

Fakahatchee Strand Preserve State Park

APPROVED
Unit Management Plan

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

August 19, 2014





**FLORIDA DEPARTMENT OF
ENVIRONMENTAL PROTECTION**

MARJORY STONEMAN DOUGLAS BUILDING
3900 COMMONWEALTH BOULEVARD
TALLAHASSEE, FLORIDA 32399-3000

RICK SCOTT
GOVERNOR

CARLOS LOPEZ-CANTERA
LT. GOVERNOR

HERSCHEL T. VINYARD JR.
SECRETARY

August 19, 2014

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

Re: Fakahatchee Strand Preserve State Park – Lease # 2840

Dear Ms. Carver:

Jennifer

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 Fakahatchee Strand Preserve State Park management plan. The next management plan update is due August 19, 2024.

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

Sincerely,

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

TABLE OF CONTENTS

INTRODUCTION	1
PURPOSE AND SIGNIFICANCE OF THE PARK	1
Park Significance	1
PURPOSE AND SCOPE OF THE PLAN	2
MANAGEMENT PROGRAM OVERVIEW	8
Management Authority and Responsibility	8
Park Management Goals	9
Management Coordination	9
Public Participation.....	9
Other Designations	10

RESOURCE MANAGEMENT COMPONENT

INTRODUCTION	11
RESOURCE DESCRIPTION AND ASSESSMENT	15
Natural Resources.....	15
Topography	15
Geology	15
Soils	15
Minerals.....	16
Hydrology	16
Natural Communities (FNAI).....	22
Imperiled Species	37
Exotic and Nuisance Species.....	48
Special Natural Features	56
Cultural Resources	56
Prehistoric and Historic Archaeological Sites	56
Description	57
Condition Assessment	57
Level of Significance	58
Historic Structures	59
Description	59
Condition Assessment	59
Level of Significance	60
Collections	61
RESOURCE MANAGEMENT PROGRAM	69
Management Goals, Objectives, and Actions.....	69
Natural Resource Management	70

Hydrological Management	70
Natural Communities Management	71
Imperiled Species Management	76
Exotic Species Management	80
Special Management Considerations.....	81
Timber Management Analysis	81
Arthropod Control Plan.....	82
Sea Level Rise	82
Additional Considerations	82
Cultural Resource Management	82
Cultural Resource Management.....	83
Resource Management Schedule.....	84
Land Management Review	84

LAND USE COMPONENT

INTRODUCTION	85
EXTERNAL CONDITIONS	85
Existing Use of Adjacent Lands	85
Planned Use of Adjacent Lands	86
PROPERTY ANALYSIS	88
Recreational Resource Elements	88
Land Area	88
Water Area.....	89
Shoreline	89
Natural Scenery	89
Significant Habitat.....	89
Natural Features	89
Archaeological and Historic Features.....	90
Assessment of Use.....	90
Past Uses	90
Future Land Use and Zoning.....	90
Current Recreational Use and Visitor Programs	93
Other Uses	93
Protected Zones.....	93
Existing Facilities	93
Recreation Facilities.....	93
Support Facilities	94

CONCEPTUAL LAND USE PLAN	94
Potential Uses	99
Public Access and Recreational Opportunities	99
Proposed Facilities	101
Capital Facilities and Infrastructure	101
Facilities Development	104
Recreational Carrying Capacity	105
Optimum Boundary	107

IMPLEMENTATION COMPONENT

MANAGEMENT PROGRESS	111
Acquisition	111
Park Administration and Operations	111
Resource Management	112
Natural Resources	112
Cultural Resources	113
Recreation and Visitor Services	113
MANAGEMENT PLAN IMPLEMENTATION	113

TABLES

TABLE 1 – Management Zones	12
TABLE 2 – Imperiled Species Inventory	41
TABLE 3 – Inventory of FLEPPC Category I and II Exotic Plant Species	50
TABLE 4 – Cultural Sites Listed in the Florida Master Site File	63
TABLE 5 – Prescribed Fire Management	73
TABLE 6 – Recreational Carrying Capacity	105
TABLE 7 – Implementation Schedule and Cost Estimates	115

MAPS

Vicinity Map	3
Reference Map	5
Management Zones Map	13
Soils Map	17
Natural Communities Map	23
Base Map	91
Conceptual Land Use Plan	95
Optimum Boundary Map	109

LIST OF ADDENDA

ADDENDUM 1

Acquisition History.....A 1 - 1

ADDENDUM 2

Advisory Group Members List and ReportA 2 - 1

ADDENDUM 3

References CitedA 3 - 1

ADDENDUM 4

Soil DescriptionsA 4 - 1

ADDENDUM 5

Plant and Animal ListA 5 - 1

ADDENDUM 6

Imperiled Species Ranking DefinitionsA 6 - 1

ADDENDUM 7

Cultural InformationA 7 - 1

ADDENDUM 8

Land Management ReviewA 8 - 1

INTRODUCTION

Fakahatchee Strand Preserve State Park is located in south central Collier County about 35 miles southeast of Naples and 80 miles west of Miami. Access is from U.S. Highway 41 (Tamiami Trail) on the south side and from State Road 29 on the east. U.S. Highway 84 (Alligator Alley), which is adjacent to the northern park boundary is a toll-access segment of Interstate Highway 75 (I-75). State Road 29 parallels the eastern boundary and provides access to the park via I-75 and from U.S. Highway 41 (see Vicinity and Reference maps). The Vicinity Map also reflects significant land and water resources existing near the park.

Fakahatchee Strand Preserve State Park was initially acquired on June 14, 1974 under the Environmentally Endangered Lands (EEL) program. Since 1974, the Trustees have acquired several individual parcels and incorporated them into the park. Acquisitions have been funded by Environmentally Endangered Lands (EEL), Land Acquisition Trust Fund (LATF), State of Conservation (SOC), Conservation and Recreational Lands (CARL), or Preservation 2000. Currently, the park comprises 77,690 acres. The Board of Trustees of the Internal Improvement Trust Fund (Trustees) hold fee simple title to the park and on June 2, 1975, the Trustees leased (Lease Number 2840) the property to DRP under a ninety-nine year lease. The current lease will expire on June 2, 2074. Fakahatchee Strand Preserve State Park is designated for 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.

Purpose and Significance of the Park

The State of Florida purchased the original 34,727 acres of Fakahatchee Strand Preserve State Park in 1974 through the Environmentally Endangered Land Bond Program established by the Land Conservation Act of 1972. Land acquisition by the State of Florida continues through the present day. The purpose of acquisition is to preserve the diverse ecosystem of the Fakahatchee Strand, preserve critical habitat for the Florida panther, protect the mangrove swamps of the Ten Thousand Islands, and provide the people of Florida with the opportunity to experience a portion of the greater Everglades ecosystem.

Park Significance

- The Fakahatchee Strand is the largest strand swamp in the world and a unique geological feature of the larger Big Cypress Swamp ecosystem.
- The park contains the largest diversity of native orchid and bromeliad species in the United States, and five individual plant species found nowhere else in the Country.
- The park supports the largest population of native royal palms in the United States and a majority portion of the world's only known bald cypress (*Taxodium distichum*) and royal palm (*Roystonea regia*) forest.

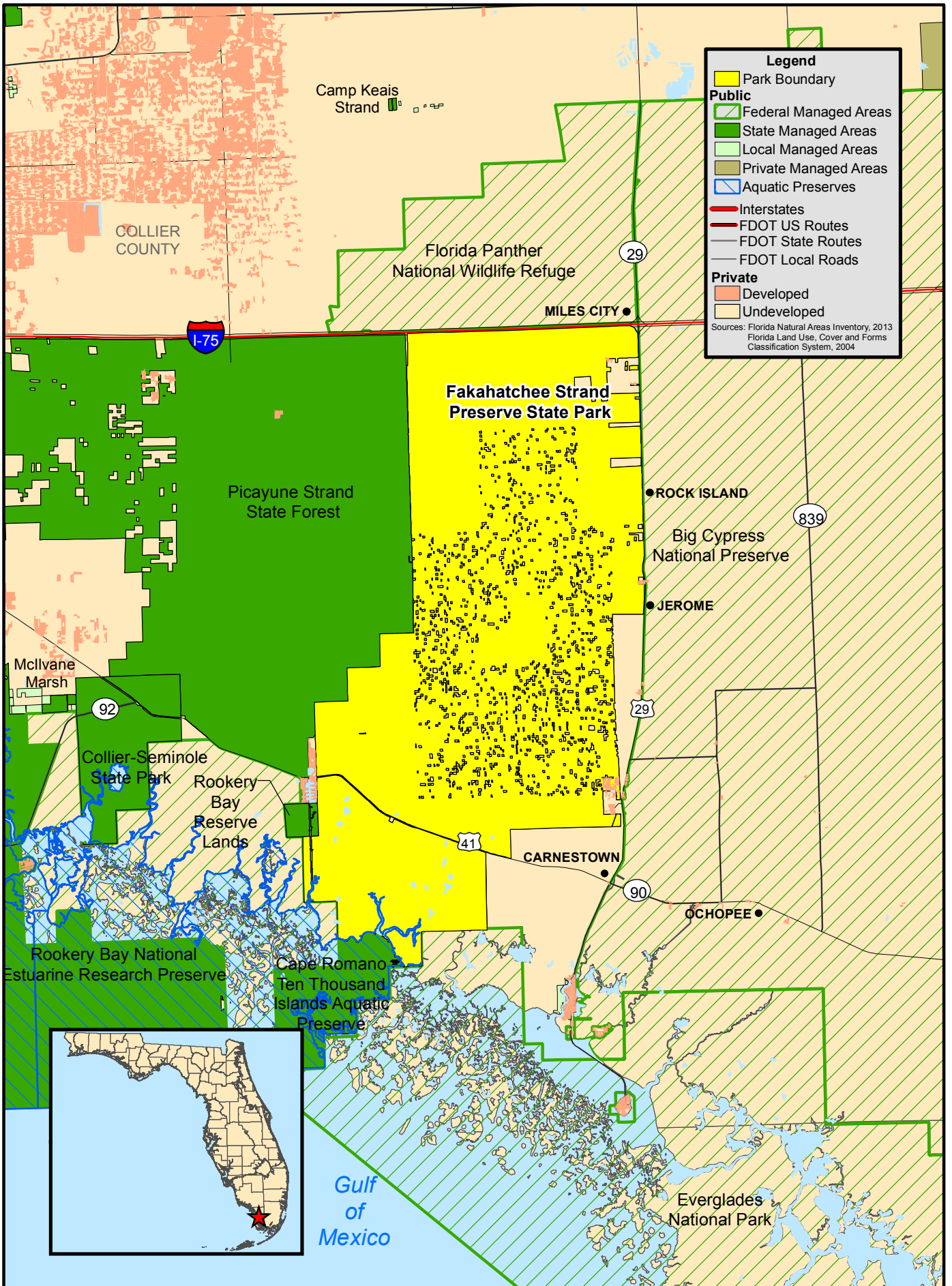
- The park provides crucial habitat for imperiled species including the Florida panther (*Puma concolor*), the American crocodile (*Crocodylus acutus*), and the Everglades mink (*Mustela vison evergladensis*).
- The park protects a portion of one the largest undisturbed mangrove estuaries in North America. This estuary provides crucial habitat for numerous species of wading birds, as well as a vital nursery area for fish and shellfish.
- From as early as 1000 BCE Native Americans and later Anglo-American settlers known as “Gladesmen” forged a unique relationship with the historic cypress forests, expansive prairies, and rich coastal estuaries of what is now known as Fakahatchee Strand Preserve State Park.
- The park provides visitors with the rare opportunity to experience a portion of Florida’s remaining subtropical wilderness through various recreational pursuits such as hiking, backcountry camping, canoeing, kayaking, nature study, and fishing.

