.

At Long Key State Park, all wetlands and floodplains as well as shoreline dune systems and known imperiled species habitat have been designated as protected zones. In addition, the entire eastern peninsula is designated as a protected zone to recognize the unique natural habitat and undeveloped conditions found there. The park's current protected zone is delineated on the Conceptual Land Use Plan.

Existing Facilities

Two recreational day use areas are located at the park, the Family Camping Area and the Atlantic Day Use Area. The campground is located towards the southwest extent of the park, parallel to U.S. Highway 1. The Atlantic Day Use Area is located near the main entrance towards the center of the park south of U.S. Highway 1 (see Base Map).

In the Family Camping Area, significant shoreline erosion is immediately threatening several of the 60 camping sites. Efforts to realign individual campsites to accommodate the changing shoreline are currently underway and will continue into the future. The camping area has three bathhouses in varying conditions as well as a dump station and campfire circle with seating at the end of the park drive to the southwest.

The Atlantic Day Use Area consists of a nature trail, observation tower, bathhouse, canoe launch, several picnic tables camping platforms, and an elevated boardwalk. The Golden Orb Nature Trail is affected by high tides and is, at times, inundated. The park has two support areas, the Shop/Residence Area with a maintenance shop, storage, and two ranger residences, and the Residence Area with three ranger residences and volunteer housing off Long Key Lake Drive adjacent to Layton (see Base Map).

Recreation Facilities	**Support Facilities**
Campsites (60)	Dump Station
Campfire circle	Ranger Station
Bathhouses (4)	Ranger Residence (5)
Nature Trails (1.5 miles)	Maintenance Shop
Observation Tower	Flammable Storage
Camping Platforms (6)	
Canoe/Kayak Launch	
Picnic Tables	
Parking Area (30 spaces)	

Conceptual Land Use Plan

The following narrative represents the current conceptual land use proposal for this park. The conceptual land use plan is the long-term, optimal development plan for the park, based on current conditions and knowledge of the park's resources, landscape, and social setting (see Conceptual Land Use Plan). The conceptual land use plan is modified or amended, as new information becomes available regarding the park's natural and cultural resources or trends in recreational uses, in order to adapt to changing conditions. Additionally, the acquisition of new parkland may provide opportunities for alternative or expanded land uses.

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

Potential Uses

Public Access and Recreational Opportunities

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

The existing recreational activities and programs of this state park are appropriate to the natural and cultural resources contained in the park and should be continued. New and improved activities and programs are also recommended and discussed below.

LONG KEY STATE PARK

N

0 0.25 0.5 1 Mile

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

BASE MAP

LONG KEY STATE PARK

N

0 0.25 0.5 1 Mile

Florida Department of Environmental Protection
Division of Recreation & Parks
Date of aerial 2011

CONCEPTUAL LAND USE PLAN

Objective: Expand the park's recreational carrying capacity by 144 users per day.

Additional picnic shelters are proposed at the park that will expand the park's recreational opportunities and increase the estimated carrying capacity. Expansion of recreational opportunity is discussed in detail below.

Visitors to Long Key State Park are attracted to the oceanfront campground and the thin, but long, stretch of sandy shoreline in the Atlantic Day Use Area. In addition to the large campground, the park's picnic facilities attract visitors who are visiting for the day. As the FKOHT is continually improved, more cyclists will pass by the park and could use park facilities as a rest stop. Encouraging cyclists to visit the park will be an important part of developing a strong relationship between the FKOHT and state parks throughout Monroe County.

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

An interpretive program is a program that serves as a catalyst to learning and forges public understanding of park resources. At the park, four interpretive programs are held regularly. These include the *Water Walk*, *Long Key Fish Tales*, *Explore the Shore* and the *Golden Orb Nature Trail Walk/Hike*.

Recreational programs offer opportunities for people to improve or learn outdoor skills or promotes leisure activities for the attainment of personal and social benefits. Two recreational programs at Long Key State Park introduce visitors to two popular activities in the Keys; these programs are *Intro to Snorkeling* and *Intro to Kayaking*.

An educational program is considered a comprehensive program that is curriculum-based, conducted on or off site, and promotes public understanding of the park and its resources. Two educational programs are provided at the park for primary school groups. These include *Who Am I?* and *Shoreline Scavenger Hunt*.

Self-guided interpretive signs and kiosks educate visitors about invasive plants, native species, and other issues. Publications available at the park cover an array of themes, including sea turtles, mangroves, sea grasses, trails and park activities.

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

One interpretive program is proposed for the park, *Intro to Shorebirds*, which will provide the opportunity for park visitors to develop an understanding and

appreciation for shorebirds and their increasingly vulnerable habitat. One educational program, *Water Testing Demo*, will also be developed for the park.

Proposed Facilities

Capital Facilities and Infrastructure

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

At Long Key State Park, future development will be guided by changes in the local environment and shoreline and the existing realities of low-lying land in an area that is heavily influenced by surrounding bodies of water. Additional park support facilities will be needed to provide staff support and allow DRP to efficiently manage its conservation and recreation lands.

The existing facilities of this state park are appropriate to the natural and cultural resources contained in the park and should be maintained. New construction, as discussed further below, is recommended to improve the quality and safety of the recreational opportunities, to improve the protection of park resources, and to streamline the efficiency of park operations. As recommended by the FWC Marine Turtle Lighting guidelines, all exterior lighting for current and proposed facilities will utilize "turtle-friendly" lighting. The following is a summary of renovated and new facilities needed to implement the conceptual land use plan for Long Key State Park:

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

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

Objective: Improve/repair five existing facilities.

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

Family Camping Area

The iconic Long Key State Park campground is well known for its proximity to the Atlantic Ocean, with many sites within several feet of the shoreline. Due to a changing shoreline, several sites are currently being reoriented to improve their relationship with the dune system. This approach will remain necessary as the shoreline continues to change along the campground. The DRP will continue

to explore opportunities for beach nourishment activities along the campground and day use area shorelines. If a beach nourishment project is completed at the park, the possibility of adding additional campsites in the campground may be examined. In addition, renovation of restroom #3 is proposed to reduce the structural impacts of spalling and ensure ADA compliance.

Atlantic Day Use Area
The day use area of the park is an increasingly popular destination for visitors. As such, the addition of three small sheltered picnic pavilions is proposed for the area. An extension to the existing boardwalk on the Golden Orb Nature Trail is also proposed.

Shop/Residence Area
Within the Shop/Residence Area, the maintenance shed is proposed to be elevated due to persistent nuisance flooding. An equipment shelter is also proposed to protect park maintenance equipment from the elements.

Entrance Area
The existing gate and roadway configuration at the entrance of the park will be examined and recommendations for improvement will be made to provide a more efficient and formalized park entrance.

A trailhead for the FKOHT is proposed at the intersection of U.S. Highway 1 and the main park entrance under the existing stand of gumbo limbo trees. This shaded area would provide an ideal location for trail support facilities including a water fountain, bench, informational signage, and a bike repair station.

Residence Area
The improvement of the staff residence area will be pursued with either Monroe County or the City of Layton, depending on the status of the City of Layton's proposal to annex a portion of Long Key State Park. Improvements to the Residence area will consist of the replacing of existing mobile homes and the possibility of additional staff residences.

Facilities Development

Preliminary cost estimates for these recommended facilities and improvements are provided in the Ten-Year Implementation Schedule and Cost Estimates (Table 7) located in the Implementation Component of this plan. These cost estimates are based on the most cost-effective construction standards available at this time. The preliminary estimates are provided to assist DRP in budgeting future park improvements, and may be revised as more information is collected through the planning and design processes. New facilities and improvements to existing facilities recommended by the plan include:

Atlantic Day Use Area
Small picnic pavilion (3)

Family Camping Area
Renovate bathhouse
Landscape improvements

Entrance Area
Entrance area improvements
FKOHT rest stop (bench, water, signage)

Shop/Residence Area
Elevate shop
Storage – Equipment (3-bay pole barn)

Residence Area
Staff Residences (4)

Recreational Carrying Capacity

Carrying capacity is an estimate of the number of users a recreation resource or facility can accommodate and still provide a high quality recreational experience and preserve the natural values of the site. The carrying capacity of a unit is determined by identifying the land and water requirements for each recreation activity at the unit, and then applying these requirements to the unit's land and water base. Next, guidelines are applied which estimate the physical capacity of the unit's natural communities to withstand recreational uses without significant degradation. This analysis identifies a range within which the carrying capacity most appropriate to the specific activity, the activity site and the unit's classification is selected (see Table 6).

The recreational carrying capacity for this park is a preliminary estimate of the number of users the unit could accommodate after the current conceptual development program has been implemented. When developed, the proposed new facilities would approximately increase the unit's carrying capacity as shown in Table 6.

Table 6. Recreational Carrying Capacity

Activity / Facility	Existing Capacity*		Proposed Additional Capacity		Estimated Recreational Capacity	
	One Time	Daily	One Time	Daily	One Time	Daily
Camping						
Standard	480	480			480	480
Primitive	48	48			48	48
Hiking	15	60			15	60
Picnicking	40	80	72	144	112	224
Fishing	240	480			240	480
Paddling	16	32			16	32
Swimming	206	412			206	412
TOTAL	**1045**	**1592**	**72**	**144**	**1117**	**1736**

*Existing capacity revised from approved plan according to DRP guidelines.

Optimum Boundary

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

Identification of parcels on the optimum boundary map is intended solely for planning purposes. It is not to be used in connection with any regulatory purposes. Any party or governmental entity should not use a property's identification on the optimum boundary map to reduce or restrict the lawful rights of private landowners. Identification on the map does not empower or suggest that any government entity should impose additional or more restrictive environmental land use or zoning regulations. Identification should not be used as the basis for permit denial or the imposition of permit conditions.

Several parcels and the submerged lands of Long Key Bight, totaling 610 acres, are identified within the optimum boundary. These parcels include the existing Peter E. Riley Conservation Area and several parcels along U.S. Highway 1 on the northern portion of Long Key between MM 68.5 and MM 69.5. Acquisition of these parcels would provide opportunities to expand recreational opportunities and allow park staff to manage these areas as part of the larger park property through continued exotic species management, natural resource protection and restoration, and monitoring of visitor activities and impacts within the park.

LONG KEY STATE PARK

N

0 500 1,000 2,000 Feet

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

OPTIMUM BOUNDARY MAP

IMPLEMENTATION COMPONENT

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

MANAGEMENT PROGRESS

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

Acquisition

- Two parcels were added to Long Key State Park since the approval of previous unit management plan in 2004. Both parcels (management zones LGK-11 and LGK-12) are on the bayside of the island and north of the City of Layton. These are Keys tidal rock barren habitats and both are in excellent condition.

Park Administration and Operations

- Cleaned the wood and debris behind building #22.
- Relocated 50 amp power and water to expand volunteer sites.
- Built out storage/cleaning lockers in buildings #22 and #23 to provide easier access to staff and volunteers for park maintenance.

Resource Management

Natural Resources

- Removed approximately 200 Australian pine trees along ten acres of shoreline and replanted with native vegetation. This was to enhance the campground facilities, restore the beach/dune habitat and to increase buffer zones between campsites.
- Replanted native vegetation along campground shoreline to slow erosion and increase visitor safety.

Cultural Resources

- In 2013, a predictive model was completed for Long Key State Park. One new site, Long Key Midden (8MO2340) was discovered during this archaeological survey and has been added to the Florida Master Site File.

Recreation and Visitor Services

- Restored native vegetation along the day use area to establish a shoreline walk with seating and interpretive information.
- Replaced two campground restrooms with new facilities compliant with ADA standards.
- Improved accessibility by resurfacing the road through the campground.
- Repaired and/or replaced the fencing and fire rings in ten campsites in the campground.
- Installed an electric gate at the entrance to the campground to provide better security and ADA accessibility.
- Replaced fire ring and installed bench seating at the campground turn around for both camper use and interpretive programs.

Park Facilities

- Acquired two mobile homes to provide additional staff or visitor housing and one trail.

MANAGEMENT PLAN IMPLEMENTATION

This management plan is written for a timeframe of ten years, as required by Section 253.034 Florida Statutes. The Ten-Year Implementation Schedule and Cost Estimates (Table 7) summarizes the management goals, objectives and actions that are recommended for implementation over this period, and beyond. Measures are identified for assessing progress toward completing each objective and action. A time frame for completing each objective and action is provided. Preliminary cost estimates for each action are provided and the estimated total costs to complete each objective are computed. Finally, all costs are consolidated under the following five standard land management categories: Resource Management, Administration and Support, Capital Improvements, Recreation Visitor Services and Law Enforcement.

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

natural and cultural resources, and changes in statewide land management issues, priorities and policies.