Fakahatchee Strand Preserve State Park is classified as a state preserve in the DRP’s unit classification system. In the management of a state preserve, preservation and enhancement of natural conditions is all important. Resource considerations are given priority over user considerations and development is restricted to the minimum necessary for ensuring its protection and maintenance, limited access, user safety and convenience, and appropriate interpretation. Permitted uses are primarily of a passive nature, related to the aesthetic, educational, and recreational enjoyment of the park as a preserve, although other compatible uses are permitted in limited amounts. Program emphasis is placed on interpretation of the natural and cultural attributes of the preserve.

Purpose and Scope of the Plan

This plan serves as the basic statement of policy and direction for the management of Fakahatchee Strand Preserve State Park as a unit of Florida’s state park system. It identifies the goals, objectives, actions, and criteria or standards that guide each aspect of park administration, and sets forth the specific measures that will be implemented to meet management objectives and provide balanced public utilization. The plan is intended to meet the requirements of Sections 253.034 and 259.032, Florida Statutes, Chapter 18-2, Florida Administrative Code, and is intended to be consistent with the State Lands Management Plan. With approval, this management plan will replace the 2001 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

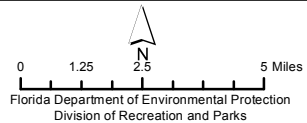


Legend

- Park Boundary
- Public**
- Federal Managed Areas
- State Managed Areas
- Local Managed Areas
- Private Managed Areas
- Aquatic Preserves
- Interstates
- FDOT US Routes
- FDOT State Routes
- FDOT Local Roads
- Private**
- Developed
- Undeveloped

Sources: Florida Natural Areas Inventory, 2013
Florida Land Use, Cover and Forms Classification System, 2004







**FAKAHATCHEE STRAND
PRESERVE STATE PARK**



**VICINITY
MAP**



Legend

-  Park Boundary
-  FDOT Interstates
-  FDOT Local Roads
-  Federal Managed Areas
-  State Managed Areas
-  Aquatic Preserves

Fakahatchee Strand Preserve State Park

Picayune Strand State Forest

ROCK ISLAND

Big Cypress National Preserve

JEROME

29

Rookery Bay Reserve Lands

COPELAND

41

CARNESTOWN

90

Ten Thousand Islands National Wildlife Refuge

Rookery Bay National Estuarine Research Reserve

OCHOPEE

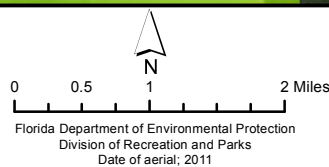
Cape Romano Ten Thousand Islands Aquatic Preserve

Everglades National Park

bing

© Harris

FAKAHATCHEE STRAND PRESERVE STATE PARK



REFERENCE MAP

each of the park's management goals and resource types. This component provides guidance on the application of such measures as prescribed burning, exotic species removal, imperiled species management, cultural resource management, and restoration of natural conditions.

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

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

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

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

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

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

Many operating procedures are standardized system-wide and are set by internal direction. These procedures are outlined in the OM that covers such areas as personnel management, uniforms and personal appearance, training, signs,

communications, fiscal procedures, interpretation, concessions, public use regulations, resource management, law enforcement, protection, safety, and maintenance.

Park Management Goals

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

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

Management Coordination

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

The Florida Department of Agriculture and Consumer Services (FDACS), Florida Forest Service (FFS), assists DRP staff in the development of wildfire emergency plans and provides the authorization required for prescribed burning. The Florida Fish and Wildlife Conservation Commission (FWC) assists staff in the enforcement of state laws pertaining to wildlife, freshwater fish and other aquatic life existing within the park. In addition, the FWC aids DRP with wildlife management programs, including imperiled species management. The Florida Department of State (FDOS), Division of Historical Resources (DHR) assists staff to ensure protection of archaeological and historical sites. The Florida Department of Environmental Protection (DEP), Florida Coastal Office (FCO) 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

DRP provided an opportunity for public input by conducting a public workshop and an Advisory Group meeting to present the draft management plan to the public. These meetings were held on Wednesday, April 2 and Thursday, April 3, respectively. Meeting notices were published in the Florida Administrative Register,

on March 24, 2014, Volume 40, Issue 57, 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

Fakahatchee Strand Preserve State Park is within the Big Cypress 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. Surface waters in this park are also classified as Class II and III waters by the Department. This park is adjacent to the Ten Thousand Islands Aquatic Preserve as designated under the Florida Aquatic Preserve Act of 1975 (Section 258.35, Florida Statutes).

RESOURCE MANAGEMENT COMPONENT

INTRODUCTION

In accordance with Chapter 258, Florida Statutes, the Division of Recreation and Parks has implemented resource management programs for preserving for all time the representative examples of natural and cultural resources of statewide significance under its administration. This component of the unit plan describes the natural and cultural resources of the park and identifies the methods that will be used to manage them. The management measures expressed in this plan are consistent with the Department'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.

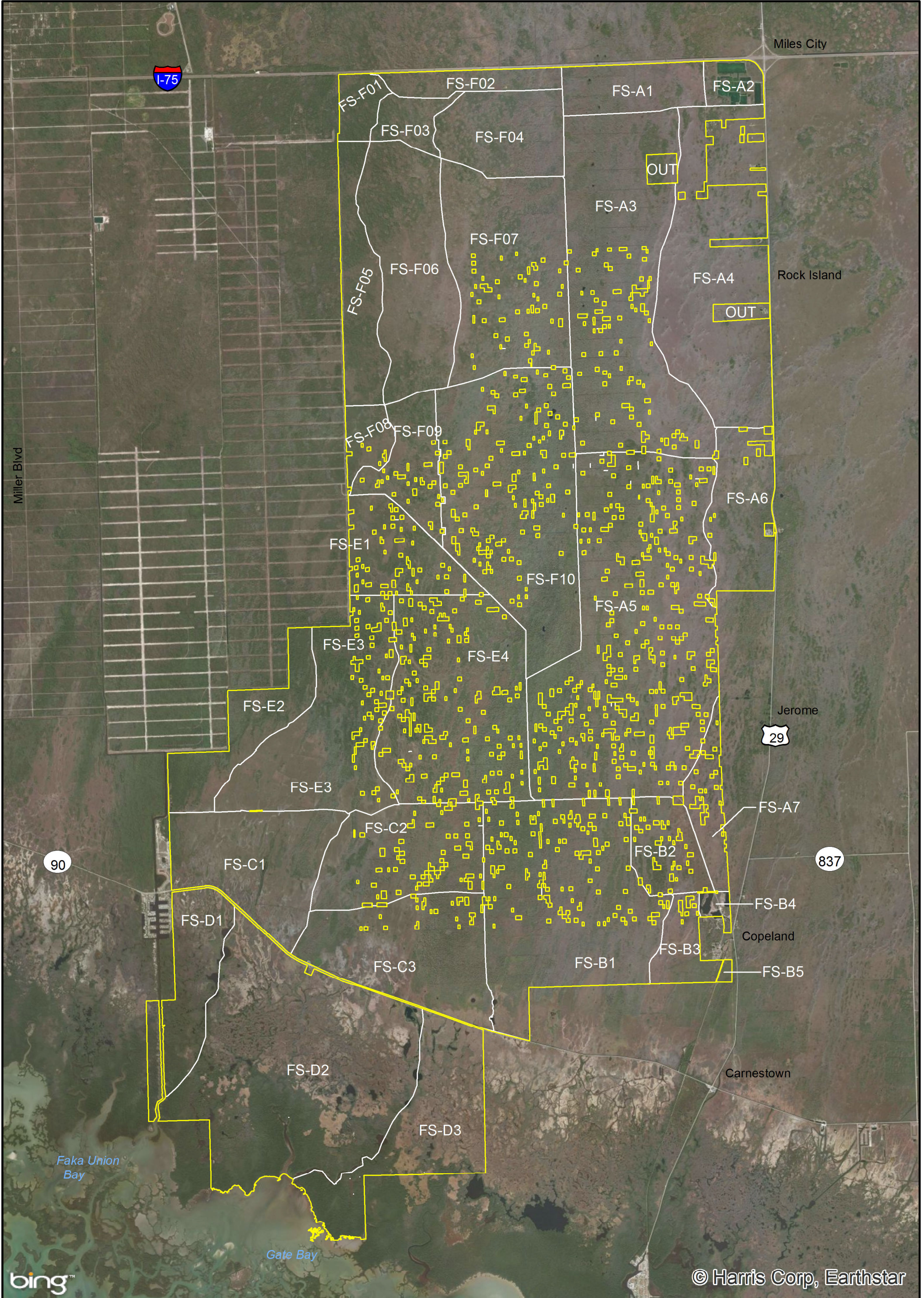
The DRP's management goal for cultural resources is to preserve sites and objects that represent Florida's cultural periods, significant historic events, or persons. This goal often entails active measures to stabilize, reconstruct, or restore resources or to rehabilitate them for appropriate public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