Statewide priorities for all aspects of land management are evaluated each year as part of the process for developing the DRP's annual legislative budget requests. When preparing these annual requests, the DRP considers the needs and priorities of the entire state park system and the projected availability of funding from all sources during the upcoming fiscal year. In addition to annual legislative appropriations, the DRP pursues supplemental sources of funds and staff resources wherever possible, including grants, volunteers and partnerships with other entities. The DRP's ability to accomplish the specific actions identified in the plan will be determined largely by the availability of funds and staff for these purposes, which may vary from year to year. Consequently, the target schedules and estimated costs identified in Table 7 may need to be adjusted during the ten-year management planning cycle.

Table 7
Long Key State Park Ten-Year Implementation Schedule and Cost
Estimates Sheet 1 of 4

NOTE: THE DIVISION'S ABILITY TO COMPLETE THE OBJECTIVES OUTLINED BY THE MANAGEMENT PLAN IS CONTINGENT ON THE AVAILABILITY OF FUNDING AND OTHER RESOURCES FOR THESE PURPOSES.				
Goal I: Provide administrative support for all park functions.		**Measure**	**Planning Period**	**Estimated Manpower and Expense Cost* (10-years)**
Objective	**Continue day-to-day administrative support at current levels.**	Administrative support ongoing	C	**$610,000**
Objective	**Expand administrative support as new lands are acquired, new facilities are developed, or as other needs arise.**	Administrative support expanded	C	**$60,000**
Goal II: Protect water quality and quantity in the park, restore hydrology to the extent feasible, and maintain the restored condition.		**Measure**	**Planning Period**	**Estimated Manpower and Expense Cost* (10-years)**
Objective	**Conduct/obtain an assessment of the park's hydrological needs.**	Assessment conducted	LT	**$20,000**
Action 1	Conduct a hydrological assessment of the Keys cactus barren habitat.	Assessment conducted	LT	$20,000
Objective	**Restore natural hydrological conditions and function to approximately 25 acres of Keys cactus barren habitat.**	# Acres restored or with restoration underway	UFN	**$220,000**
Action 1	Determine the best management practice to restore natural water flow to the Keys cactus barren	Study Conducted	UFN	$20,000
Action 2	Restore approximately 25 acres of the Keys cactus barren in zone LGK-03	# Crossings/culverts installed	UFN	$200,000
Goal III: Restore and maintain the natural communities/habitats of the park.		**Measure**	**Planning Period**	**Estimated Manpower and Expense Cost* (10-years)**
Objective	**Determine the restoration needs of the seagrass bed habitats in the nearshore waters of the park.**	# Acres restored or with restoration underway	ST	**$200,250**
Action 1	Develop site specific restoration plan.	Plan developed/updated	ST	$250
Action 2	Implement restoration plan.	# Acres with restoration underway	LT	$200,000

* 2015 Dollars
ST = actions within 2 years
LT = actions within 10 years
C = long term or short term actions that are continuous or cyclical
UFN = currently unfunded need

Table 7
Long Key State Park Ten-Year Implementation Schedule and Cost
Estimates Sheet 2 of 4

NOTE: THE DIVISION'S ABILITY TO COMPLETE THE OBJECTIVES OUTLINED BY THE MANAGEMENT PLAN IS CONTINGENT ON THE AVAILABILITY OF FUNDING AND OTHER RESOURCES FOR THESE PURPOSES.				
Goal IV: Maintain, improve, or restore imperiled species populations and habitats in the park.		**Measure**	**Planning Period**	**Estimated Manpower and Expense Cost* (10-years)**
Objective	**Update baseline imperiled species occurrence inventory lists for plants and animals.**	List [developed] updated	C	**$5,000**
Objective	**Monitor and document four selected imperiled animal species in the park.**	# Species monitored	C	**$10,000**
Action 1	Implement monitoring protocols to conduct monitoring on four imperiled animal species.	Four protocols developed	ST	$5,000
Action 2	Continue to conduct USFWS annual piping plover surveys.	Four species monitored	C	$1,500
Action 3	Continue to conduct nesting shorebird surveys.	# Surveys monitored	C	$1,500
Action 4	Continue to conduct sea turtle nesting surveys on all beaches.	# Surveys monitored	C	**$2,000**
Objective	**Monitor and document all of the imperiled plant species in the park.**	# Species monitored	C	**$3,500**
Action 1	Implement monitoring protocols to conduct monitoring of imperiled plant species.	Protocols developed	ST	$3,000
Action 2	Conduct specific conservation monitoring on selected imperiled plant species.	One species monitored	C	$500
Goal V: Remove exotic and invasive plants and animals from the park and conduct needed maintenance-control.		**Measure**	**Planning Period**	**Estimated Manpower and Expense Cost* (10-years)**
Objective	**Annually treat 10.5 acres of exotic plant species in the park.**	# Acres treated	C	**$22,500**
Action 1	Annually develop/update exotic plant management plan.	Plan developed/updated	C	$2,500
Action 2	Implement annual managment plan by treating 10.5 acres in park, annually.	Plan implemented	C	$20,000
Objective	**Implement control measures on 5 exotic animal species in the park.**	# Measures Implemented	C	**$6,000**
Action 1	Implement exotic animal removal control measures for lionfish, giant ameiva, black rats, green	# Species Removed	C	$6,000

* 2015 Dollars
ST = actions within 2 years
LT = actions within 10 years
C = long term or short term actions that are continuous or cyclical
UFN = currently unfunded need

Table 7
Long Key State Park Ten-Year Implementation Schedule and Cost
Estimates Sheet 3 of 4

NOTE: THE DIVISION'S ABILITY TO COMPLETE THE OBJECTIVES OUTLINED BY THE MANAGEMENT PLAN IS CONTINGENT ON THE AVAILABILITY OF FUNDING AND OTHER RESOURCES FOR THESE PURPOSES.				
Goal VI: Protect, preserve, and maintain the cultural resources of the park.		**Measure**	**Planning Period**	**Estimated Manpower and Expense Cost* (10-years)**
Objective	**Assess and evaluate 1 of 4 recorded cultural resources in the park.**	# Evaluations complete	ST	**$5,000**
Action 1	Complete one evaluation of an archeological site.	# Evaluations complete	ST	$5,000
Objective	**Compile reliable documentation for all recorded historic and archaeological resources.**	Documentation complete	LT	**$5,000**
Action 1	Ensure all known sites are recorded or updated in the Florida Master Site File.	# of sites recorded	LT	$5,000
Goal VII: Provide public access and recreational opportunities in the park.		**Measure**	**Planning Period**	**Estimated Manpower and Expense Cost* (10-years)**
Objective	**Maintain the park's current recreational carrying capacity of 1592 users per day.**	# Recreation/visitor opportunities per day	C	**$1,520,000**
Objective	**Expand the park's recreational carrying capacity by 144 users per day.**	# Recreation/visitor opportunities per day	LT	**$140,000**
Objective	**Document and continue to provide the current repertoire of 8 interpretive, educational and recreational programs on a regular basis.**	# Interpretive/education programs	C	**$40,000**
Objective	**Develop two new interpretive, educational and recreational programs.**	# Interpretive/education	LT	**$14,000**

* 2015 Dollars
ST = actions within 2 years
LT = actions within 10 years
C = long term or short term actions that are continuous or cyclical
UFN = currently unfunded need

Table 7
Long Key State Park Ten-Year Implementation Schedule and Cost
Estimates Sheet 4 of 4

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

Goal VIII: Develop and maintain the capital facilities and infrastructure necessary to meet the goals and objectives of this management plan.		Measure	Planning Period	Estimated Manpower and Expense Cost* (10-years)
Objective	Maintain all public and support facilities in the park.	Facilities maintained	C	$2,740,000
Objective	Continue to implement the park's transition plan to ensure facilities are accessible in accordance with the American with Disabilities Act of 1990.	Plan implemented	LT	$1,800,000
Objective	Improve and/or repair 5 existing facilities.	# Facilities	LT	$3,360,000
Objective	Expand maintenance activities as existing facilities are improved and new facilities are developed.	Facilities maintained	C	$250,000

Summary of Estimated Costs		
Management Categories		Total Estimated Manpower and Expense Cost* (10-years)
Resource Management		$497,250
Administration and Support		$670,000
Capital Improvements		$6,970,000
Recreation Visitor Services		$1,534,000
Law Enforcement Activities	Note: Law enforcement activities in Florida State Parks are conducted by the FWC Division of Law Enforcement and by local law enforcement agencies.	

* 2015 Dollars
ST = actions within 2 years
LT = actions within 10 years
C = long term or short term actions that are continuous or cyclical
UFN = currently unfunded need

Addendum 1—Acquisition History

Long Key State Park Acquisition History

LAND ACQUISITION HISTORY REPORT	
Park Name	Long Key State Park
Date Updated	10/1/2015
County	Monroe
Trustees Lease Number	3672 (original lease, Lease No. 2324)
Current Park Size	983.65 acres
Purpose of Acquisition	This property was initially acquired for fishing, camping, and other recreational purposes.

Acquisition History

Parcel Name or Parcel DM-ID	Date Acquired	Initial Seller	Initial Purchaser	Size in acres	Instrument Type
MDID 2885	6/8/1973	Sidarlen Development Corporation	State of Florida, Trustees of the Internal Improvement Trust Fund	386	Warranty Deed
MDID 2891	6/14/1973	Harold P. Kravitz, individually and as Trutee, joined by his wife, Betty Kravitz	State of Florida, Trustees of the Internal Improvement Trust Fund	171.43	Warranty Deed
MDID 2892	1/16/1970	Monroe County, Florida	The Florida Board of Parks and Historic Memorials	153.74	Deed
MDID 2888	6/14/1973	Thomas A. Curtis and his wife Augustina Curtis	State of Florida, Trustees of the Internal Improvement Trust Fund	57.59	Indenture
MDID 2887	5/10/1973	Inga Risteigen	State of Florida, Trustees of the Internal Improvement Trust Fund	Same area as above (just partial interest	Warranty Deed
MDID 366054 (This is also the initial purchase)	9/21/1961	Monroe County, Florida	State of Florida for the use and benefit of the Florida Board of Parks and Historic Memorials	56.77	Deed

Management Lease

Parcel Name or Lease Number	Date Leased	Initial Lessor	Initial Lessee	Current Term	Expiration Date
Original lease, Lease No. 2324	1/23/1968	State of Florida, Trustees of the Internal Improvement Trust Fund	The Florida Board of Parks and Historic Memorials	99	1/22/2067

Outstanding Issue	Type of Instrument	Brief Description of the Outstanding Issue	Term of the Outstanding Issue
Reverter	Deed	*If the subject property is not used for the intended purposes, lessee's title and other interests in the property shall revert back to Monroe County.*	Perpetuity

Addendum 2—Advisory Group Members and Report

Elected Officials

The Honorable Norman Anderson
Mayor
City of Layton

The Honorable Mark Senmartin, Mayor
City of Marathon

The Honorable Heather Carruthers
Mayor
Monroe County Board of County Commissioners

Agency Representatives

Mark Duncan, Park Manager
Long Key State Park

Kenneth Troisi, Park Manager
Curry Hammock State Park

Eric Kiefer, Park Manager
Bahia Honda State Park

Cooper McMillan, Chairman
South Dade Soil and Water Conservation District

Mark Torok, County Forester
Florida Forest Service

Jeanette Parker, Regional Biologist
Florida Fish and Wildlife Commission

Capt. David Dipre, Regional Commander
Florida Fish and Wildlife Commission

Rebecca Jetton, Administrator
Florida Keys Area of Critical State Concern

Sean Morton, Superintendent
Florida Keys National Marine Sanctuary

Tourism/Economic Development Representative

Harold Wheeler, Director
Monroe County Tourism Development Council

Environmental Representatives

Dr. Jerry Lorenz, Director
Audubon of Florida Everglades Science Center

Chris Bergh, Director
Nature Conservancy Coastal and Marine Resilience

Rita Irwin, President
Dolphin Research Center

Recreational Representatives

Rafael Gálvez, Coordinator
Florida Keys Hawkwatch

Jay Elliot, Coordinator
Florida Keys Astronomy Club

Duane Baker, Commodore
Florida Keys Fishing Guides Association

Cultural Resource Representative

Barbara Edgar, President
Matecumbe Historical Trust

Local Private Property Owners

John Fusco, Local Property Owner
Long Key State Park

John Morris, Local Property Owner
Curry Hammock State Park

Doug Sposito, Local Property Owner
Bahia Honda State Park

Citizen Support Organizations

Diane Rullen, Director
Friends of Bahia Honda State Park

Citizen Support Organizations Cont.

Karen Sunderland, President
Friends of the Islamorada Area State Parks

The Advisory Group meeting to review the proposed unit management plan (UMP) for Long Key, Curry Hammock, and Bahia Honda State Parks was held in the city of Marathon in the Marathon Government Center on Friday, June 10, 2016 at 9:00 AM.

Skip Haring represented the City of Layton. Chuck Kean represented John Morris, a local property owner. Vicki Weagley represented the Friends of Bahia Honda State Park. Katherine Becker represented Dr. Jerry Lorenz. Beth Dieveney represented the Florida Keys National Marine Sanctuary. Heather Carruthers, Cooper McMillan, Capt. David Dipre, Rita Irwin, Rafael Gálvez, Duane Baker, and Harold Wheeler were not in attendance. All other appointed Advisory Group members were present.