The entire park is divided into management zones which delineate areas on the ground that are used to reference management activities (see Table 1 and Management Zones Map). The shape and size of each zone may be based on natural community types, burn zones, 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: Fakahatchee Strand Preserve State Park Management Zones

Management Zone	Acreage	Managed with Prescribed Fire	Contains Known Cultural Resources
FS-A1	1158.14	Yes	Yes
FS-A2	444.28	Yes	Yes
FS-A3	5926	Yes	Yes
FS-A4	4425.22	Yes	Yes
FS-A5	8066.89	Yes	Yes
FS-A6	1663.8	Yes	No
FS-A7	728.17	Yes	No
FS-B1	5185.69	Yes	Yes
FS-B2	972.96	Yes	No
FS-B3	655.26	Yes	No
FS-B4	147.54	Yes	No
FS-B5	46.23	Yes	No
FS-C1	2665.31	Yes	No
FS-C2	2349.94	Yes	Yes
FS-C3	2994.17	Yes	Yes
FS-D1	1765.34	Yes	Yes
FS-D2	7537.45	Yes	Yes
FS-D3	2783.38	Yes	Yes
FS-E1	1432.15	Yes	Yes
FS-E2	1552.83	Yes	No
FS-E3	3541.45	Yes	Yes
FS-E4	4437.23	Yes	Yes
FS-F01	463.17	Yes	No
FS-F02	689.37	Yes	No
FS-F03	548.15	Yes	No
FS-F04	1725.8	Yes	Yes
FS-F05	1504.43	Yes	No
FS-F06	3198.11	Yes	Yes
FS-F07	3906.2	Yes	Yes
FS-F08	485.63	Yes	No
FS-F09	1170.04	Yes	Yes
FS-F10	5384.64	Yes	Yes



Miller Blvd

Miles City

Rock Island

Jerome

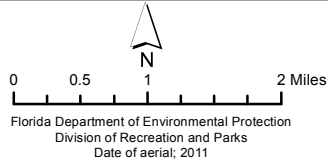
Copeland

Carnestown

bing™

© Harris Corp, Earthstar

**FAKAHATCHEE STRAND
PRESERVE STATE PARK**



MANAGEMENT ZONES MAP

RESOURCE DESCRIPTION AND ASSESSMENT

Natural Resources

Topography

Collier County is part of the coastal lowlands physiographic region of Florida. U.S. Coast and Geodetic Survey topographic maps show contour lines roughly in concentric fashion down-gradient from the highest elevation of 44 feet near Immokalee to 5.9 feet at Carnestown and 3.3 feet in Everglades City.

Most of the Fakahatchee Strand proper lies between five to 15 feet above mean sea level (msl) in elevation, although the southernmost preserve boundaries slope down to sea level.

Geology

The Tamiami Limestone Formation, exposed along the Tamiami Trail, underlies nearly all of Collier County and is approximately six million years old. The formation is capped by hard rocks under which are found sand, silts, and clays, shell marls and shell-free, greenish clay. This formation is also found in the southern and eastern parts of the county and is exposed at the surface.

Geologically, the region around the preserve is known as a "karst" feature, a term describing a land type based on carbonate rocks, chiefly limestone. The drainage sloughs, given prominence by the strand swamps rising from them, are karst features, which develop when limestone, formed as a sedimentary rock below sea level, is exposed in a region of high precipitation. Water containing carbon dioxide (and carbonic acid) seeps into openings in the soluble rock and dissolves some of the limestone. The strand swamps occupy these linear solution features in the surface rock. In general the strands are functioning as shallow valleys in the flat, limestone substrate of the Big Cypress Swamp and the deeper sloughs function much like seasonally flowing streams within the valleys.

Other karst features include sinkholes such as Deep Lake in Big Cypress National Preserve near Copeland, which is 97 feet in depth. Deep sinkholes are relics of an ancient geologic period when sea levels were much lower. They signify possible infiltration to a sub-surface cavern system.

Recent work done by researchers from Utrecht University in the Netherlands has documented a peat layer overlying limestone six feet deep that has been dated to 5,200 years BP. The core was extracted in the vicinity of the Big Cypress Bend Boardwalk where old-growth bald cypress occurs (Donders et al. 2005).

Soils

Over most of Collier county, a thin blanket of sand, sandy marl, clay, and fine shell of Pamlico Sea origin covers the limestone (see Soils Map). These sands and their accumulated organic material form the substratum for the biological systems of the county and, prior to the hydrological disruptions caused by extensive canal building, were in direct or close contact with the water table. It is the organic material in this upper layer that yields the acids responsible for solution of the underlying

limestone. Addendum 4 contains detailed soil descriptions for this unit. Currently, there are no naturally occurring soil conservation or erosion issues at this preserve; however, erosion has occurred where off-road vehicles (ORV) are driven outside of designated access routes to private inholdings.

Minerals

Mineral resources of economic value in this region of southern Florida include limestone, high silica sand, clay, phosphate rock, peat, oil, and gas.

Limestone was historically mined within the current park boundary near Copeland by the Harmon Brothers Rock Co. The USACE permit ended in 2003, requiring a sloping gradient along the northern lake to create a littoral zone for emergent vegetation as well as habitat for insects, small fish, and amphibians. The 200 acres of property owned by the Harmon Brothers Rock Co. was acquired in 2004 as an addition to the preserve. The Bear Island oil field, discovered during the early 1970s, lies to the northeast. It currently produces approximately 2,500 barrels of crude oil per day. Oil reserves could also be located beneath the park.

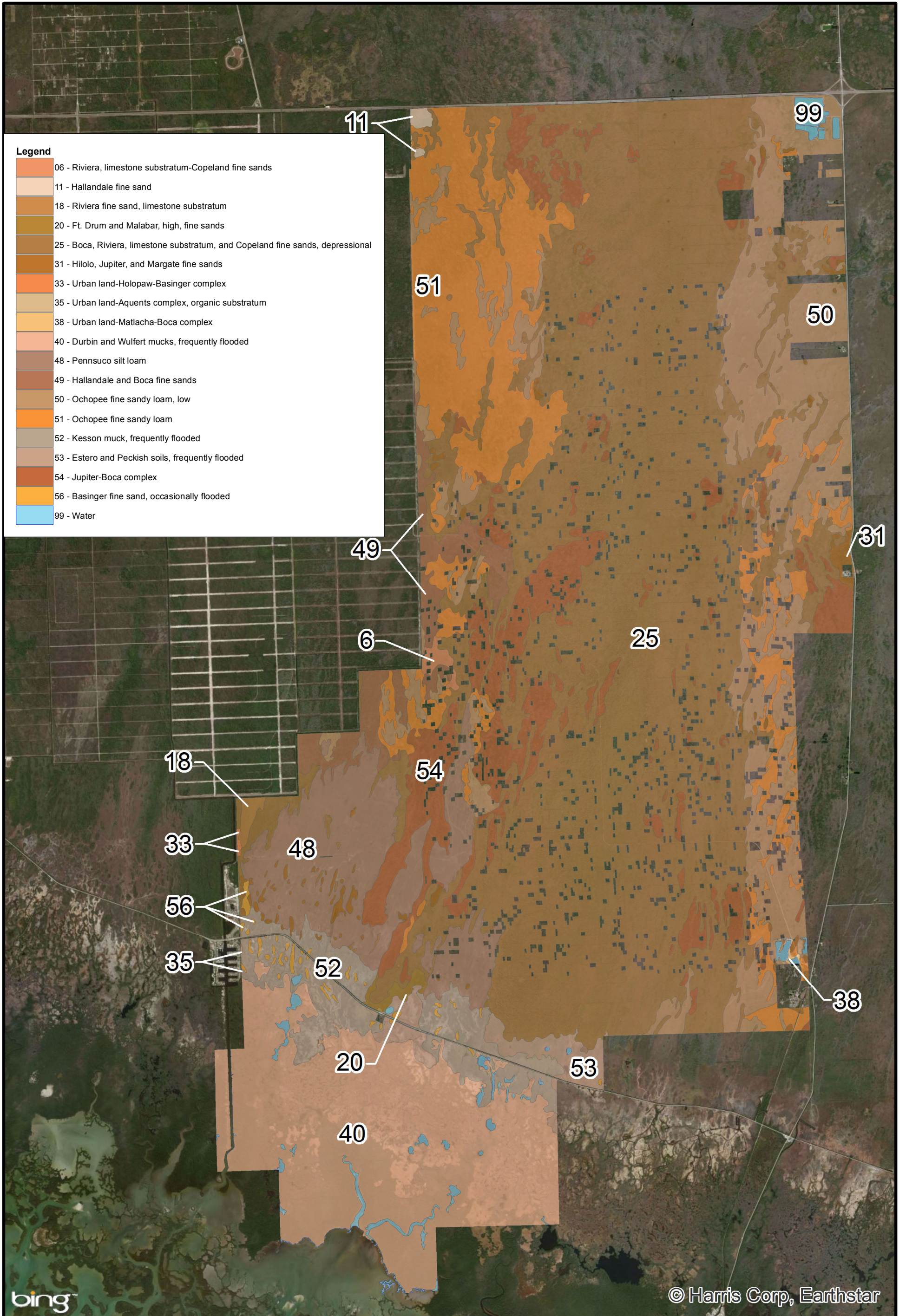
Hydrology

Surface water Surface waters in the preserve are all designated as Class III waters by the DEP as stipulated under Chapter 17-3, Florida Statutes. They are also designated Outstanding Florida Waters, meaning that no actions can be taken that will degrade the existing quality. Water conservation issues will be addressed later in the Management Needs section.