Attending Division of Recreation and Parks (DRP) staff members were Janice Duquesnel, Kenneth Troisi, Mark Duncan, Meredith Kruse, Eric Kiefer, Martha Robinson, and Eric Pate.

Mr. Pate began the meeting by explaining the purpose of the Advisory Group and reviewing the meeting agenda. He provided a brief review of comments received the previous evening and an overview of the DRP's planning process. Mr. Pate then asked each member of the Advisory Group to express his or her comments on the draft plan. After all comments were shared, Mr. Pate described the next steps for drafting the plan and the meeting was adjourned.

Summary of Advisory Group Comments

Beth Dieveney (Representing Sean Morton with the Florida Keys National Marine Sanctuary) expressed that the time given to Advisory Group members to review the draft Unit Management Plans limited the ability of Advisory Group members to adequately review and address the plans at the meeting. Ms. Dieveney explained the management philosophy shared by the Florida Keys National Marine Sanctuary (FKNMS) managers, the prioritization of natural resource management while allowing for human access through recreational opportunities, and acknowledged the difference in management philosophies with the DRP, seeking an appropriate balance between resource protection and the provision of recreational opportunities. She then stressed the need for additional consideration of the impacts of sea level rise to be incorporated into the planning process for state parks in the Florida Keys. Ms. Dieveney stated that the FKNMS enjoys a great working relationship with the DRP and hopes to continue this relationship into the future. She also asked about the potential for collaboration with the U.S. Fish and Wildlife Service with prescribed burning efforts at Curry Hammock State Park.

Caitlin Lustic (Representing Chris Bergh with The Nature Conservancy) highlighted the extensive working relationship between The Nature Conservancy (TNC) and the DRP. Ms. Lustic brought to the attention of the Advisory Group her concern with the level of attention given to high-profile invasive plants through current resource management efforts and the lack of attention given to lower-profile invasive plants. Ms. Lustic cautioned the DRP to not focus solely on high-profile invasive plants at

the expense of expending sufficient resources to control the spread of low-profile invasive plants.

Jay Elliot (Florida Keys Astronomy Club) emphasized the importance of acting to minimize the effects of light pollution whenever possible. Mr. Elliot identified the relatively low amount of light-pollution compared to the mainland as an important characteristic of the Florida Keys. He then elaborated on the economic benefits of efforts to reduce light pollution derived from the associated sustainable revenue generated from ecotourism. Mr. Elliot stressed the importance of aesthetic decisions when installing lighting on support facilities in state parks, he noted that harsh, bright lights can significantly increase light pollution and can often be easily addressed.

Rebecca Jetton (Florida Department of Economic Opportunity Florida Keys Area of Critical State Concern) referenced her extensive experience with conservation lands management throughout Monroe County. Ms. Jetton emphasized the need to work collaboratively to effectively control the alarming increase in the iguana population in the Florida Keys. She then noted that the DRP would face the same land use and development regulations that private developers work under in Monroe County, in particular working within the Rate-of-Growth Ordinance (ROGO) process. She did mention that DRP would be able to apply for affordable housing allowances. Ms. Jetton then stressed the importance of evacuation procedures and then inquired about how the DRP addresses the evacuation of overnight visitors and staff in the case of tropical storm events. She then inquired into how each park dealt with sewage. Ms. Jetton emphasized the negative impact of invasive animal species, such as iguanas and the Gambian pouched rat, and encouraged DRP staff to adequately address the issue.

Chuck Kean (Representing Local Property Owner, John Morris) acknowledged his role on the Advisory Group and stated that he didn't have comments but meant to observe the Group's discussion.

Mayor Mark Senmartin (Mayor of Marathon, FL) concurred with the comments and concerns brought by Rebecca Jetton. He went on to explain that the City of Marathon shares many concerns with Monroe County and have worked to responsibly manage development pressures through similar land use regulations. Mayor Senmartin brought attention to land administration issues that could potentially involve the expansion of the optimum boundary for Curry Hammock State Park. Mayor Senmartin also took the opportunity to bring up the possibility of an organized iguana "round-up" similar to efforts meant to control the spread of lionfish. He went on to inquire as to how state parks in Monroe County control the iguana population and identified the need to work collaboratively across municipal and county boundaries, and conservation lands in order to adequately address the spread of invasive animal species. Ms. Duquesnel commented on the proposed

iguana “round-up” by stating that efforts should incorporate public education programs to inform residents of proper methods of exterminating iguanas, in a manner that does not harm natural communities in the process.

Mark Torok (Florida Forest Service) offered assistance to the DRP to conduct prescribed burning at Curry Hammock State Park. Mr. Torok then inquired into the processes followed when working to control and eradicate invasive species by park staff. Mr. Torok also mentioned the state champion tree program and inquired into whether or not the parks could be eligible to collaborate in order to showcase important specimens.

Doug Sposito (Local Property Owner near Bahia Honda State Park) stated he believed that current natural resource management efforts were not accommodating to the large number of visitors to the parks. He expressed confusion over why park staff would seek to remove plants that are considered exotic on certain keys when they are considered native on other keys, such as lignumvitae at Bahia Honda State Park. In addition, Mr. Sposito noted that many visitors to the Florida Keys expect certain types of trees, such as coconut palms, and believed that the DRP should not remove these trees in order to accommodate visitor preferences. Ms. Duquesnel stressed the importance of acknowledging the historic role of island biogeography throughout the Florida Keys and the need for its incorporation into the natural resource management philosophy of conservation lands managers. Ms. Duquesnel also mentioned that efforts to manage natural resources are developed with political realities in mind. As an example, she stated that DRP staff did not intend to remove coconut palms in a beach day use area unless they posed a hazard to park visitors.

John Fusco (Local Property Owner near Long Key State Park) acknowledged his role on the Advisory Group as a representative local property owner in the City of Layton and deferred comments to the City of Layton representative, Skip Haring.

Skip Haring (Representing Mayor Norman Anderson of the City of Layton) acknowledged that he has been working with DRP staff regarding the Unit Management Plan updates over the past several months and thanked DRP staff for their work on the plans. Mr. Haring went on to mention that the City of Layton and the DRP will remain in conversation about the potential for the City of Layton to annex Long Key State Park. Mr. Haring also brought up the importance of public education on negative human impacts to the environment, as an example he mentioned the role that Long Key State Park played in educating residents of Layton on responsible mosquito population management.

Katharine Becker (Representing Dr. Jerry Lorenz with Audubon of Florida Everglades Science Center) stated that she has been studying conditions of the Florida Bay ecosystem and was pleased to see that the Seagrass Bed natural

community at Bahia Honda State Park was considered in good condition. Ms. Becker also brought up the issue of crowding on the deck of the Curry Hammock State Park campground restroom when utilized by the Florida Keys Hawkwatch.

Vicki Weagley (Representing Diane Rullan with Friends of Bahia Honda State Park) mentioned that she was thankful for the opportunity to be included in the Advisory Group for the updates to the unit management plans and expressed support for the proposed improvements included in the draft plans.

Barbara Edgar (Matecumbe Historical Trust) expressed that she agreed with comments made by Mr. Doug Sposito regarding opposition to the removal of certain species of exotic plants that visitors to Monroe County expect to find in a tropical setting, specifically the coconut palm. Ms. Edgar also commented that she did not have enough time to review the draft unit management plans. In addition, Ms. Edgar asked if DRP staff considers the timing on prescribed burns with bird migration patterns.

Karen Sunderland (Friends of Islamorada Area State Parks) took the opportunity to state her support for the draft unit management plans and, in particular, maintaining a focus on the preservation of natural communities and current resource management efforts. Ms. Sunderland cautioned the Advisory Group members that efforts to remove iguanas may prove to be politically sensitive because some area residents view them favorably. She also inquired into the relationship between DRP staff and the FDOT as it relates to landscaping in the U.S. right-of-way and working to exclude the introduction of exotic plant species. In response to Ms. Sunderland's question regarding the working relationship between DRP and FDOT when landscaping in the U.S. 1 right-of-way, Ms. Duquesnel mentioned that she has consulted with FDOT staff in regards to avoiding the introduction of exotic plant species and hopes to continue the relationship.

Kenneth Troisi (Park Manager, Curry Hammock State Park) acknowledged the role that efforts to facilitate the evacuation of overnight visitors play in the provision of overnight camping facilities in Monroe County. In regard to iguana population control, Mr. Troisi mentioned that proper disposal of iguanas once caught is necessary; he went on to state that he has taken iguanas to the Wild Bird Center. He expressed support for efforts to reduce the impacts of light pollution and for acting to accommodate the Florida Keys Hawkwatch group that utilizes the park. In regards to the removal of certain exotic plants, in particular the coconut palms, Mr. Troisi stated that there are no plans to remove the trees from the beach/day use areas that are heavily visited, but does intend to act to remove exotic plants from the protected areas of the park that see less visitor use. When conducting prescribed burning at the park, Mr. Troisi say they will consider all impacts the fire may have on the surrounding environment, including potential impacts to bird migration.

Mark Duncan (Park Manager, Long Key State Park) stressed that DRP staff and park visitors are required to evacuate during Phase 1 evacuations or when called to by District 5 administration, whichever comes first. Mr. Duncan emphasized that the DRP does what it can to not increase evacuation times along U.S. 1. Mr. Duncan also mentioned the importance of public outreach and education about natural resource management throughout Monroe County.

Eric Kiefer (Park Manager, Bahia Honda State Park) referenced successful efforts of DRP staff to control the spread of iguanas in state parks when adding on to Mayor Senmartin's suggestion of a possible iguana "round-up." Mr. Kiefer also explained that he considers acting to reduce the impacts of light pollution an important task. In addition, he elaborated on the discussion surrounding the removal of exotic species, in particular the coconut palm, stating that coconut palms will remain in the beach areas and other day use area unless they pose a threat to visitor safety.

Staff Recommendations

Suggestions received from the Advisory Group meeting resulted in the following modifications to the draft management plan:

- DRP staff will act to reduce the impacts of light pollution on park facilities.
- In order to appropriately manage the park's natural communities, efforts to remove exotic plants, including the coconut palm, will continue in the protected areas of the parks away from heavy visitor use. Coconut palm trees in heavy use areas such as beaches or picnic areas may be kept unless the tree poses a risk to visitor safety or is diseased.
- Language will be incorporated to highlight the issue of Island Biogeography and its role in natural resource management in state parks.

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

Notes on Composition of the Advisory Group

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

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

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

Addendum 3—References Cited

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Addendum 4—Soil Descriptions

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

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

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

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

(3) 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 o decomposition. Slopes are 0 to 1 percent. The taxonomic class is Euic, isohyperthemric 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 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 Pennekamp soils in the higher positions 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 woodland wildlife. 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 palms, 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 and sanitary facilities.

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

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

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

Soils that are associated with the Tavernier soil are the very poorly drained, organic Islamorada and Keylargo soils in landscape positions similar to those of the

Tavernier soil; the poorly drained, marly Cudjoe, Lignumvitae, and Keywest soils in the slightly higher positions on the landscape; and the moderately well drained, organic Matecumbe soils and somewhat poorly drained, marly Saddlebunch soils in the significantly higher positions on the landscape.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

(7) Udorthents, Urban land complex - This map unit is 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 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.

(8) Rock outcrop-Cudjoe complex, tidal - The Cudjoe series consists of poorly drained soils that are shallow to rippable coral or oolitic limestone bedrock. The depth to bedrock is 3 to 20 inches. These soils formed in calcareous marl. The taxonomic class in Loamy, carbonatic, isohyperthermic, shallow Tropic Fluvaquents.

This map unit is in mangrove swamps throughout the keys. Individual areas are frequently flooded by tides. Elevations are 0 to 1 foot above sea level, according to National Geodetic Vertical Datum of 1929. The mean annual temperature ranges from 75 to 78 degrees F, and the mean annual precipitation ranges from 40 to 50 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 Cudjoe soil is dominant in about 40 percent of 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 Cudjoe soil are the well drained, mineral Keyvaca and Pennekamp soils, moderately well drained, organic Matecumbe soils, and somewhat poorly drained, marly Saddlebunch soils in the higher positions on the landscape; the poorly drained marly Keywest and Lignumvitae soils in the landscape positions similar to those of the Cudjoe soil; and the very poorly drained, organic Islamorada, Keylargo, and Tavernier soils in the lower positions on the landscape.

The Cudjoe soil is poorly drained. The season high water table is within a depth of 6 inches during the wet periods of most years. Permeability is moderate or moderately rapid.

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

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

(16) Bahiahonda fine sand, 0 to 3 percent slopes - The Bahiahonda series consists of moderately well drained soils that are deep to rippable coral limestone bedrock. The depth to bedrock is 60 to 90 inches. These soils formed in sandy marine material and shells overlying the limestone bedrock. They are uplands. Slopes range from 0 to 3 percent. The taxonomic class is Isohyperthermic, uncoated Aquic Quartzipsamments.