Drainage in the park varies seasonally. Overland flows are normally greatest between June and October, the months of heavy rainfall, and slowly subside between October and May, sometimes ceasing altogether and leaving water standing only in surface depressions. In very dry years, all surface water is lost to evapotranspiration or absorbed by the porous substrate. During the wettest months the water moves southward as sheet flow, perhaps as slowly as 0.03 feet per second (0.5 mile per day) on its way to the estuaries south of the preserve.

The preserve lies in the Okaloacoochee Slough drainage basin. The principal drainage features are the Okaloacoochee Slough, the Fakahatchee Strand, the Barron River Canal (along SR 29), Turner River Canal, and East Hinson Marsh. The northernmost feature is the elongated, seasonally flooded Okaloacoochee Slough. This depression extends southward, varying in width from less than a half mile to over four miles.

Just north of the Collier County line, in the southwestern corner of Hendry County, the Okaloacoochee Slough turns southwesterly towards SR 29. The Barron River Canal, the borrow canal for SR 29, intercepts this flow. The USGS reports that the Barron River Canal once drained as much as 150 cubic feet per second (cfs); since then however, Collier County has activated water control structures in the canal, which redirected some water into the Fakahatchee Strand. In 1989 the South Florida Water Management District (SFWMD) and Collier County installed bridges at SR 29 where the Okaloacoochee Slough historically flowed into



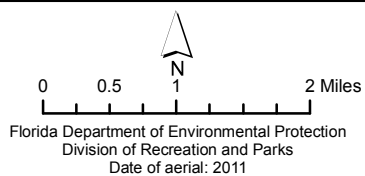
Legend

- 06 - Riviera, limestone substratum-Copeland fine sands
- 11 - Hallandale fine sand
- 18 - Riviera fine sand, limestone substratum
- 20 - Ft. Drum and Malabar, high, fine sands
- 25 - Boca, Riviera, limestone substratum, and Copeland fine sands, depressional
- 31 - Hilolo, Jupiter, and Margate fine sands
- 33 - Urban land-Holopaw-Basinger complex
- 35 - Urban land-Aquents complex, organic substratum
- 38 - Urban land-Matlacha-Boca complex
- 40 - Durbin and Wulfert mucks, frequently flooded
- 48 - Pennsuco silt loam
- 49 - Hallandale and Boca fine sands
- 50 - Ochopee fine sandy loam, low
- 51 - Ochopee fine sandy loam
- 52 - Kesson muck, frequently flooded
- 53 - Estero and Peckish soils, frequently flooded
- 54 - Jupiter-Boca complex
- 56 - Basinger fine sand, occasionally flooded
- 99 - Water

bing™

© Harris Corp, Earthstar

FAKAHATCHEE STRAND
PRESERVE STATE PARK



SOILS MAP

the northern portion of the Fakahatchee Strand, now within the Florida Panther National Wildlife Refuge. In 1997 the SFWMD installed 3 culverts under SR 29 near Deep Lake to convey water southwesterly from the Barron River Canal into the Fakahatchee watershed through historic hydrologic connections. Also, some water from Okaloacoochee Slough, east of SR 29, drains southeasterly into East Hinson Marsh and into the Turner River Canal, the borrow canal for State Road 839A.

The Fakahatchee Strand is the largest wetland extension of Okaloacoochee Slough, stretching south about 20 miles to the estuaries of the Gulf of Mexico. Some of the surface drainage is intercepted by the I-75 borrow canal. In 1989 the conversion of SR 84 into I-75 was completed. A series of rock pits were excavated at the intersection of SR 29 and I-75 for fill material for this project. More culverts were installed under the roadway to convey a larger volume of water into the Fakahatchee Strand south of I-75 where it flows under Janes' Scenic Drive and eventually under the Tamiami Trail into the estuarine natural communities to the south.

During the 1960s, a series of north-south canals were excavated just west of the Fakahatchee Strand, part of a land development called Southern Golden Gate Estates (SGGE). During 2005, three new culverts were installed under the Tamiami Trail (US-41) between SR 29 and the Faka-Union Canal in preparation for increased sheet flow resulting from the Picayune Strand Restoration Project (PSRP). The SGGE was purchased by the State of Florida and is now managed by the Florida Forest Service (FFS) as Picayune Strand State Forest. Phase 1 of the PSRP was completed in June 2007 and involved the plugging of seven miles of Prairie Canal along Fakahatchee's western boundary with Picayune Strand State Forest.

A series of small lakes are aligned north-south in the central portion of the strand swamp. Logging trams occupy the central portion of the Fakahatchee Strand and reduce the rate of water flow. This moderation of the southward flow through the sloughs of Fakahatchee Strand may have fortuitously compensated for the increased drawdown effect of the SGGE canal system, located only 1 to 2.5 miles west of the strand's edge. The logging trams were created by digging borrow canals on both sides to create a narrow gauge railroad bed (tram) about 15 feet wide and about 2 to 3 feet above the strand elevation. These trams are now functioning as linear hammocks, supporting tree species found on low hammocks within the strand [laurel oak (*Quercus laurifolia*), cabbage palm (*Sabal palmetto*), swamp bay (*Persea palustris*), royal palm, myrsine (*Myrsine cubana*), marlberry (*Ardisia escallonioides*), sweet bay (*Magnolia virginica*), gumbo limbo (*Bursera simaruba*), Simpson's stopper (*Myrcianthes fragrans*), willow bustic (*Sideroxylon salicifolium*), and satinleaf (*Chrysophyllum oliviforme*)]. Most of the logging trams are approximately one-mile long and run east and west from the central north-south-oriented tram (East Main Tram). The water collects in the north ditch of these trams and continues flowing to the nearest "washout" or break in the tram where a bridge was built for the train. The bridged washouts in the trams occur about every 1,000 feet. The purpose of these bridged washouts was to prevent the trams from being washed-out during high-water events during the logging period between 1944 and

1954. Due to their east-west orientation, these trams may have helped maintain water levels of the interior sloughs somewhat closer to their historic levels.

A borrow canal along an old railroad grade drains the southeastern-most corner of the preserve along with adjacent private land. Restoration of this feature at Bridge 75 along US-41 should be considered. The water in the canal is tidal and carries saltwater farther inland than would occur under natural conditions, allowing saltwater intrusion to shift the natural community from marl prairie to salt marsh. At its upper reaches, the canal may also be reducing the hydroperiod of approximately 400 acres of marl prairie and favoring a transition to salt marsh, and impacting the natural hydrological regime. Some measure of control, such as earthen plugs in the canal or a series of weirs, should be investigated to regulate the amount of freshwater discharge and reduce the influence of saltwater on adjacent natural communities.

The Barron River Canal extends south from Immokalee for about 40 miles to Everglades City. Water flow is regulated by nine stop-log controls between Alligator Alley and US-41. The USGS maintains a water stage recorder 0.7-mile upstream from Copeland between two of these control structures. The maximum daily discharge to pass the recorder was 292 cfs on September 25, 1962. The minimum discharge was 0.0 cfs on May 17 and 18, 1952. Complete flow records of the canal are available from 1952 to the present.

Water quality monitoring is conducted within a natural swamp lake at the northern end of the Fakahatchee Strand by the Collier County Pollution Control Department. Data are collected four times per year and the site is utilized as a reference site. The data includes water temperature, dissolved oxygen, pH, conductivity, clarity, chlorophyll *a* and *b*, as well as nitrates. Expanding the water quality monitoring program is proposed in the Hydrological Management section.

Groundwater Groundwater in the extensive, shallow, non-artesian surficial aquifer of southwest Florida is recharged seasonally by rainfall. Groundwater in the preserve has been most immediately affected by two north-south canals that were cut into the porous limestone, near the preserve on either side of the boundary. During most of the year, surface water is lower in these canals and groundwater drains toward them from the strand, creating a negative gradient outward from the canal. This drawdown extends for over two miles during the dry season, from the large Prairie Canal, while it only extends for approximately 0.5 to 1 mile from the smaller SR 29 canal (Swayze and McPherson 1977). In the 1970s, this drawdown effect was compounded by severe drought. Subsequently wildfires burned into the Fakahatchee Strand. Since then, water control structures have been installed in the canals to retard the discharge of water in the wet season. These structures have been beneficial, but data collected from groundwater wells in the preserve indicate drawdown effects still extend 1 to 1.5 miles (during the wet season) and 2 to 3 miles (during the dry season) into the preserve from the canal along the eastern boundary of South Golden Gate Estates. Hydrological data collection continues helps researchers to assess impacts to the Fakahatchee Strand ecosystem, which

will guide the development of strategies for addressing these impacts. This undertaking will require collaboration with hydrologists, possibly from other agencies, to complete. The regulated use of water control structures in canals, perhaps to include the installation of plugs, is essential to the proper management of hydrology in the preserve.