The soil is on coastal strands and topical hammocks in the uplands on Bahia Honda Key and Long Key. Individual areas are subject to rare flooding from hurricanes and other tropical storms. Elevations are dominantly 4 to 7 feet above sea level, according to National Geodetic Vertical Datum of 1929.

The Bahiahonda soil is dominant in this map unit. Soils in areas on Long Key are wetter than the Bahiahonda soil and have slightly more limitations. They have a high water table at a depth of 1.5 to 2.5 feet. Areas that have different uses and interpretations are rare and generally are adjacent to the boundaries of this map unit.

Soils that are associated with the Bahiahonda soil are moderately well drained, organic Matecumbe soils in landscape positions similar to those of the Bahiahonda soil; the poorly drained, marly Cudjoe soils in the slightly lower positions on the landscape; and the very poorly drained, organic Islamorada and Keylargo soils and Beaches in the significantly lower position on the landscape.

The Bahiahonda soil is moderately well drained. It has a seasonal high water table at a depth of 2.5 to 3.5 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 woodland wildlife. A few areas have been developed for recreation use. Some areas support invader, or exotic species.

These invader species are dominantly Australian pine. Characteristic vegetation for the soils in this survey include; poisonwood, crabwood, wild tamarind, gumbo limbo, stopper, and Buccaneer palm.

The wetness, the flooding, and seepage are severe limitations affecting most uses of this soil, including most kinds of building site and recreation development and sanitary facilities.

(18) Beaches - This map unit consists of barren areas adjacent to the Atlantic Ocean on the lower keys. Individual areas are subject to shallow flooding by tides and to deep flooding from hurricanes and other tropical storms. Elevations are at or near sea level, according to National Geodetic Vertical Datum of 1929.

The Beaches are miscellaneous areas that have been reworked by the tides. They commonly consist of about 16 inches of sand underlain by about 44 inches of fine sand. The fine sand is underlain by muck and other soil or nonsoil material at a depth of about 60 inches. The width and shape of the Beaches can change during each major storm.

The Beaches are adjacent to Bahiahonda soils. They are also adjacent to Urban land and water. The Bahiahonda soils and the Urban land are in the higher positions on the landscape.

This map unit is poorly drained. It has a seasonal high water table at the surface. Permeability is rapid or very rapid. Most areas of this map unit are not vegetated. The Beaches are used for recreational activities, such as sunbathing and fishing, and as access areas for swimming and wading.

Because of the unique location of the Beaches and their value for recreational activities, other uses are not practical and interpretations have not been provided.

Addendum 5—Plant and Animal List

Long Key State Park Plants

Common Name	*Scientific Name*	Primary Habitat Codes (for imperiled species)
PTERIDOPHYTES		
Giant leather fern	*Acrostichum danaeifolium*	
Golden polypody	*Phlebodium aureum*	
MONOCOTS		
False sisal	*Agave decipiens*	
Sisal hemp	*Agave sisalana* *	
Bushy bluestem	*Andropogon glomeratus var. pumilus*	
Pitted bluestem	*Bothriochloa pertusa* *	
Southern sandbur	*Cenchrus echinatus*	
Coastal sandbur	*Cenchrus incertus*	
Coconut palm	*Cocos nucifera* *	
Bermuda grass	*Cynodon dactylon* *	
Umbrella sedge	*Cyperus croceus*	
Royal flatsedge	*Cyperus elegans*	
Limestone flatsedge	*Cyperus fuligineus*	
False saw grass	*Cyperus ligularis*	
Umbrella sedge	*Cyperus planifolius*	
Pinebarren flatsedge	*Cyperus retrorsus*	
Tropical flatsedge	*Cyperus surinamensis* *	
Egyptian grass	*Dactyloctenium aegyptium* *	
Southern crabgrass	*Digitaria ciliaris*	
Saltgrass	*Distichlis spicata*	
Red-edged Dracaena	*Dracaena marginata* *	
Goosegrass	*Eleusine indica* *	
Butterfly orchid	*Encyclia tampensis*	
Pothos	*Epipremnum pinnatum* *	
Feather lovegrass	*Eragrostis amabilis* *	
Gophertail lovegrass	*Eragrostis ciliaris* *	
Dominican lovegrass	*Eragrostis prolifera* *	
Finger grass	*Eustachys petraea*	
Hurricane grass	*Fimbristylis cymosa* *	
Chestnut sedge	*Fimbristylis spadicea*	
Night-blooming cereus	*Hylocereus undatus* *	
Spider lily	*Hymenocallis latifolia*	
Wild bamboo	*Lasiacis divaricate*	
Green sprangle top	*Leptochloa dubia*	
Key grass	*Monanthochloe littoralis*	
Ground orchid	*Oeceoclades maculata* *	
Beach grass	*Panicum amarum*	
Guinea grass	*Panicum maximum* *	
Coral panicum	*Paspalidium chapmanii**	
Salt joint grass	*Paspalum setaceum*	
Salt joint grass	*Paspalum vaginatum*	
Sargent's cherry palm	*Pseudophoenix sargentii*	RH, CB
Cabbage palm	*Sabal palmetto*	

* Non-native Species

Long Key State Park Plants

Common Name	*Scientific Name*	Primary Habitat Codes (for imperiled species)
Bowstring hemp	*Sansevieria hyacinthoides* *	
Foxtail grass	*Setaria macrosperma*	
Saltmeadow cordgrass	*Spartina patens*	
Prickly cordgrass	*Spartina spartinae*	
Coral dropseed grass	*Sporobolus domingensis*	
West Indian dropseed	*Sporobolus indicus var. pyramidalis* *	
Whorled dropseed	*Sporobolus pyramidatus*	
Coastal dropseed	*Sporobolus virginicus*	
St. Augustine grass	*Stenotaphrum secundatum* *	
Arrowhead vine	*Syngonium podophyllum* *	
Key thatch palm	*Thrinax morrisii*	RH
Florida thatch palm	*Thrinax radiata*	RH
Stiff leaved wild pine	*Tillandsia fasciculata var. densispica*	
Twisted air plant	*Tillandsia flexousa*	
Silvery wild pine	*Tillandsia paucifolia*	
Spanish moss	*Tillandsia usneoides*	
Giant wild pine	*Tillandsia utriculata*	
Oyster plant	*Tradescantia spathacea* *	
Cattail	*Typha domingensis*	
Sea oats	*Uniola paniculata*	
Dominican panicum	*Urochloa adspersa*	
Washington palm	*Washingontonia robusta* *	
Spanish bayonet	*Yucca aloifolia*	
Spineless yucca	*Yucca guatemalensis* *	
	DICOTS	
Indian mallow	*Abutilon permolle*	
Cinnecord (cultivated)	*Acacia choriophylla*	
Sweet acacia	*Acacia farnesiana*	
Barbed wire cactus	*Acanthocereus tetragonus*	
False foxglove	*Agalinis maritime*	
Chaff flower	*Alternanthera flavescens*	
Notch-leaved amaranth	*Amaranthus blitum* *	
Spiny amaranth	*Amaranthus spinosus* *	
Toothcups	*Ammannia latifolia*	
Torchwood	*Amyris elemifera*	
Sea lavender	*Argusia gnaphalodes*	BD
Blodgett's silverbush	*Argythmnia blodgettii*	CL, RH
Sand atriplex	*Atriplex cristata*	
Black mangrove	*Avicennia germinans*	
Salt bush	*Baccharis halimifolia*	
Water hyssop	*Bacopa monnieri*	
Saltwort	*Batis maritime*	
Spanish needle	*Bidens alba* var. *radiate*	
Green shrimp plant	*Blechum pyramidatum* *	

* Non-native Species

Long Key State Park Plants

Common Name	*Scientific Name*	Primary Habitat Codes (for imperiled species)
Samphire	*Blutaparon vermiculare*	
Red spiderling	*Boerhavia diffusa*	
Sea ox-eye daisy	*Borrichia arborescens*	
Sea oxeye	*Borrichia frutescens*	
Bahama strongbark	*Bourreria succulent*	
Gumbo limbo	*Bursera simaruba*	
Gray nickerbean	*Caesalpinia bonduc*	
Southern sea rocket	*Cakile lanceolata*	
Mastwood	*Calophyllum antillanum* *	
Bay-bean	*Canavalia rosea*	
Jamaica caper	*Capparis cynophallophora*	
Limber caper	*Capparis flexuosa*	
Goatweed	*Capraria biflora*	
Papaya	*Carica papaya*	
Natal plum	*Carissa macrocarpa* *	
Love vine	*Cassytha filiformis*	
Australian pine	*Casuarina equisetifolia* *	
Madagascar periwinkle	*Catharanthus roseus* *	
Blodgett's spurge	*Chamaesyce blodgettii*	
Garber's spurge	*Chamaesyce garberii*	CL, CB
Hairy spurge	*Chamaesyce hirta*	
Hyssopleaf sandmat	*Chamaesyce hyssopifolia*	
Seaside spurge	*Chamaesyce mesembryanthemifolia*	
Lamb's quarters	*Chenopodium ambrosioides* *	
Snowberry	*Chiococca alba*	
Fennel	*Chromolaena frustrate*	
Yellow hibiscus	*Cienfuegosia yucatanensis*	KTRB
Fiddlewood	*Citharexylum spinosum*	
Pigeon plum	*Coccoloba diversifolia*	
Seagrape	*Coccoloba uvifera*	
Coffee colubrine	*Colubrina arborescens*	
Latherleaf	*Colubrina asiatica* *	
Day flower	*Commelina erecta*	
Buttonwood	*Conocarpus erecta*	
Cordia	*Cordia globose*	
Geiger tree	*Cordia sebestena*	
Rhacoma	*Crossopetalum rhacoma*	RH, CB
Fragrant milkweed	*Cynanchum northropiae*	
Leafless cynanchum	*Cynanchum scoparium*	
Royal poinciana	*Delonix regia* *	
Virgate mimosa	*Desmanthus virgatus*	
Beggerweed	*Desmodium incanum*	
False-mint	*Dicliptera sexangularis*	
Milkbark	*Drypetes diversifolia*	RH
Guiana plum	*Dyrpetes laterfilora*	
False daisy	*Eclipta prostrata* *	

* Non-native Species

Long Key State Park Plants

Common Name	*Scientific Name*	Primary Habitat Codes (for imperiled species)
Tasselflower	*Emilia fosbergii* *	
Black torch	*Erithalis fruticosa*	
Beach creeper	*Ernodea littoralis*	
White stopper	*Eugenia axillaris*	
Spanish stopper	*Eugenia foetida*	
Grassleaf spurge	*Euphorbia graminea* *	
Seaside gentian	*Eustoma exaltatum*	
Creeping morning glory	*Evolvulus alsinoides*	
Creeping morning glory	*Evolvulus convolvuloides*	
Inkwood	*Exothea paniculata*	
Weeping fig	*Ficus benjamina* *	
Shortleaf fig	*Ficus citrifolia*	
India rubber tree	*Ficus elastica* *	
Yellow top	*Flaveria linearis*	
Stalkless yellow top	*Flaveria trinervia*	
Segregata	*Foresteria segregate*	
Milk pea	*Galactia striata*	
Milk pea	*Galactia volubilis*	
Seven year apple	*Genipa clusiifolia*	
Wild cotton	*Gossypium hirsutum*	RH, KTRB
Lignum vitae	*Guajacum sanctum*	RH
Blolly	*Guapira discolor*	
Crabwood	*Gymanthes lucida*	
Scorpion tail	*Heliotropium angiospermum*	
Seaside heliotrope	*Helioptropium curassavicum*	
Bladder mallow	*Herissantia crispa*	
Wild hibiscus	*Hibisucs poeppigii*	KTRB
March pennywort	*Hydrocotyle umbellate*	
Wild indigo	*Indigofera miniata var. florida*	
Florida Keys indigo	*Indigofera mucronata* var. *keyensis*	KTRB
Wild indigo	*Indigofera spicata* *	
Moon flower	*Ipomoea alba*	
Morning glory	*Ipomoea indica var. acuminate*	
Railroad vine	*Ipomoea pes-caprae ssp. Brasiliensis*	
Moonvine	*Ipomoea violaceae*	
Bloodleaf	*Iresine diffusa*	
Beach elder	*Iva imbricate*	
Sky blue morning glory	*Jacquemontia pentanthos*	KTRB
Joewood	*Jacquinia keyensis*	KTRB, CB
Black ironwood	*Krugiodendron ferreum*	
White mangrove	*Languncularia racemosa*	
Wild lantana	*Lantana involucrate*	
Peppergrass	*Lepidium virginicum*	
Lead tree	*Leucaena leucocephala* *	
Sea lavender	*Limonium carolinianum*	
Christmas berry	*Lycium carolinianum*	

* Non-native Species

Long Key State Park Plants

Common Name	*Scientific Name*	Primary Habitat Codes (for imperiled species)
Wild tamarind (cultivated)	*Lysiloma latisiliquum*	
Wild dilly	*Manilkara jaimiqui subsp. emarginata*	KTRB
Sapodilla	*Manilkara zapota* *	
Mayten	*Maytenus phyllanthoides*	
Marsh elder	*Melanthera nivea*	
Poor man's patch	*Mentzelia floridana*	
Poisonwood	*Metopium toxiferum*	
Indian mulberry	*Morinda citrifolia* *	
Cheeseweed	*Morinda royoc*	
Sensitive plant	*Neptunia pubescens*	
Lady's sorrel	*Oxalis corniculata*	
Prickly-pear cactus	*Opuntia stricta*	
Jumping cactus	*Opuntia triacantha*	KTRB
Pellitory	*Parietaria floridana*	
Corky stemmed passionflower	*Passiflora suberosa*	
Wild allamanda	*Pentalinon luteum*	
Creeping Charlie	*Phyla nodiflora*	
Rock Carolina leaf flower	*Phyllanthus caroliniensis var. saxicola*	
Mascarene island leafflower	*Phyllanthus tenellus* *	
Ground cherries	*Physalis walteri*	
Key tree cactus	*Pilosocereus robinii*	RH
Jamaica dogwood	*Piscidia piscipula*	
Cockspur	*Pisonia aculeate*	
Blackbead	*Pithecellobium keyense*	
Cat's claw	*Pithecellobium unguis-cati*	
Marsh fleabane	*Pluchea odorata*	
Wild poinsettia	*Poinsettia cyathophora*	
Wild poinsettia	*Poinsettia heterophylla*	
Rustweed	*Polypremum procumbens*	
Purslane	*Portulaca oleracea*	
Purslane	*Portulaca rubricaulis*	
Wild coffee	*Psychotria nervosa*	
White indigo berry	*Randia aculeate*	
Darling plum	*Reynosia septentrionalis*	
Mangrove rubber vine	*Rhabdadenia biflora*	
Red mangrove	*Rhizophora mangle*	
Least snoutbean	*Rhynchosia minima*	
Rougeberry	*Rivina humilis*	
Britton's wild petunia	*Reullia brittoniana* *	
Annual glasswort	*Salicornia bigelovii*	
Woody glasswort	*Salicornia perennis*	
Soapberry	*Sapindus saponaria*	
Milkweed vine	*Sarcostemma clausum*	
Inkberry	*Scaevola plumieri*	BD
Beach naupaka	*Scaevola taccada* *	

* Non-native Species

Long Key State Park Plants

Common Name	*Scientific Name*	Primary Habitat Codes (for imperiled species)
Florida boxwood	*Schaefferia fruitescens*	RH
Brazilian pepper	*Schinus terinthifolius* *	
Gulf graytwig	*Schoepfia chrysophylloides*	
Bahama senna	*Senna mexicana var. chapmanii*	
Dangle pod	*Sesbania herbacea* *	
Sea purslane	*Sesuvium portulacastrum*	
Spreading fan petals	*Sida abutifolia*	
Broomweed	*Sida acuta*	
Fringed fanpetals	*Sida ciliaris*	
Indian hemp	*Sida rhombifolia*	
Saffron plum	*Sideroxylon celastrinum*	
Mastic	*Sideroxylon foetidissimum*	
Greenbriar	*Smilax havanensis*	
American black nightshade	*Solanum americanum*	
Bahama nightshade	*Solanum bahamense*	
Necklace pod	*Sophora tomentosa var. occidentalis* *	
Necklace pod	*Sophora tomentosa var. truncate*	
Florida false buttonweed	*Spermacoce floridana*	
Blue porterweed	*Stachytarpheta jamaicensis*	
Pencil flower	*Stylosanthes hamate*	
Sea blite	*Suada linearis*	
Bay cedar	*Suriana maritime*	
West Indian mahogany (cultivated)	*Swietenia mahagoni*	DV
Mahoe	*Talipariti tiliaceum* *	
Yellow elder	*Tecoma stans* *	
Portia	*Thespesia populnea* *	
Soldier bush	*Tournefortia volubilis*	
Desert horsepurslane	*Trianthema portulacastrum*	
Puncture weed	*Tribulus cistoides* *	
Mexican daisy	*Tridax procumbens* *	
Yellow alder	*Turnera ulmifolia* *	
Waltheria	*Waltheria indica*	
Hog plum	*Ximenia americana*	
Wild lime	*Zanthoxylum fagara*	

MARINE PLANTS

	Acanthophora spicifera
	Acetablularia calyculus
	Avrainvillea nigricans
	Avrainvillea longicaulis
	Batophora oerstedii
	Caulerpa sertularioides
	Caulerpa Mexicana
	Chondria sp.
	Dasycladus vermicularis

* Non-native Species

Long Key State Park Plants

Common Name	*Scientific Name*	Primary Habitat Codes (for imperiled species)
	Dictyota sp.	
	Dictyosphaeria cavernosa	
	Digenia simplex	
	Gracilaria sp.	
	Halimeda incrassate	
	Halimeda monile	
	Halimeda opuntia	
	Halodule wrightii	
	Laurencia sp.	
	Neogoniolithon strictum	
	Padina gymnospora	
	Padina sanctae-crucis	
	Penicillus capitatus	
	Penicillus dumetosus	
	Rhipocephalus phoenix	
	Sargassum fluitans	
	Sargassum natans	
	Syringodium filiforme	
	Thalassia testudinum	
	Udotea flabellum	
	Ulva fasciata	

* Non-native Species

Long Key State Park Animals

Common Name	*Scientific Name*	Primary Habitat Codes (for imperiled species)
SPONGES		
Brown sponge	*Anthosigmella varians*	MCNS,MUS,MSGB,MCPS
Rope sponge	*Amphimedon sp.*	MCNS,MUS,MSGB,MCPS
Chickenliver sponge	*Chondrilla nucula*	MCNS,MUSMSGB,MCPS
Orange sponge	*Cinachyra sp.*	MCNS,MUS,MSGB,MCPS
White sponge	*Geodia gibberosa*	MCNS,MUS,MSGB,MCPS
Red sponge	*Haliclona rubens*	MCNS,MUS,MSGB,MCPS
Green sponge	*Haliclona viridis*	MCNS,MUS,MSGB,MCPS
Vase sponge	*Ircinia campana.*	MCNS,MUS,MSGB,MCPS
Loggerhead sponge	*Spheciospongia vesparium.*	MCNS,MUS,MSGB,MCPS
Fire sponge	*Tedania ignis*	MCNS,MUS,MSGB,MCPS
HYDROZOANS		
Portuguese man-of-war	*Physalia physalis*	MTC
By-the-wind sailor	*Velella velella*	MTC
JELLYFISH		
Moon jellyfish	*Aurelia aurita*	MTC
Upside-down jellyfish	*Cassiopeia xamachana*	MSGB,MUS
CNIDARIANS		
Giant anemone	*Condylactis gigantea*	MSGB,MCPS
CORALS		
Ivory tube coral	*Cladocora arbuscula*	MSGB,MCPS,MCNS
Golfball coral	*Favia fragum*	MSGB,MCPS,MCNS
Common rose coral	*Manicina areolata*	MSGB,MCPS,MCNS
Ivory bush coral	*Oculina diffusa*	MSGB,MCPS,MCNS
Finger coral	*Porites divercata.*	MSGB,MCPS,MCNS
Finger coral	*Porites porites*	MSGB,MCPS,MCNS
Small finger coral	*Porites furcata*	MSGB,MCPS,MCNS
Sea whip	*Pterogorgia sp.*	MSGB,MCPS,MCNS
Massive starlet coral	*Siderastrea siderea*	MSGB,MCPS,MCNS
Lesser starlet coral	*Siderastrea radians*	MSGB,MCPS,MCNS
CHITONS		
West Indian fuzzy chiton	*Acanthopleura granulata*	MCNS
GASTROPODS		
Spotted sea hare	*Aplysia dactylomela*	MSGB,MCPS,MCNS
Black horn snail	*Batillaria minima*	MCNS
Gray peanut-snail	*Cerion incanum*	KTRB
Cerith	*Cerithium litteratum*	MCNS
Multilined tree snail	*Drymaeus multilineatus*	RH
Rosy predator snail	*Euglandina rosea*	CB,RH
Tulip snail	*Fasciolaria tulipa*	MCNS,MUSMSGB,MCPS

* Non-native Species

Long Key State Park Animals

Common Name	*Scientific Name*	Primary Habitat Codes (for imperiled species)
Florida tree snail	*Liguus fasciatus*	CB, RH
Glowing marginella	*Marginella pruniosum*	MCNS,MUS,MSGB,MCPS
Coffeebean snail	*Melampus coffeus*	MSGB,MS
Bleedingtooth nerite	*Nerita peloronta*	MCNS
Checkered nerite	*Nerita tesselata*	MCNS
Caribbean reef squid	*Sepioteuthis sepioidea*	MCNS,MUS,MSGB,MCPS
Milk conch	*Strombus costatus*	MCNS,MUS,MSGB,MCPS
Queen conch	*Strombus gigas*	MCNS,MUS,MSGB,MCPS
Hawkwing conch	*Strombus raninus*	MCNS,MUS,MSGB,MCPS
Knobby periwinkle	*Tectarius muricatus*	MCNS,MUS,MSGB,MCPS
Cuban garden snail	*Zachrysia provisoria**	CL,DV,CB,RH
BIVALVES		
Tree-oyster	*Isognomon alatus*	MS
Purse-oyster	*Isognomon radiatus*	MS
Rough fileclam	*Lima scabra*	MCNS,MUS,MSGB,MCPS
Pen shell	*Pinna carnea*	MCNS,MUS,MSGB,MCPS
Sunrise telling	*Tellina radiata*	MCNS,MUS,MSGB,MCPS
SEGMENTED WORMS		
Southern lugworm	*Arenicola cristata*	MCNS,MUS,MSGB,MCPS
Bearded fireworm	*Hermodice carunculata*	MCNS,MUS,MSGB,MCPS
Medusa worm	*Loimia medusa*	MCNS,MUS,MSGB,MCPS
ARTHROPODS		
Yellow banded millipede	*Anadenobolus monilicornis*	CL,DV
Palmetto bug	*Eurycotis floridana*	CL,DV,RH,CB
American cockroach	*Periplaneta americana*	CL,DV,RH,CB
CRUSTACEANS		
Mangrove crab	*Aratus pisonii*	MS,KTRB
Ivory barnacle	*Balanus eburneus*	MS
Common blue crab	*Callinectes sapidus*	MCNS,MUS,MSGB,MCPS
Great land crab	*Cardisoma guanhumi*	CB,RH
Green-striped hermit crab	*Clibanarius vittatus*	MCNS,MUS,MSGB,MCPS
Common land hermit crab	*Coenobita clypeatus*	CB,RH
Mangrove crab	*Goniopsis cruentata*	MS,KTRB
Goose-neck barnacles	*Lepas anatifera*	MTC
Horseshoe crab	*Limulus polyphemus*	MCNS,MUS,MSGB,MCPS
Stone crab	*Menippe mercenaria*	MCNS,MUS,MSGB,MCPS
Ghost crab	*Ocypode quadrata*	BD
Banded dwarf hermit crab	*Pagurus annulipes*	MCNS,MUS,MSGB,MCPS
Spiny lobster	*Panulirus argus*	MCNS,MUS,MSGB,MCPS
Pink shrimp	*Penaens duorarum*	MCNS,MUS,MSGB,MCPS
Mangrove gribble	*Sphaeroma tenebrans*	MS
Fiddler crab	*Uca pugilator*	MS,KTRB

* Non-native Species

Long Key State Park Animals

Common Name	*Scientific Name*	Primary Habitat Codes (for imperiled species)
DRAGONFLIES		
Common green darner	*Anax junius*	MTC
Four-spotted pennant	*Brachymesia gravida*	MTC
Halloween pennant	*Celithemus eponina*	MTC
Eastern pondhawk	*Erythemis simplicicollis*	MTC
Great pondhawk	*Erythemis vesiculosa*	MTC
MANTIDS		
Carolina mantid	*Stagmomantis carolina*	MTC
STICK INSECTS		
Two-striped walkingstick	*Anisomorpha buprestoides*	MTC
TRUE BUGS, CICADAS, HOPPERS AND KIN		
Seaside cicada	*Diceroprocta viridifascia*	MTC
Thorn bug	*Umbonia crassicornis*	MTC
BEETLES		
Click beetle	*Lanelator sallei*	MTC
BUTTERFLIES AND SKIPPERS		
Gulf fritillary	*Agraulis vanillae*	MTC
Great southern white	*Ascia monuste*	MTC
Orange barred sulphur	*Colias eurytheme*	MTC
Julia heliconian	*Dryas iulia largo*	MTC
Barred yellow	*Eurema daira*	MTC
Zebra heliconian	*Heliconius charitonius*	MTC
Fiery skipper	*Hylephila phyleus*	MTC
Cassius blue	*Leptotes cassius*	MTC
Giant swallowtail	*Papilio cresphontes*	MTC
Mangrove skipper	*Phocides pigmalion*	MTC
Cloudless sulphur	*Phoebis sennae*	MTC
Orange-barred sulphur	*Phoebis philea*	MTC
Large orange sulphur	*Phoebis agarithe*	MTC
Hammock skipper	*Polygonus leo*	MTC
Buckeye butterfly	*Precis coenia*	MTC
Malachite	*Spiroeta stelenes biplagiata*	MTC
Long-tailed skipper	*Urbanus proteus*	MTC
MOTHS		
Black witch moth	*Ascalapha odorata*	MTC
Florida io moth	*Automeris io lilith*	MTC
Faithful beauty	*Composia fidelissima*	MTC
Melonworm moth	*Diaphania hyalinata*	MTC
Puss moth	*Megalopyge opercularis*	MTC