The first phase of the PSRP that started in 2004 included plugging sections of Prairie Canal along the park's western boundary, and was completed in 2006. Since Prairie Canal was plugged in November 2006 the negative gradient has been reduced in the dry season and almost eliminated in the wet season as determined by monthly data from two transects of groundwater wells perpendicular to the north-south canals. Since the drawdown effect of Prairie Canal was documented to reach up to three miles eastward, the plugging of seven miles of the north-south portion of Prairie Canal has resulted in the hydrologic improvement of 14 square miles of wetland natural communities (marl prairie, wet flatwoods, and strand swamp) within the Fakahatchee Strand Preserve State Park. The completion of the second phase of the PSRP (filling Merritt Canal) is expected to remove the wet season drawdown effect, and the filling of the East-West Stair-Step Canal connecting Prairie and Merritt Canals is expected to remove the dry season drawdown effect (2014, Mike Duever, personal communication).

The surficial aquifer within the preserve is currently tapped as the source of drinking water for Everglades City, Copeland, Lee Cypress, Chokoloskee, and Plantation. Three wells to the west of Janes' Scenic Drive were abandoned because of chronic water quality issues related to surface water contamination because of the proximity of the Harmon Brothers borrow pits. A replacement wellfield was developed for these communities in 2013. It is located to the east of Janes' Scenic Drive, in the southeastern portion of the preserve in Management Zone FS-A7P. Groundwater monitoring well #22 is located 1.5 mile northwest of the three abandoned wells and a staff gauge in the borrow pit at the Copeland Fire Tower has been recorded daily or weekly since 1993.

Another well field is currently the source of drinking water for the Port of the Islands development along the southwestern boundary. These two wells are located along Old Pump Road in central Dan House Prairie at 1 to 1.5 mile east of the Faka-Union Canal (Township 52, Range 28, Section 2 NW ¼). The SFWMD issues water use permits for both of these wellfields (SFWMD, annual water consumption data). Groundwater monitoring well #13 and a staff gauge are located about 0.5 mile east of the easternmost well on Old Pump Road and a monthly record of water level data has been collected since December 1987. For future monitoring, gauges could be placed closer to these two wellfields to monitor weekly/monthly water levels to determine if the wellfields are creating significant drawdown gradients from the park. However, major hydrologic improvements are expected in the area below the Stair-Step Canal when the upstream East-West Stair-Step Canal is filled.

Though described separately, surface and groundwater levels at this park are closely interrelated because they are essentially the same water mass that is above

ground in the wet season and normally recedes below ground at some point during most dry seasons.

Natural Communities

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

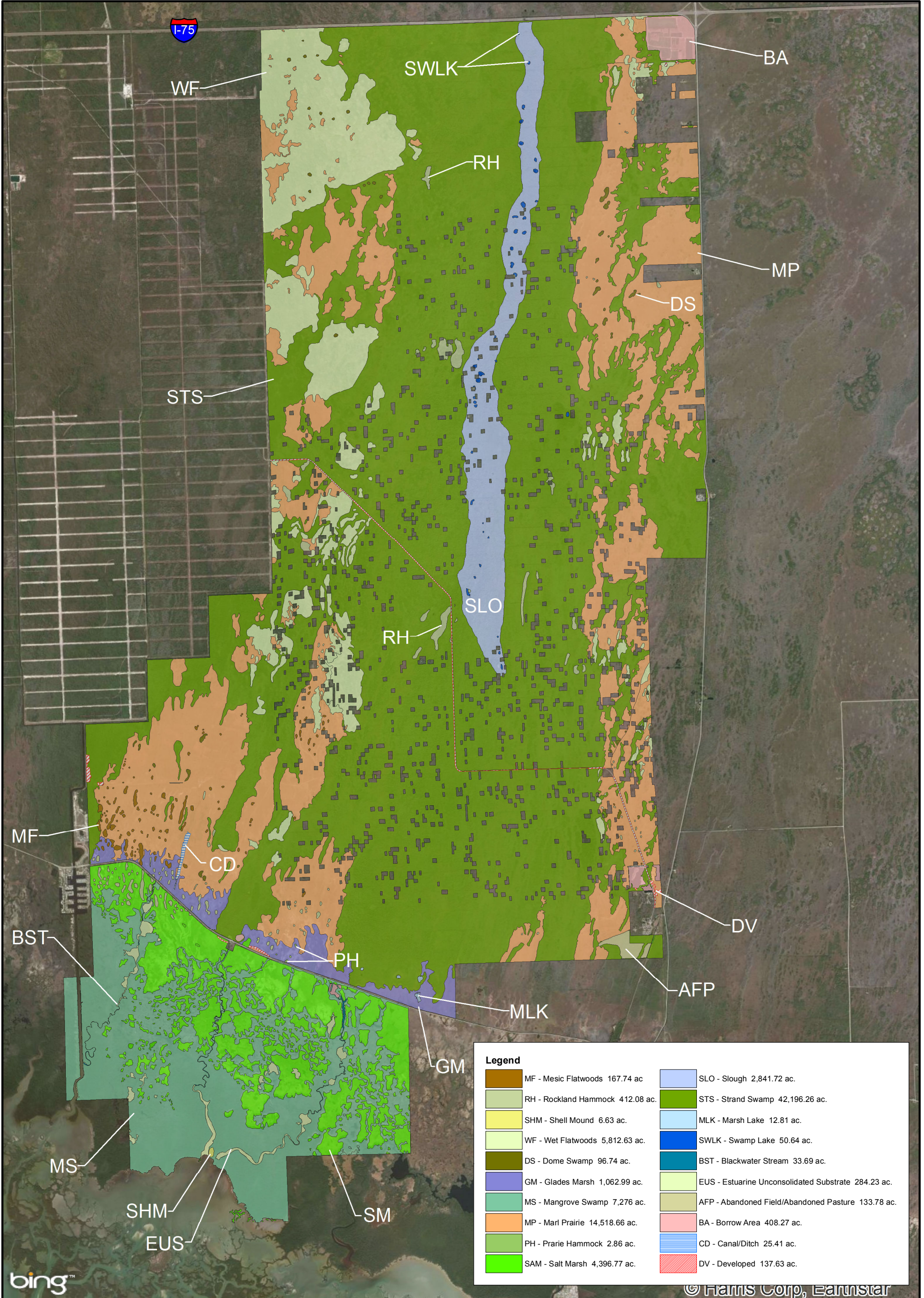
The system of classifying natural communities employed in this plan was developed by the Florida Natural Areas Inventory (FNAI). The premise of this system is that physical factors such as climate, geology, soil, hydrology, and fire frequency generally determine the species composition of an area, and that areas which 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.

At the point in time when the park's natural communities have reached their desired future condition, they are considered to be in a maintenance status and share certain basic characteristics and management requirements. These include the maintenance of the optimal fire return intervals for fire dependent communities, the maintenance control of non-native plant and animal species, the maintenance of natural hydrological functions (including historic water flows and water quality), the maintenance of proper vegetative structure that represents the natural diversity of the community, the maintenance of healthy populations of plant and wildlife species (including those that are imperiled or endemic), and the maintenance of intact ecotones between natural communities across the landscape.

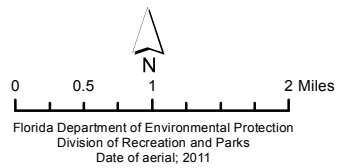
The park contains 14 distinct natural communities as well as altered landcover types and developed areas (see Natural Communities Map). A list of known plants and animals occurring in the park is contained in Addendum 5.

MESIC FLATWOODS

Desired future condition: Dominant pines will be South Florida slash pine (*Pinus elliotii* var. *densa*). Native herbaceous groundcover should be at least 50 percent of the area and is less than three feet in height. Saw palmetto (*Serenoa repens*)/shrub component will comprise no more than 50 percent of total cover and will be less than three feet in height. Shrub species include saw palmetto, gallberry (*Ilex glabra*), and highbush blueberry (*Vaccinium corymbosum*). Shrubs are generally knee-high or less, and there are few if any large trunks of saw palmetto along the



FAKAHATCHEE STRAND PRESERVE STATE PARK



NATURAL COMMUNITIES MAP

bing™

© Harris Corp, Earthstar

ground. The optimal fire return Interval for this community is 1 to 3 years. Cover from invasive exotic plant species will be five percent or less.

Description and assessment: In the preserve, mesic flatwoods is distinguished from wet flatwoods by the presence of uninterrupted patches of saw palmetto. The mesic flatwoods are closely associated with and usually grade into wet flatwoods, the difference being determined by minor topographic change, with mesic flatwoods on slightly more elevated sites. The mesic flatwoods in the preserve is approximately 168 acres in total and consists of numerous small, isolated pockets within a complex of wet flatwoods and marl prairie. Saw palmetto fruit in the mesic flatwoods is an important food source for the regions black bear (*Ursus americanus floridanus*). Mesic flatwoods are generally in good condition and are burned with the adjacent marl prairie and wet flatwoods that have similar optimal fire return intervals. The most commonly encountered invasive exotic plant species in the mesic flatwoods is Brazilian pepper (*Schinus terebinthifolius*), but frequent fires help keep them from forming a dense monoculture.

General management measures: Continue maintaining this community through frequent growing season prescribed burning to maintain biological diversity and reduce hardwood encroachment. Treat infestations of invasive exotic plant species, especially Brazilian pepper.

PRAIRIE MESIC HAMMOCK

Desired future condition: Isolated patches of canopied hammock occurring within a larger matrix of pyrogenic vegetation, usually marl prairie or mesic flatwoods. Dominant vegetation will typically be cabbage palm, live oak (*Quercus virginiana*) or a mixture of the two species. Common species in the relatively open understory will include saw palmetto, wax myrtle (*Myrica cerifera*), dahoon holly (*Ilex cassine*), marlberry, and epiphytes. Soils often include a thick leaf layer underlain by mixed sands and organics over a limestone substrate. Prairie hammock should be allowed to burn on the same frequency as the adjacent fire type community, allowing fires to naturally burn across ecotones. On organic substrates, fires should be appropriately planned to avoid high severity ground fires resulting in the upper soil level being completely consumed. Cover from invasive exotic plant species will be five percent or less.