* Non-native Species

Long Key State Park Animals

Common Name	*Scientific Name*	Primary Habitat Codes (for imperiled species)
ANTS, BEES, AND WASPS		
Ant	*Brachymyrmex depilis*	MTC
Florida carpenter ant	*Camponotus planatus*	MTC
Ant	*Hypoponera opaciceps*	MTC
Ant	*Quadristruma emmae*	MTC
Ant	*Strumigenys gundlachi*	MTC
Fire ant	*Solenopsis invicta**	MTC
Ghost ant	*Tapinoma melanocephalum**	MTC
Ant	*Trachymyrmex septentrionalis*	MTC
Ant	*Trachymyrmes sp. nr. jamaicensis*	MTC
Ant	*Xenomyrmex floridanus*	MTC
SPIDERS		
Silver argiope	*Argiope argentata*	CB,RH
Spiny orb-weaver	*Gasteracantha cancriformis*	CB,RH
Golden silk orbweaver	*Nephila clavipes*	CB,RH
SEA URCHINS AND SAND DOLLARS		
Sea biscuit	*Clypeaster rosaceus*	MCNS,MUS,MSGB,MCPS
Rock-boring urchin	*Echinometra lucunter*	MCNS,MUS,MSGB,MCPS
Orange-ridged sea star	*Echinaster spinulosus*	MCNS,MUS,MSGB,MCPS
Pencil urchin	*Eucidaris tribuloides*	MCNS,MUS,MSGB,MCPS
Donkey dung sea cucumber	*Holothuria mexicana*	MCNS,MUS,MSGB,MCPS
Red heart urchin	*Meoma ventricosa*	MCNS,MUS,MSGB,MCPS
Brittle star	*Ophiocoma echinata*	MCNS,MUS,MSGB,MCPS
Cushion sea star	*Oreaster reticulatus*	MCNS,MUS,MSGB,MCPS
TUNICATES		
Black tunicate	*Ascidia nigra*	MSGB,MS
Flat tunicate	*Botrylloides nigrum*	MSGB,MS
Mangrove tunicate	*Ecteinascidia trubinata*	MSGB,MS
SHARKS AND RAYS		
Spotted eagle ray	*Aetobatus narinari*	MCNS,MUS,MSGB,MCPS
Southern stingray	*Dasyatis americana*	MCNS,MUS,MSGB,MCPS
Nurse shark	*Ginglymostoma cirratum*	MCNS,MUS,MSGB,MCPS
Lemon shark	*Negaprion brevirostris*	MCNS,MUS,MSGB,MCPS
Smalltooth sawfish	*Pristis pectinata*	MCNS,MUS,MSGB,MCPS
Hammerhead shark	*Sphyrna lewini*	MCNS,MUS,MSGB,MCPS
Bonnethead shark	*Sphyrna tiburo*	MCNS,MUS,MSGB,MCPS
Yellow stingray	*Urolophus jamaicensis*	MCNS,MUS,MSGB,MCPS
BONY FISHES		
Sergeant major	*Abudefduf saxatilis*	MCNS,MUS,MSGB,MCPS
Ocean surgeonfish	*Acanthurus bahianus*	MCNS,MUS,MSGB,MCPS
Doctorfish	*Acanthurus chirurgus*	MCNS,MUS,MSGB,MCPS

* Non-native Species

Long Key State Park Animals

Common Name	*Scientific Name*	Primary Habitat Codes (for imperiled species)
Blue tang	*Acanthurus coeruleus*	MCNS,MUS,MSGB,MCPS
Bonefish	*Albula vulpes*	MCNS,MUS,MSGB,MCPS
Orange filefish	*Aluterus schoepfi*	MCNS,MUS,MSGB,MCPS
Scrawled filefish	*Aluterus scriptus*	MCNS,MUS,MSGB,MCPS
Porkfish	*Anisotremus virginicus*	MCNS,MUS,MSGB,MCPS
Sea bream	*Archosargus rhomboidalis*	MCNS,MUS,MSGB,MCPS
Trumpetfish	*Aulostomus maculatus*	MCNS,MUS,MSGB,MCPS
Spotfin hogfish	*Bodianus pulchellus*	MCNS,MUS,MSGB,MCPS
Spanish hogfish	*Bodianus rufus*	MCNS,MUS,MSGB,MCPS
Saucereye porgy	*Calamus calamus*	MCNS,MUS,MSGB,MCPS
Sheepshead porgy	*Calamus penna*	MCNS,MUS,MSGB,MCPS
Sharpnose puffer	*Canthigaster rostrata*	MCNS,MUS,MSGB,MCPS
Yellow jack	*Caranx bartholomaei*	MCNS,MUS,MSGB,MCPS
Blue runner	*Caranx crysos*	MCNS,MUS,MSGB,MCPS
Bar jack	*Caranx ruber*	MCNS,MUS,MSGB,MCPS
Common snook	*Centropomus undecimalis*	MCNS,MUS,MSGB,MCPS
Atlantic spadefish	*Chaetodiperus faber*	MCNS,MUS,MSGB,MCPS
Foureye butterflyfish	*Chaetodon capistratus*	MCNS,MUS,MSGB,MCPS
Spotfin butterflyfish	*Chaetodon ocellatus*	MCNS,MUS,MSGB,MCPS
Reef butterflyfish	*Chaetodon sedentarius*	MCNS,MUS,MSGB,MCPS
Banded butterflyfish	*Chaetodon striatus*	MCNS,MUS,MSGB,MCPS
Shortfin pipefish	*Cosmocampus elucens*	MCNS,MUS,MSGB,MCPS
Bluelip parrotfish	*Cryptotomus roseus*	MCNS,MUS,MSGB,MCPS
Sea trout	*Cynoscion nebulosus*	MCNS,MUS,MSGB,MCPS
Balloonfish	*Diodon holocanthus*	MCNS,MUS,MSGB,MCPS
Porcupinefish	*Diodon hystrix*	MCNS,MUS,MSGB,MCPS
Sand perch	*Diplectrum formosum*	MCNS,MUS,MSGB,MCPS
Spottail pinfish	*Diplodus holbrooki*	MCNS,MUS,MSGB,MCPS
Sharksucker	*Echeneis naucrates*	MCNS,MUS,MSGB,MCPS
Rock hind	*Epinephelus adscensionis*	MCNS,MUS,MSGB,MCPS
Graysby	*Epinephelus cruentatus*	MCNS,MUS,MSGB,MCPS
Red grouper	*Epinephelus morio*	MCNS,MUS,MSGB,MCPS
Nassau grouper	*Epinephelus striatus*	MCNS,MUS,MSGB,MCPS
Spotted drum	*Equetus punctatus*	MCNS,MUS,MSGB,MCPS
Mosquitofish	*Gambusia affinis*	MCNS,MUS,MSGB,MCPS
Yellowfin mojarra	*Gerres cinereus*	MCNS,MUS,MSGB,MCPS
Goldspot goby	*Gnatholepis thompsoni*	MCNS,MUS,MSGB,MCPS
Neon goby	*Gobiosoma oceanops*	MCNS,MUS,MSGB,MCPS
Green moray	*Gymnothorax funebris*	MCNS,MUS,MSGB,MCPS
Spotted moray	*Gymnothorax moringa*	MCNS,MUS,MSGB,MCPS
Caesar grunt	*Haemulon carbonarium*	MCNS,MUS,MSGB,MCPS
Smallmouth grunt	*Haemulon chrysargyreum*	MCNS,MUS,MSGB,MCPS
French grunt	*Haemulon flavolineatum*	MCNS,MUS,MSGB,MCPS
Spanish grunt	*Haemulon macrostomum*	MCNS,MUS,MSGB,MCPS
Cottonwick	*Haemulon melanurum*	MCNS,MUS,MSGB,MCPS
Sailor's choice	*Haemulon parra*	MCNS,MUS,MSGB,MCPS

* Non-native Species

Long Key State Park Animals

Common Name	*Scientific Name*	Primary Habitat Codes (for imperiled species)
White grunt	*Haemulon plumieri*	MCNS,MUS,MSGB,MCPS
Bluestriped grunt	*Haemulon sciurus*	MCNS,MUS,MSGB,MCPS
Slippery dick	*Halichoeres bivittatus*	MCNS,MUS,MSGB,MCPS
Yellowhead wrasse	*Halichoeres garnoti*	MCNS,MUS,MSGB,MCPS
Puddingwife	*Halichoeres radiatus*	MCNS,MUS,MSGB,MCPS
Ballyhoo	*Hemiramphus brasiliensis*	MCNS,MUS,MSGB,MCPS
Blue angelfish	*Holacanthus bermudensis*	MCNS,MUS,MSGB,MCPS
Queen angelfish	*Holacanthus ciliaris*	MCNS,MUS,MSGB,MCPS
Bermuda chub	*Kyphosus sectartrix*	MCNS,MUS,MSGB,MCPS
Hogfish	*Lachnolaimus maximus*	MCNS,MUS,MSGB,MCPS
Spotted trunkfish	*Lactophrys bicaudalis*	MCNS,MUS,MSGB,MCPS
Honeycomb cowfish	*Lactophrys polygonia*	MCNS,MUS,MSGB,MCPS
Scrawled cowfish	*Lactophrys quadricornis*	MCNS,MUS,MSGB,MCPS
Trunkfish	*Lactophrys triqueter*	MCNS,MUS,MSGB,MCPS
Mutton snapper	*Lutjanus analis*	MCNS,MUS,MSGB,MCPS
Schoolmaster	*Lutjanus apodus*	MCNS,MUS,MSGB,MCPS
Mangrove snapper	*Lutjanus griseus*	MCNS,MUS,MSGB,MCPS
Dog snapper	*Lutjanus jocu*	MCNS,MUS,MSGB,MCPS
Mahogany snapper	*Lutjanus mahogoni*	MCNS,MUS,MSGB,MCPS
Lane snapper	*Lutjanus synagris*	MCNS,MUS,MSGB,MCPS
Tarpon	*Megalops atlanticus*	MCNS,MUS,MSGB,MCPS
Black mullet	*Mugil cephalus*	MCNS,MUS,MSGB,MCPS
Black grouper	*Mycteroperca bonaci*	MCNS,MUS,MSGB,MCPS
Yellowtail snapper	*Ocyurus chrysurus*	MCNS,MUS,MSGB,MCPS
Shortnose batfish	*Ogcocephalus nasutus*	MCNS,MUS,MSGB,MCPS
Banded jawfish	*Opistognathus macrognathus*	MCNS,MUS,MSGB,MCPS
Gray angelfish	*Pomacanthus arcuatus*	MCNS,MUS,MSGB,MCPS
French angelfish	*Pomacanthus paru*	MCNS,MUS,MSGB,MCPS
Dusky damselfish	*Pomacentrus fuscus*	MCNS,MUS,MSGB,MCPS
Beaugregory	*Pomacentrus leucostictus*	MCNS,MUS,MSGB,MCPS
Bicolor damselfish	*Pomacentrus partitus*	MCNS,MUS,MSGB,MCPS
Three spot damselfish	*Pomacentrus planifrons*	MCNS,MUS,MSGB,MCPS
Cocoa damselfish	*Pomacentrus variabilis*	MCNS,MUS,MSGB,MCPS
Spotted goatfish	*Pseudupeneus maculatus*	MCNS,MUS,MSGB,MCPS
Lionfish	*Pterois volitans**	MCNS,MUS,MSGB,MCPS
Midnight parrotfish	*Scarus coelestinus*	MCNS,MUS,MSGB,MCPS
Blue parrotfish	*Scarus coeruleus*	MCNS,MUS,MSGB,MCPS
Striped parrotfish	*Scarus croicensis*	MCNS,MUS,MSGB,MCPS
Rainbow parrotfish	*Scarus guacamaia*	MCNS,MUS,MSGB,MCPS
Princess parrotfish	*Scarus taeniopterus*	MCNS,MUS,MSGB,MCPS
Queen parrotfish	*Scarus vetula*	MCNS,MUS,MSGB,MCPS
Greenblotch parrotfish	*Sparisoma atomarium*	MCNS,MUS,MSGB,MCPS
Redband parrotfish	*Sparisoma aurofrenatum*	MCNS,MUS,MSGB,MCPS
Redtail parrotfish	*Sparisoma chrysopterum*	MCNS,MUS,MSGB,MCPS
Bucktooth parrotfish	*Sparisoma radians*	MCNS,MUS,MSGB,MCPS

* Non-native Species

Long Key State Park Animals

Common Name	*Scientific Name*	Primary Habitat Codes (for imperiled species)
Yellowtail parrotfish	*Sparisoma rubripinne*	MCNS,MUS,MSGB,MCPS
Stoplight parrotfish	*Sparisoma viride*	MCNS,MUS,MSGB,MCPS
Bandtail puffer	*Sphoeroides spengleri*	MCNS,MUS,MSGB,MCPS
Great barrucuda	*Sphyraena barracuda*	MCNS,MUS,MSGB,MCPS
Atlantic needlefish	*Strongylura marina*	MCNS,MUS,MSGB,MCPS
Redfin needlefish	*Strongylura notata*	MCNS,MUS,MSGB,MCPS
Permit	*Trachinotus falcatus*	MCNS,MUS,MSGB,MCPS
FROGS AND TOADS		
Eastern narrowmout toad	*Gastrophryne carolinensis carolinensis*	RH
Green tree frog	*Hyla cinero*	RH
Cuban treefrog	*Osteopilus septentrionalis**	RH, CL,DV
REPTILES		
American crocodile	*Crocodyluc acutus*	BD
Loggerhead turtle	*Caretta caretta*	BD
Green turtle	*Chelonia mydas*	MTC
Atlantic leatherback turtle	*Dermochelys coriacea*	MTC
Atlantic hawksbill turtle	*Eretmochelys imbricate*	MTC
Atlantic ridley turtle	*Lepidochelys kempii*	MTC
Striped mud turtle	*Kinosternon bauri*	MS
Mangrove terrapin	*Malaclemys terrapin rhizophorarium*	MS
Florida box turtle	*Terrapene carolina bauri*	RH
Agama	*Agama agama**	CL
Green anole	*Anolis carolinensis*	RH, CL,DV
Brown anole	*Anolis sagrei**	RH, CL,DV
Six-lined racerunner	*Aspidoscelis sexlineata*	BD, CB, RH
Florida Keys mole skink	*Eumeces egregious egregious*	CB, RH, CL,DV
Southeastern five-lined skink	*Plestiodon inexpectatus*	BD, RH
Great green iguana	*Iguana iguana**	MTC
Northern curly tailed lizard	*Leiocephalus carinatus armouri**	MTC
Ashy gecko	*Spaerodactylus cinereus*	RH, CL,DV
Florida reef gecko	*Sphaerodactylus notatus*	RH, CL,DV
Florida cottonmouth	*Agkistrodon piscivorus conanti*	CB, KTRB, MS
Southern black racer	*Coluber constrictor priapus*	RH
Southern ringneck snake	*Diadophis punctatus*	RH
Eastern indigo snake	*Drymarchon corais couperi*	RH
Corn snake	*Pantherophis guttatus*	RH, CL,DV
Rosy rat snake	*Elaphe guttata rosacea*	RH, CL,DV
Key rat snake	*Elaphe obsolete deckerti*	RH
Scarlet kingsnake	*Lampropeltis triangulum elapsoides*	RH, CL,DV
Atlantic saltmarsh snake	*Nerodia clarkii compressicauda*	MS
Florida water snake	*Nerodia fasciata pictiventris*	MS
Florida rough green snake	*Opheodrys aestivus carinatus*	RH
Florida brown snake	*Storeria dekayi victa*	RH
Peninsula ribbon snake	*Thamnophis sauritus sackenii*	RH

* Non-native Species

Long Key State Park Animals

Common Name	*Scientific Name*	Primary Habitat Codes (for imperiled species)
BIRDS		
Common loon	*Gavia immer*	MTC
Horned grebe	*Podiceps auritus*	MTC
Double-crested cormorant	*Phalacrocorax auritus*	MTC
American anhinga	*Anhinga anhinga*	OF
American wigeon	*Anas americana*	MTC
Brown pelican	*Pelecanus occidentalis*	MTC
Northern gannet	*Morus bassanus*	OF
Brown booby	*Sula leucogaster*	OF
Northern shovelor	*Anas clypeata*	OF
Blue-winged teal	*Anas discors*	MS
Lesser scaup	*Aythya affinis*	OF
Red-breasted merganser	*Mergus serrator*	OF
Magnificent frigatebird	*Fregata magnificens*	OF
Herring gull	*Larus argentatus*	BD, OF
Ring-billed gull	*Larus delawarensis*	BD, OF
Lesser black-backed gull	*Larus fuscus*	OF
Laughing gull	*Leucophaeus atricilla*	BD, OF
Caspian tern	*Hydroprogne caspia*	BD, OF
Common tern	*Sterna hirundo*	BD, OF
Least tern	*Sternulla antillarum*	BD, OF
Royal tern	*Thalasseus maximus*	BD, OF
Sandwich tern	*Thalasseus sandvicensis*	OF
Black skimmer	*Rynchops niger*	OF
Great egret	*Ardea albus*	MTC
Great blue heron	*Ardea herodias*	BD,MS,KTRB
Great white heron	*Ardea herodias occidentalis*	BD,MS,KTRB
Wurdemann's heron	*Ardea herodias herodias*	BD,MS
Cattle egret	*Bubulcus ibis*	MTC
Green heron	*Butorides striatus*	MS
Little blue heron	*Egretta caerulea*	BD,MS,KTRB
Reddish egret	*Egretta rufescens*	BD,MS
Snowy egret	*Egretta thula*	MTC
Tricolored heron	*Egretta tricolor*	MS,KTRB
Black-crowned night heron	*Nycticorax nycticorax*	MS
Yellow-crowned night-heron	*Nyctanassa violacea*	BD
White ibis	*Eudocimus albus*	MTC
Roseate Spoonbill	*Platalea ajaja*	OF
Glossy ibis	*Plegadis falcinellus*	MTC
Wood stork	*Mycteria americana*	OF
Turkey vulture	*Cathartes aura*	OF
Black vulture	*Coragyps atratus*	OF
Bald eagle	*Haliaeetus leucocephalus*	OF
Osprey	*Pandion haliaetus*	OF
Cooper's hawk	*Accipiter cooperii*	OF
Sharp-shinned hawk	*Accipiter striatus*	OF

* Non-native Species

Long Key State Park Animals

Common Name	*Scientific Name*	Primary Habitat Codes (for imperiled species)
Short-tailed hawk	*Buteo brachyurus*	OF
Red-tailed hawk	*Buteo jamaicensis*	OF
Red-shouldered hawk	*Buteo lineatus*	OF
Broad-winged hawk	*Buteo platypterus*	OF
Swainson's hawk	*Buteo swainsoni*	OF
Northern harrier	*Circus cyaneus*	OF
Swallow-tailed kite	*Elanoides forficatus*	OF
Mississippi kite	*Ictinia mississippiensis*	OF
Merlin	*Falco columbarius*	OF
Peregrine falcon	*Falco peregrinus*	OF
American kestrel	*Falco sparverius*	OF
Sora	*Porzana carolina*	MS
Clapper rail	*Rallus crepitans*	MS
Limpkin	*Aramus guarauna*	MS
Piping plover	*Charadrius melodus*	BD
Semipalmated plover	*Charadrius semipalmatus*	BD
Killdeer	*Charadrius vociferus*	RD
Wilson's plover	*Charadrius wilsonia*	BD
Black-bellied Plover	*Pluvialis squatarola*	BD
Black-necked stilt	*Himantopus mexicanus*	KTRB
American avocet	*Recurvirostra americana*	KTRB
Spotted sandpiper	*Actitis macularius*	BD
Ruddy turnstone	*Arenaria interpres*	BD
Sanderling	*Calidris alba*	BD
Dunlin	*Calidris alpine*	BD
Western sandpiper	*Calidris mauri*	BD
Pectoral sandpiper	*Calidris melanotos*	BD
Least sandpiper	*Calidris minutilla*	BD
Semipalmated sandpiper	*Calidris pusilla*	BD
Wilson's snipe	*Gallinago delicata*	BD
Short-billed dowitcher	*Limnodromus griseus*	BD
Long-billed dowitcher	*Limnodromus scolopaceus*	BD
Marbled godwit	*Limosa fedoa*	BD
Whimbrel	*Numenius phaeopus*	BD
Lesser yellowlegs	*Tringa flavipes*	BD
Greater yellowlegs	*Tringa melanoleuca*	BD
Willet	*Tringa semipalmata*	BD
Solitary sandpiper	*Tringa solitaria*	BD
Rock pigeon	*Columba livia**	MTC
Common ground-dove	*Columbina passerina*	MTC
Key West Quail dove	*Geotrygon chrysie*	RH
White-crowned pigeon	*Patagioenas leucocephala*	CB,RH
Eurasian collared dove	*Streptopelia decaocto**	MTC
White-winged dove	*Zenaida asiatica*	MTC
Mourning dove	*Zenaida macroura*	MTC
Yellow-billed cuckoo	*Coccyzus americanus*	RH

* Non-native Species

Long Key State Park Animals

Common Name	*Scientific Name*	Primary Habitat Codes (for imperiled species)
Black-billed cuckoo	*Coccyzus erythropthalmus*	RH
Mangrove cuckoo	*Coccyzus minor*	RH
Smooth-billed ani	*Crotophaga ani*	RH
Burrowing owl	*Atene cunicularia*	OF
Eastern screech-owl	*Megascops asio*	RH
Barn owl	*Tyto alba*	MS
Chuck-will's-widow	*Caprimulgus carolinensis*	RH
Whip-poor-will	*Caprimulgus vociferus*	RH
Common nighthawk	*Chordeiles minor*	OF
Chimney swift	*Chaetura pelagica*	OF
Ruby-throated hummingbird	*Archilochus colubris*	CL,RH
Belted kingfisher	*Megaceryle alcyon*	MS
Pileated woodpecker	*Dryocopus pileatus*	RH
Red-bellied woodpecker	*Melanerpes carolinus*	RH
Yellow-bellied sapsucker	*Sphyrapicus varius*	RH
Eastern wood-Pewee	*Contopus virens*	RH
Alder flycatcher	*Empidonax alnorum*	RH
Least flycatcher	*Empidonax minimus*	RH
Acadian flycatcher	*Empidonax virescens*	RH
Scissor-tailed flycatcher	*Muscivora forficata*	RH
Great-crested flycatcher	*Myiarchus crinitus*	RH
Sulphur-bellied flycatcher	*Myiodnastes luteiventris*	RH
Eastern phoebe	*Sayornis phoebe*	RH
Gray kingbird	*Tyrannus dominicensis*	RH
Eastern kingbird	*Tyrannus tyrannus*	RH
Western kingbird	*Tyrannus verticalis*	RH
Loggerhead shrike	*Lanius ludovicianus*	RH
Black-whiskered vireo	*Vireo altiloquus*	CB,RH
Yellow-throated vireo	*Vireo flavifrons*	CB,RH
Yellow-green vireo	*Vireo flavoviridis*	RH
Philadelphia vireo	*Vireo philadelphicus*	RH
White-eyed vireo	*Vireo griseus*	CB,RH
Red-eyed vireo	*Vireo olivaceus*	CB,RH
Solitary vireo	*Vireo solitarius*	CB,RH
Fish crow	*Corvus ossifragus*	MTC
Blue jay	*Cyanocitta cristata*	MTC
Sedge wren	*Cistothorus platensis*	CB
House wren	*Troglodytes aedon*	RH
Barn swallow	*Hirundo rustica*	OF
Cave swallow	*Petrochelidon fulva*	OF
Cliff swallow	*Petrochelidon pyrrhonota*	OF
Purple martin	*Progne subis*	OF
Bank swallow	*Riparia riparia*	OF
Rough-winged swallow	*Stelgidopteryx ruficollis*	OF
Tree swallow	*Tachycineta bicolor*	OF
Blue-gray gnatcatcher	*Polioptila caerulea*	CB,RH