Description and assessment: There are numerous prairie mesic hammocks scattered over marl prairies. Many are very small and round in shape, when seen from above, accounting for less than an acre each, and approximately 3 acres in total. Others are elongated in shape. Such communities were designated as low hammocks by Harper (1921) and Davis (1943). The latter author actually cited a specific location (by township, range, and section) for examples of a low hammock within the boundaries of the present-day preserve. These communities are probably in a near original condition except for a few invading Brazilian pepper plants.

General management measures: Allow to burn as often as the adjacent marl prairie community is burned. Control exotic plants, especially Brazilian pepper, as it is spread by birds, raccoons (*Procyon lotor*), and black bear.

ROCKLAND HAMMOCK

Desired future condition: 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 can dissolve the surface limestone causing collapsed depressions in the surface rock called solution holes.

Rockland hammocks will typically have larger more mature trees in the interior, while the margins are dense with growth of smaller shrubs, trees, and vines. Typical canopy and understory species will include, gumbo limbo, pigeon plum (*Coccoloba diversifolia*), false mastic (*Sideroxylon foetidissimum*), strangler fig (*Ficus aurea*), several species of stoppers, marlberry, satinleaf, and catclaw blackbead (*Pithecellobium unguis-cati*). Vines and herbaceous vegetation are less common and include greenbrier (*Smilax* spp.). Epiphytes, including orchids, ferns, and bromeliads can be found on larger trees. Cover from invasive exotic plants will be less than five percent.

Description and assessment: These are islands of rockland hammock within the strand. Most are elongated north to south similar to the orientation of tree islands in sawgrass marsh of Everglades National Park (ENP). In both cases orientation is related to the southerly flow of water. The dominant plants are tropical shrubs and hardwood trees. Typical plants include royal palm, laurel oak, occasionally live oak, Simpson's stopper, white stopper (*Eugenia axillaris*), marlberry, myrsine, gumbo-limbo, willow bustic, swamp bay, cabbage palm, tallowwood (*Ximenia americana*) and occasionally false mastic, pigeon plum, and satinleaf. Epiphytes are common. A notable difference from the tree island hammocks of the Everglades is the usual presence of royal palms in the Fakahatchee Strand hammocks. During times of extreme high water, the water surface may be slightly above the ground in these hammocks.

In the approximately 60 years since their construction, some of the tram roads of the strand have become linear artificial tropical hardwood hammocks. Species composition is similar to that of the natural hammocks described above. The richest species composition seems to be correlated with proximity to the deeper water, which may have an effect on moderating extremes in air temperature. About one third of the 5,000 to 7,000 royal palms in the preserve are found on the tram roads. The only occurrences of Chiggery grape (*Tournefortia hirsutissima*) ever noted in the preserve are on tram roads. Two woody tropical species, Gulf graytwig (*Schoepfia chrysophylloides*), and devil's claws (*Pisonia aculeata*) occur on trams as well as in rockland hammock.

General management measures: Restoration and maintenance of historic hydrologic conditions will help to protect this natural community from excessive drought and muck consuming fires. Control invasive exotic plants.

SHELL MOUND

Desired future condition: The shell mound community is largely the result of human activities instead of natural and physical processes. Shell mounds are small hills or mounds made up almost entirely of mollusk shells discarded by Native Americans. The soils will be circumneutral to slightly alkaline, contain minimal organic material, and very well drained. Undisturbed shell mounds can support a variety of hardwood trees and shrubs which may include white stopper, live oak, cabbage palm, wild lime (*Zanthoxylum fagara*), saffron plum (*Sideroxylon celastrinum*), soapberry (*Sapindus saponaria*), snowberry (*Chiococca alba*), White indigo berry (*Randia aculeata*), Jamaican capertree (*Capparis cynophallophora*), and false mastic. Desired future conditions include minimizing erosion; including maintaining appropriate vegetation heights to minimize toppling of large trees, and protecting sites from illegal digging. Cover from invasive exotic plants will be less than five percent.

Description and assessment: The most notable shell mound site is Daniels' Point at the southern extremity of the preserve, between the mouths of the Fakahatchee and East Rivers. It is named after one of the pioneering fishermen families who lived here around the turn of the twentieth century. It is also listed as one of the cultural sites of the preserve. The substrate is shell. Prior to clearing by settlers the vegetation was tropical hardwood in the interior, such as gumbo-limbo and Jamaican dogwood (*Piscidia piscipula*). Halophytic trees such as buttonwood grow along the shore. Specimens of these trees remain, but today introduced species like white leadtree (*Leucaena leucocephala*), latherleaf (*Colubrina asiatica*), seaside mahoe (*Thespesia populnea*), and the sprawling Madagascar rubber vine (*Cryptostegia madagascarensis*), are conspicuous components of the flora.

The condition of the shell mound is fair due to the presence of exotic plant species and a historic cattle dipping vat.

General management measures: Soil disturbance at Daniels' Point can increase invasion by exotic species such as Brazilian pepper and Australian pine. A thorough exotic treatment plan needs to be followed to prevent further infestation. The larger hardwoods should be monitored to determine the threat of toppling, which could cause damage and loss of the archaeological resources. Erosion should continue to be monitored to ensure the survivorship of this unique habitat type.

WET FLATWOODS

Desired future condition: Dominant pines will be slash pine. Pond cypress (*Taxodium ascendens*) may reach the canopy in some locations. The canopy will be open, with pines being widely scattered and of at least three age classes. Native herbaceous cover is at least 80 percent. Common shrubs will include swamp bay, dahoon holly, cabbage palm, and wax myrtle. The Optimal Fire Return Interval for this community is 2 to 4 years. Cover from invasive exotic plants will be less than five percent.

Description and assessment: This community is more prevalent in northern portions of the preserve and is usually intermixed with marl prairie, dome swamps, strand swamps, and other types. Grasses and sedges, which form fine fuels when dry, are more prevalent than in mesic flatwoods. Examples include: gulf hairawn muhly (*Muhlenbergia capillaris* var. *filipes*), sand cordgrass (*Spartina bakeri*), various broomsedges or bluestems, and several species of beaksedge (*Rhynchospora* spp.).

The wet flatwoods are generally in good condition except for the presence of swamp buggy trails that have caused soil compaction and alteration of plant species composition, widely scattered Brazilian peppers, and abandoned hunting camps. The wet flatwoods along the western boundary of the park have a higher density of cabbage palms than desired. These palms became established after the hydrology change resulting from the construction of Prairie Canal. Additional information and actions to reduce the cabbage palm density can be found in the Natural Communities Improvements section.

General management measures: A prescribed fire return interval of 2 to 4 years as well as the restoration and maintenance of historic hydrologic conditions will help to protect this natural community from hardwood encroachment and excessive duff consuming fires. Control invasive exotic plants. Mitigate impacts from ORV by enforcing park rules and requiring landowners to access private property by designated trails. Reduce the density of cabbage palms where they are overly abundant.

DOME SWAMP

Desired future condition: Isolated, forested, depression wetland occurring within a fire maintained matrix such as marl prairie or wet flatwoods. The characteristic dome appearance is created by smaller trees that grow on the outer edge (shallower water and less peat) and the larger trees that grow in the interior. Pond cypress will typically dominate. Other sub-canopy species can include red maple (*Acer rubrum*), cabbage palm, dahoon holly, swamp bay, Coastal plain willow (*Salix caroliniana*), pop ash (*Fraxinus caroliniana*), and pond apple (*Annona glabra*). Shrubs can be absent to moderate (a function of fire frequency) and can include Virginia willow (*Itea virginica*), buttonbush (*Cephalanthus occidentalis*), wax myrtle, and swamp dogwood (*Cornus foemina*). An herbaceous component can range from absent to dense and include ferns, sawgrass (*Cladium jamaicense*), sedges, pickerel weed (*Pontederia cordata*), bulltongue arrowhead (*Sagittaria lancifolia*), and lizard's tail (*Saururus cernuus*). Vines and epiphytes will be commonly found. Maintaining the appropriate hydrology and fire frequency is critical for preserving the structure and species composition of the community. Dome swamps should be allowed to burn on the same frequency as the adjacent fire type community, allowing fires to naturally burn across ecotones. Fires should be appropriately planned to avoid high severity fuel consumption within the dome swamp.

Description and assessment: Dome swamps are scattered over the marl prairies bordering the Fakahatchee Strand. The domes are presumed to be in an original

condition, except where the presence of shrubs and smaller hardwood trees that may signify that fire has been less frequent in recent decades than in former times. In addition, a few invasive exotic plant species are scattered around the drier periphery of the domes, most commonly Brazilian pepper.

General management measures: Allow to burn as often as adjacent marl prairie is burned. Control exotic plants, especially Brazilian pepper, as it is spread by birds and wildlife.

GLADES MARSH

Desired future condition: Glades marsh is a primarily herbaceous wetland in South Florida, especially in the Everglades basin, that occurs in broad shallow channels over a substrate of peat or marl that directly overlies limestone. Soils are often deep peats that have been deposited over the limestone. Glades marsh is frequently flooded with a hydroperiod of at least six months, and may be slowly flowing, particularly in the Everglades basin. Fire return interval is generally infrequent from 3 to 10 years.

Description and assessment: Glades marsh grades into marl prairie within the freshwater zone downstream of the Fakahatchee Strand and together with sloughs form a mosaic of wetland communities. In the increasingly saline environment towards the coast, glades marsh and marl prairie grade into salt marsh and mangrove swamp, forming large zones of overlap where red mangrove and buttonwood becomes increasingly frequent or where the freshwater marsh species are gradually replaced by cordgrasses (*Spartina* spp.), saltgrass (*Distichlis spicata*), and shoreline seapurslane (*Sesuvium portulacastrum*).

General management measures: Restoration and maintenance of historic hydrologic conditions to maintain the complex mosaic of wetland communities. Continue to monitor water levels and seek potential restoration projects to reduce the excessive draining of fresh water through canals. Continue exotic plant removal activities throughout this natural community. Allow marl prairie prescribed fires to burn into the Glades marsh, but only when conditions are wet enough to prevent ignition of peat soils.

ESTUARINE MANGROVE SWAMP

Desired future condition: Dense, low forests occurring along relatively flat, intertidal and supratidal shorelines of low wave-energy along Florida's coasts, generally south of the normal freeze-line. The dominant plants will include red mangroves (*Rhizophora mangle*) (occupying the deeper zones), black mangroves (*Avicennia germinans*) (occupying the middle zones), white mangroves (*Laguncularia racemosa*) and buttonwood (*Conocarpus erectus*) (occupying the uppermost zones). The tree canopy will be typically dense with little to no understory. Where present, the understory can include saltgrass (*Distichlis spicata*), saltmeadow cordgrass (*Spartina patens*) needle rush (*Juncus roemerianus*), bushy seaside oxeye (*Borrichia frutescens*), coinvine (*Dalbergia ecastaphyllum*), saltwort (*Batis maritima*), perennial glasswort (*Sarcocornia ambigua*), and giant leather fern

(*Acrostichum danaeifolium*). Soils will range from saturated to inundated, and vary considerably from deep mucks to fine sands but always contain a high salt content limiting plant diversity.

Description and assessment: Tidal swamps in the Fakahatchee Strand seem unaltered by man except at obvious disturbed sites like the Faka-Union canal with its high spoil bank. The northern edge of the mangrove forest has migrated northwards since the 1940s because drainage canals in this region reduced the broad freshwater pressure head of surface flows from the mainland, thus allowing saltwater to transport mangrove propagules farther inland.

General management measures: Restoration and maintenance of historic hydrologic conditions will help to protect this natural community. Removal of invasive Brazilian pepper plants and maintenance of exotic plant control should continue.

MARL PRAIRIE

Desired future condition: Herbaceous plant species cover is sparse at 30 to 40 percent, and will be dominated by grasses and sedges. Open vistas will be vast. Stands of stunted pond cypress, known as "hat-rack cypress", may be visually characteristic of sites. Dominant species include gulf hairawn muhly grass, spreading beaksedge (*Rhynchospora divergens*), little bluestem (*Schizachyrium scoparium*), sand cordgrass, lovegrass (*Eragrostis* spp.), and black bogrush (*Schoenus nigricans*). The optimal fire return interval for this community is 1 to 3 years.

Description and assessment: Marl prairies include intermixed within them prairie mesic hammocks, dome swamps and small strand swamps. Large expanses of these prairies appear undisturbed. On Dan House Prairie, No Name Prairie, and in portions of the East Prairies there are some barely perceptible signs of agricultural sites where tomatoes were planted in the 1930s. Drainage features associated with the agricultural use of the land diverts some of the subsurface and surface water sheetflow. However, at the edges of these prairies, numerous young cypress trees, and sometimes pine trees, can be seen trying to extend the forest edge. These encroaching trees are less numerous since fire-frequency has been increased. Due to ongoing prescribed fire and hydrologic restoration, the floristic diversity is in excellent shape. As with the wet flatwoods natural community along the western boundary near Prairie Canal, cabbage palm density is greater than desired.

General management measures: This natural community should be burned every 1 to 3 years to maintain the dominant graminoids and prevent the encroachment of cypress, pines and wax myrtle. Develop and implement a plan to improve sheet flow by filling ditches or plugging canals and reduce the diversion of water from the prairies formerly used for agriculture. Monitor and treat invasive exotic plants when encountered. Reduce the density of cabbage palms where they are overly abundant.

ESTUARINE SALT MARSH

Desired future condition: Expanses of grasses, rushes and sedges along coastlines of low wave-energy and river mouths. Saltmeadow cordgrass and needle rush are indicator species that typically form dense stands and will be delineated by elevation. Saltmeadow cordgrass can tolerate daily inundation and dominates at lower elevations while black needlerush is found where the marsh floods less frequently. Other common plants will include saltwort, glassworts, bushy seaside oxeye, saltgrass, and seashore paspalum. Soils will range from saturated to inundated, and vary considerably from deep mucks to fine sands but always contain a high salt content limiting biodiversity of plants. Natural optimal fire return intervals are unknown (FNAI 2010), but sporadic fires that leave a mosaic of burned and un-burned areas will occur at a greater than two year interval.

Description and assessment: Salt marsh is unaltered except for the presence of mangroves that have encroached upon it during the years of salt-water advance mentioned above. Embedded within the salt marsh is the "salt flat" variant which are too saline to support much vegetation and appear white and barren on aerial photography. More than 200 acres of salt flat can be identified from aerial photography in two areas. Undisturbed salt flats can be important areas for ground nesting plovers and other species. Several bird species such as the Florida clapper rail (*Rallus longirostris scottii*), reddish egret (*Egretta rufescens*), tricolored heron (*Egretta tricolor*), and roseate spoonbill (*Platalea ajaia*) favor the salt marshes. Rare mammals such as the Everglades mink (*Neovison vison*), have been known to utilize the infrequently flooded upper marsh habitat. The American crocodile (*Crocodylus acutus*) has been documented within this natural community.

General management measures: Maintenance of historic hydrologic conditions to prevent encroachment of tidal swamp. Continue sporadic use of prescribed fire in the salt marsh, at a 3 to 5 year fire return interval. Monitoring salt flats for ground nesting birds is recommended. Prevention of disturbance to vegetation and hydrology by excluding airboats and other vehicles from the salt marsh and salt flats is also significant to maintaining this natural community type.

POND APPLE SLOUGH

Desired future condition: Characterized by broad shallow channels, inundated with slow moving water except during extreme droughts. With a hydroperiod of at least 250 days, Sloughs are the deepest drainage ways within marsh and swamp systems and can contain open water, herbaceous cover or be partially forested. Sloughs will occur in irregular linear arrangements within strand swamp, floodplain swamp, basin swamp, glades marsh, or slough marsh communities. The vegetation structure will be quite variable. In south Florida, Sloughs are often dominated by a pond apple canopy with a large diversity of epiphytes (including many rare species). Sloughs dominated by emergent herbs often contain fireflag (*Thalia geniculata*), arrowhead (*Sagittaria* spp.), canna (*Canna flaccida*), pickerelweed, and lizard's tail. Deeper sloughs may contain submerged and floating vegetation including white water lily (*Nymphaea odorata*), spatterdock (*Nuphar advena*), frog's bit (*Limnobiium spongia*), bladderworts (*Utricularia* spp.), and lesser duckweed

(*Lemna aequinoctialis*). The soils will be peat, typically submerged, but may become exposed during extreme drought and subject to deep peat fires.

Description and assessment: Sloughs are in the lowest part of linear depressions in the underlying bedrock. While it is distinct enough to be classed as a community itself, the slough is an integral part of the strand swamp, being its deepest drainageway and centrally located. Hydrologically it is distinguished by the presence of surface water at least two-thirds of the year (250 days). Vegetation is characterized by pond apple and pop ash trees, and frequently by southern giant rice (*Zizaniopsis miliacea*). It is also where the greatest number of orchids, bromeliads and ferns are found. The epiphytes are protected from frost in the winter months and from desiccation during spring and early summer by the high levels of humidity coming from the water surface or wicked up by the organic soils and partially retained by the layered canopy of bald cypress (*Taxodium distichum*), pop ash, and pond apple trees. FNAI identified Fakahatchee as an exemplary site for the slough natural community (FNAI 2010).

General management measures: Restoration and maintenance of historic hydrologic conditions will help to protect this natural community from excessive drought and muck consuming fires. The poaching of epiphytic plants, specifically orchids and bromeliads, is an on-going threat to this resource.

STRAND SWAMP

Desired future condition: A shallow, forested, usually elongated depression or channel situated in a trough within a flat limestone plain. The dominant canopy species will primarily be bald cypress but pond cypress occasionally dominates. The cypress trees at the outer edge are younger and smaller than the interior giving the strand a rounded profile. Typical understory plants will include red maple, pond apple, pop ash, laurel oak, cabbage palm, strangler fig, swamp bay, sweetbay, wax myrtle, and buttonbush. The groundcover can include string-lily (*Crinum americanum*), giant leather fern, swamp fern (*Blechnum serrulatum*), royal fern (*Osmunda regalis* var. *spectabilis*), sawgrass, and water hyssops (*Bacopa* spp.). A variety of vines and epiphytes typically also occur. Soils are peat and sand (of varying depths) over limestone. The normal hydroperiod ranges from 100 to 300 days and the water is deepest and remains longest near the center of the strand.

Description and assessment: The word "strand" describes an elongated swamp forest usually dominated by cypress trees. These strand swamps are often conspicuous features of the landscape in the Big Cypress Swamp because they are dense forests bordered by more open terrain, and thus visible from a distance. Within the strand swamp are the slough communities and several rockland hammocks as well.

The strand swamp is the most disturbed of all the natural communities in the park. It was once dominated by large cypress trees that formed a closed canopy overhead. Oaks were confined to the higher ground and maples were not so common as today. Logging began around Copeland in 1944, advancing northward

until it reached the remote strands of what is now Golden Gate Estates in 1957. The aftermath of tree felling favored fires in the damaged forest during times of drought. Most of the canopy had been eliminated, which permitted the sun to dry the organic substrate. Large amounts of slash were also available as fuel. Severe fires followed the logging of the 1940s and early 1950s. Willows, which are today being replaced by maples and laurel oaks, seeded into the burned sites. Cypress trees are slowly regaining their primeval stature, and proper hydrological management may someday return this community to its pre-disturbance grandeur. On the prairies bordering the Fakahatchee Strand proper, as mentioned above, there are numerous smaller strand swamps. These differ substantially from the Fakahatchee Strand by being smaller in size and simpler in vegetative composition, but under the FNAI classification they are typed as the same community.