* Non-native Species

Long Key State Park Animals

Common Name	*Scientific Name*	Primary Habitat Codes (for imperiled species)
Ruby-crowned kinglet	*Regulus calendula*	CB,RH
Gray-cheeked thrush	*Catharus minimus*	CB,RH
Veery	*Catharus fuscescens*	RH
Swainson's thrush	*Catharus ustulatus*	RH
Wood thrush	*Hylocichla mustelina*	RH
Northern wheatear	*Oenanthe oenanthe*	RH
American robin	*Turdus migratorius*	CL
Gray catbird	*Dumetella carolinensis*	CB,RH
Northern mockingbird	*Mimus polyglottos*	MTC
Brown thrasher	*Toxostoma rufum*	CB,RH
Cedar waxwing	*Bombycilla cedrorum*	CB,RH
Canada warbler	*Cardellina canadensis*	RH
Wilson's warbler	*Cardellina pusilla*	RH
Common yellowthroat	*Geothlypis trichas*	CB,RH
Worm-eating warbler	*Helmitheros vermivorous*	CB,RH
Yellow-breasted chat	*Icteria virens*	CB
Swainson's warbler	*Limnothlypis swainsonii*	RH
Black-and-white warbler	*Mniotilta varia*	CB,RH
Kentucky warbler	*Oporornis formosus*	CB,RH
Tennessee warbler	*Oreothlypis peregrina*	RH
Nashville warbler	*Oreothylpis ruficapilla*	RH
Louisiana waterthrush	*Parkesia motacilla*	CB,RH
Northern waterthrush	*Parkesia noveboracensis*	CB,RH
Prothonotary warbler	*Protonotaria citrea*	CB,RH
Ovenbird	*Seiurus aurocapilla*	CB,RH
Northern parula	*Setophaga americana*	CB,RH
Black-throated blue warbler	*Setophaga caerulescens*	RH
Bay-breasted warbler	*Setophaga castanea*	RH
Hooded warbler	*Setophaga citrina*	CB,RH
Yellow-rumped warbler	*Setophaga coronata*	CB,RH
Prairie warbler	*Setophaga discolor*	CB,RH
Yellow-throated warbler	*Setophaga dominica*	CB,RH
Blackburnian warbler	*Setophaga fusca*	RH
Magnolia warbler	*Setophaga magnolia*	CB,RH
Palm warbler	*Setophaga palmarum*	CB,RH
Chestnut-sided warbler	*Setophaga pensyvanica*	RH
Yellow warbler	*Setophaga petechia*	CB,RH
American redstart	*Setophaga ruticilla*	CB,RH
Blackpoll warbler	*Setophaga striata*	CB,RH
Cape May warbler	*Setophaga tigrina*	CB,RH
Black-throated green warbler	*Setophaga virens*	CB,RH
Orange-crowned warbler	*Vermivora celata*	BD
Golden-winged warbler	*Vermivora chrysoptera*	RH
Blue-winged warbler	*Vermivora cyanoptera*	RH
Bananaquit	*Coereba flaveola*	CB,RH
Grasshopper sparrow	*Ammodramus savannarum*	RD

* Non-native Species

Long Key State Park Animals

Common Name	*Scientific Name*	Primary Habitat Codes (for imperiled species)
House sparrow	*Passer domesticus**	MTC
Savannah sparrow	*Passerculus sandwichensis*	CB,RH
Clay-colored sparrow	*Spizella pallida*	RH
Chipping sparrow	*Spizella passerina*	CB,RH
Northern cardinal	*Cardinalis cardinalis*	CB,RH
Blue grosbeak	*Passerina caerulea*	RH
Painted bunting	*Passerina ciris*	CB,RH
Indigo bunting	*Passerina cyanea*	CB,RH
Rose-breasted grosbeak	*Pheucticus ludovicianus*	CB,RH
Summer tanager	*Piranga rubra*	CB,RH
Dickcissel	*Spiza americana*	RH
Red-winged blackbird	*Agelaius phoeniceus*	MS
Bobolink	*Dolichonyx oryzivorus*	CL
Baltimore oriole	*Icterus galbula*	CB,RH
Brown-headed cowbird	*Molothrus ater*	CB,RH
Common grackle	*Quiscalus quiscula*	MTC
Scarlet tanager	*Piranga olivacea*	RH
Summer tanager	*Piranga rubra*	RH
MAMMALS		
Virginia opossum	*Didelphis virginiana*	MTC
Marsh rabbit	*Sylvilagus palustris*	KTRB,RH
Black rat	*Rattus rattus**	MTC
Domestic cat	*Felis catus **	MTC
Raccoon	*Procyon lotor*	MTC
Florida manatee	*Trichechus manatus*	MCNS,MSGB
Bottle-nosed dolphin	*Tursiops truncatus*	MCNS,MUS,MSGB,MCPS

* Non-native Species

Addendum 6—Imperiled Species Ranking Definitions

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

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

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

FNAI GLOBAL RANK DEFINITIONS

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

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

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

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

G5 ..... demonstrably secure globally

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

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

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

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

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

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

G#Q..... rank of questionable species - ranked as species but questionable whether it is species or subspecies; numbers have same definition as above (e.g., G2Q)
G#T#Q..... same as above, but validity as subspecies or variety is questioned.
GU ..... due to lack of information, no rank or range can be assigned (e.g., GUT2).
G?..... Not yet ranked (temporary)
S1..... Critically imperiled in Florida because of extreme rarity (5 or fewer occurrences or less than 1000 individuals) or because of extreme vulnerability to extinction due to some natural or man-made factor.
S2..... Imperiled in Florida because of rarity (6 to 20 occurrences or less than 3000 individuals) or because of vulnerability to extinction due to some natural or man-made factor.
S3..... Either very rare or local throughout its range (21-100 occurrences or less than 10,000 individuals) or found locally in a restricted range or vulnerable to extinction of other factors.
S4..... apparently secure in Florida (may be rare in parts of range)
S5..... demonstrably secure in Florida
SH ..... of historical occurrence throughout its range, may be rediscovered (e.g., ivory-billed woodpecker)
SX..... believed to be extinct throughout range
SA..... accidental in Florida, i.e., not part of the established biota
SE..... an exotic species established in Florida may be native elsewhere in North America
SN ..... regularly occurring but widely and unreliably distributed; sites for conservation hard to determine
SU ..... due to lack of information, no rank or range can be assigned (e.g., SUT2).
S?..... Not yet ranked (temporary)
N ..... Not currently listed, nor currently being considered for listing, by state or federal agencies.

LEGAL STATUS

FEDERAL

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

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

PT ..... Proposed for listing as Threatened Species.
C ..... Candidate Species for addition to the list of Endangered and Threatened Wildlife and Plants. Defined as those species for which the USFWS currently has on file sufficient information on biological vulnerability and threats to support proposing to list the species as endangered or threatened.
E(S/A) ..... Endangered due to similarity of appearance.
T(S/A) ..... Threatened due to similarity of appearance.
EXPE, XE..... Experimental essential population. A species listed as experimental and essential.
EXPN, XN .... Experimental non-essential population. A species listed as experimental and non-essential. Experimental, nonessential populations of endangered species are treated as threatened species on public land, for consultation purposes.

STATE

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

FE ..... Federally-designated Endangered

FT ..... Federally-designated Threatened

FXN..... Federally-designated Threatened Nonessential Experimental Population

FT(S/A) ..... Federally-designated Threatened species due to similarity of appearance

ST..... Listed as Threatened Species by the FWC. Defined as a species, subspecies, or isolated population, which is acutely vulnerable to environmental alteration, declining in number at a rapid rate, or whose range or habitat, is decreasing in area at a rapid rate and therefore is destined or very likely to become an endangered species within the near future.
SSC..... Listed as Species of Special Concern by the FWC. Defined as a population which warrants special protection, recognition or consideration because it has an inherent significant vulnerability to habitat modification, environmental alteration, human disturbance or substantial human exploitation that, in the near future, may result in its becoming a threatened species.

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

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

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

Addendum 7—Cultural Information

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

A. General Discussion

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

B. Agency Responsibilities

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

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

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

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

C. Statutory Authority

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

D. Management Implementation

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

Managers of state lands must coordinate any land clearing or ground disturbing activities with the Division to allow for review and comment on the proposed

project. Recommendations may include, but are not limited to: approval of the project as submitted, cultural resource assessment survey by a qualified professional archaeologist, modifications to the proposed project to avoid or mitigate potential adverse effects.

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

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

E. Minimum Review Documentation Requirements

In order to have a proposed project reviewed by the Division, certain information must be submitted for comments and recommendations. The minimum review documentation requirements can be found at: http://www.flheritage.com/preservation/compliance/docs/minimum_review_documentation_requirements.pdf .

* * *

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

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

Phone: (850) 245-6425

Toll Free: (800) 847-7278
Fax: (850) 245-6435

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

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

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

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

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

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

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

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

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

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

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

Addendum 8 —Land Management Review

Long Key State Park

Land Management Review

Management Review Team Members

Agency Represented	Team member Appointed	Team member In attendance
DEP/DRP	Janice Duquesnel	Janice Duquesnel
DEP South Florida	Tania McMillian	Tania McMillian
DACS/DOF	Wes Howell	Wes Howell
FWCC	Randy Grau	Randy Grau
Soil and Water	N/A	N/A
County Commission	Laurie McHargue	Laurie McHargue
Conservation	Chris Bergh	Chris Bergh
Private Land Manager	Barbara Craig	

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, 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 Long Key State Park considered approximately 966 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 DRP revised the management plan on February 5, 1998, and the management plan update is due on February 5, 2003.

Review Team Determination

1. Is the land being managed for the purpose for which it was acquired?

After completing the checklist, team members were asked to answer "yes" or "no" to this question. All team members agreed that Long Key State Park 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?

After completing the checklist, team members were asked to answer "yes" or "no" to this question. 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

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

1. The team commends the manager and staff for their outstanding efforts towards exotic plant removal, and for their efforts to plant native plants and reintroduce extirpated plants to the park. (Vote: 6+, 0-)

Exceptional Management Actions

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

Exceptional management actions

- Management and protection the Beach dune, coastal berm, rockland hammock, marine grass bed, marine tidal swamp, marine unconsolidated substrate communities.
- Protection and preservation of listed plants.
- Excellent job of restoring the coastal berm and wetland/hammock communities.
- Excellent control of non-native plants and animals.
- Exceptional signage, gates and fencing and boundary surveys.
- Excellent parking, water access, recreational opportunities.
- Exceptional success with acquiring in-holdings.
- Exceptional sanitary facilities.

Recommendations and Checklist Findings

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

Recommendations

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

1. The team recommends that DRP complete a survey and map for listed animal species at Long Key SP. (VOTE: 6+, 0 -)

   Manager's Response: Agree. The plant species have already been identified. The project to map listed animal species is ongoing. Completing a survey of listed animal species is more difficult, but efforts are being made to accomplish this objective. However, mapping of the listed species will only be done as a management tool to ensure that listed species are properly protected.

2. The team concurs with the recommendation in the management plan, that a trail be constructed to Long Key Point to facilitate law enforcement, resource management and hiking access. (VOTE: 6+, 0-)

   Manager's Response: Agree. However funding is needed to construct a bridge in order to extend the trail to the point. The bridge will need to follow all appropriate standards and permitting requirements.

3. The team recommends that the DRP request that the Division of State Lands lease the submerged lands in Long Key Bight to the DRP, to help protect this resource. (VOTE: 6+, 0 -)

   Manager's Response: Agree. The proposal to lease this area is already in the UMP.

4. The team recommends that DRP inventory the benthic communities within the 400 foot managed area around the park. (VOTE: 6+, 0 -)

   Manager's Response: Agree. An effort will be made to have the necessary benthic inventories conducted on submerged lands managed by the park. The completion of this task depends upon other priorities for resource management and funding.

5. The team recommends that DRP request that prior to the re-issuance of the lease for the tower site within the park, that the Division of State Lands incorporate input from the DRP regarding the impacts to the park and justification for the renewal. (VOTE: 6+, 0 -)

Manager's Response: Agree. The tower is located in an existing wetland and residence area. Before any lease is extended by DSL, DRP should be provided an opportunity to comment on the impacts to the park. DSL is hereby requested to provide this opportunity to DRP.

Checklist findings

The following items received low scores on the review team checklist (see Attachment 1), 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 further addressed in the management plan update.

1. Discussion in the management plan of the need for a cultural resources survey. (f).

Manager's Response: Disagree. A phase one cultural resource survey has been already been completed. Based upon the findings, the park is not expected to possess significant cultural resources and a phase two survey is not needed.

2. Discussion in the management plan of surface water quality(p).

Manager's Response: Agree. A general discussion of the surface waters will be addressed in the next updated UMP. Since a great deal of sampling work has already been performed in the Keys area, no specific water quality monitoring is proposed except for supporting the monitoring of the surface waters in the bay offshore of the sanitary landfill transfer station. Other sampling may be proposed in the future, but only if there are indications from observations that water quality problems are occurring.

3. Discussion in the management plan of the need for a boundary survey of Long Key (f), and for restoration of the area in the boundary encroachment. (p,f).

Manager's Response: Agree. However, this need is already addressed in the UMP. We will review the need to address this in more detail during development of the next updated plan. Efforts are ongoing to resolve encroachments that exist on the western boundary north of US 1 located adjacent to Long Key Outdoor Resorts.

4. Discussion in the management plan of the management issues relating to the tower.(p).

Manager's Response: Agree. The tower issue will be address in more detail in the next updated UMP.

5. Discussion in the management plan of inholdings and additions.(p).

Manager's Response: Agree. However, this matter is already reviewed in the UMP. A list of such properties is prepared yearly by the District office.