These lesser strand swamps are biologically identical to the regionally abundant dome swamp communities dominated by cypress trees, differing only by forming from linear depressions rather than circular ones. The small strand swamps appear largely undisturbed. In the absence of frequent fires, however, hardwood vegetation grows rapidly in these communities. FNAI also identifies Fakahatchee Strand State Park as an exemplary site for the occurrence of strand swamp.

General management measures: Restoration and maintenance of historic hydrologic conditions will help to protect this natural community from excessive drought and muck consuming fires. Efforts to preserve, and in some cases restore populations of listed species such as the Everglades mink, wood stork (*Mycteria americana*), limpkin (*Aramus guarauna*), ghost orchid (*Dendrophylax lindenii*), cowhorn orchid (*Cyrtopodium punctatum*), umbelled epidendron (*Epidendrum floridense*), and giant air plant (*Tillandsia utriculata*) are ongoing.

MARSH LAKE

Desired future condition: Characterized by an open water zone with or without floating plants surrounded by glades marsh. Water generally remains throughout the year, although water levels may fluctuate substantially.

Description and assessment: There are three marsh lakes located south of the southern end of the Fakahatchee Strand and north of US-41 surrounded by glades marsh. The margin of these lakes are dominated by cattails (*Typha* spp.) and sand cordgrass. One of the lakes is completely surrounded by Brazilian pepper and would be considered in fair condition.

General management measures: Restoration and maintenance of historic hydrological conditions will help to protect this natural community from excessive drought and muck consuming fires. Continue invasive exotic plant control efforts with emphasis on Brazilian pepper.

SWAMP LAKE

Desired future condition: Characterized as shallow open-water zones, with or without floating or submerged aquatic plants, which are surrounded by Strand

Swamp. Although water levels may fluctuate substantially, they are generally permanent water bodies but may become dry during extreme droughts. Water flow will generally be non-existent to very slow moving. Existing vegetation can include white water lily, spatterdock, duckweed, coontail (*Ceratophyllum demersum*), and bladderworts. Emergent plants may also occur but the community should be considered a marsh if emergent species dominate the water body. Substrates are variable and may be comprised of peat, sand, alluvial clay or any combination of these. The water column for a swamp lake is typically highly tannic with a moderate mineral content. Desired future conditions will include minimizing disturbance in adjacent uplands that may result in an increase in sedimentation.

Description and assessment: There are more than 97 small lakes in the park. They appear unaffected by past human disturbances to the landscape. These swamp lakes provide important aquatic refugia for the American alligator (*Alligator mississippiensis*), river otter (*Lontra canadensis*), many native fish species, as well as various turtle and frog species. The swamp lakes are also utilized as nesting and feeding areas for black-crowned night herons (*Nycticorax nycticorax*), wood storks, purple gallinules (*Porphyryula martinica*), egrets, herons, and ibis. In general, the swamp lakes are in good condition, with the exception of a few invasive exotic species that keep them from being considered pristine.

General management measures: Restoration and maintenance of historic hydrologic conditions will help to protect this natural community from excessive drought and muck consuming fires. Several of the swamp lakes are impacted by the presence of exotic cichlids and invasive aquatic vegetation such as hydrilla (*Hydrilla verticillata*) and water lettuce (*Pystia stratiotes*). Efforts to remove exotic species in these areas are ongoing.

BLACKWATER STREAM (Tidal Creek)

Desired future condition: Blackwater stream can be characterized as perennial or intermittent watercourses originating in lowlands where extensive wetlands with organic soils collect rainfall and runoff, discharging it slowly to the stream. The stained waters will be laden with tannins, particulates, and dissolved organic matter derived from drainage through adjacent swamps resulting in sandy bottoms overlain by organic matter. Emergent and floating vegetation, including smartweeds (*Polygonum* spp.), grasses, and sedges may occur but is often limited by dramatic seasonal fluctuations in water levels. Desired conditions include minimizing disturbance and alterations and preserving adjacent natural communities.

Description and assessment: The three examples of this community originate south of US-41 where the swamps associated with the streams converge and flow southward until it is met by tidally influenced portion of the stream. Seasonal fluctuations in salinity will vary depending on time of year; in the summer months the freshwater flow is greater and this process is almost reverse in the winter months as the freshwater flows diminish in the fall, and saltwater increases salinity in the stream. Invasive exotic plants that can be seen along the blackwater streams are primarily Brazilian pepper with the possibility of isolated recruitment of

Australian pine. The majority of the exotic plants take root and survive along the banks or on higher ground during the winter and spring months when water levels are much lower or nonexistent. As the stream progresses southward it is likely that most of the exotics will be found above the mean high tide mark. Some animals that can be seen include West Indian manatee (*Trichechus manatus*), river otter, fresh and saltwater fish species, alligator, various turtle spp., wading birds, fresh and mangrove water snakes (*Nerodia clarkii compressicauda*), snails, variety of frog spp., crab spp., and small mammals. Non-native invasive fish are common in the freshwater portion of this ecosystem including spotted tilapia (*Tilapia mariae*), and walking catfish (*Clarias batrachus*).

General management measures: Long-term enhancement will require continued exotic plant treatments. Overall this community should contain less than 2 percent of exotic plants in order to be considered in maintenance. Park staff should pursue the possibility for establishing boundary markers where necessary, so park rules and regulations can be enforced by law enforcement.

UNCONSOLIDATED SUBSTRATE

Desired future condition: Unconsolidated substrate will consist of expansive un-vegetated, open areas of mineral based substrate composed of shell, coralgall, marl, mud, and/or sand (sand beaches). Desired conditions include preventing soil compaction, dredging activities, and disturbances such as the accumulation of pollutants.

Description and assessment: FNAI's most appropriate synonyms for this community are probably mud flats or tidal flats. There are discontinuous isolated patches south of US-41 where considerable numbers of wading birds, shore birds and waterfowl can be seen at low tide. Although superficially appearing barren, this community is rich in invertebrates and bottom-feeding fish that explain the presence of numerous birds. This community may also be very important to the federally-threatened smalltooth sawfish (*Pristis pectinata*). This community is to be considered in excellent to good condition.

General management measures: The continuation of the no public motor boat access policy in the park is the best management measure for this community. Continue to monitor for potential exotic marine invaders (e.g., Asian green mussels [*Perna viridis*] or Indo-Pacific lionfish [*Pterois* spp.]).

ALTERED LANDCOVER TYPES

BORROW AREA

Desired future condition: Two former limestone rock mine operations are within the park. When they closed, a series of steep-walled borrow lakes remained, surrounded by wetlands and uplands disturbed by the mining operation. The borrow lakes will have littoral shelves dominated by native aquatic and emergent wetland vegetation, shrubs and trees. At least 50 percent of the lake's shorelines will be contoured to have littoral shelves. The remaining shoreline will be planted with

native hammock forming vegetation, or reclaimed to the most appropriate natural community in the park. The upland areas disturbed by mining will be reclaimed to an approximation of the park's natural communities, with the exception of areas designated for future park development, recreational access, or to meet other resource management goals (for example, areas for ground nesting birds). Where feasible areas will be contoured to the natural grade. Invasive exotic plant coverage will be less than five percent of the upland, shoreline, and littoral shelf.

Description and assessment: Approximately 500 acres in the park are considered borrow area, with the majority of acreage being open water in the borrow lakes. Two areas in the park have this landcover including a large site in the northeast corner of the park. It was used for the excavation of fill when I-75 was built. All vegetation was removed and limerock extracted leaving several large pits. A variety of opportunistic plants now grow here. The second is the 200 acres of property owned by the Harmon Brothers Rock Company that was acquired in 2004 as an addition to the park, near the park entrance on Janes' Scenic Drive. The upland areas are covered in opportunistic invasive exotic plant species and weedy species with some areas still devoid of vegetation. The borrow areas are bounded by marl prairie and strand swamp natural communities. Native and exotic fish species can be found in the lakes. Wading birds also use the lake shoreline, but foraging habitat is limited by the steep bank drop-off.

General management measures: Continue to treat invasive exotic plant species to prevent spread into the adjacent natural community. Develop a plan to reclaim the borrow areas to a more natural condition, improve habitat for wetland dependent fish and wildlife, and create a potential bird rookery site. Plan to be described in more detail in the Resource Management section, and implementation schedule. Occasional mowing and maintenance of developed areas is often beneficial to various species of birds such as killdeer (*Charadrius vociferous*), common nighthawk (*Chordeiles minor*), Chuck-will's widow (*Caprimulgus carolinensis*) as they serve as resting and nesting areas.

Canal/Ditch

Desired future condition: Pursue opportunities to minimize hydrological impacts to adjacent marl prairie, glades marsh, and estuarine tidal marsh communities. Continue exotic plant removal activities to prevent spread into nearby natural communities.

Description and assessment: The canals and ditches within the park are remnants of past human disturbances which, in the case of the canal north of US-41 continues to alter the hydrologic function and possibly the water quality in adjacent natural communities. The canal also provides a deep water habitat for various types of wildlife including; American alligator, American crocodile, various turtle and snake species, great egret, snowy egret, tricolored heron, and many fresh water fish species.

General management measures: Work with other resource management agencies to pursue hydrological restoration projects in order to minimize the negative impacts to adjacent natural communities while maintaining some of the benefits provided by the canal or ditches. For example, the shallow ditches provide a greater diversity of habitats with variations in topography and hydroperiods than the marl prairies, which can allow a larger biomass of aquatic organisms to survive over a longer period of water level drawdown, thus benefiting wading bird productivity, such as the wood stork (Jason Lauritsen, personal communication 2014). Hydrological improvement proposals related to canals and ditches can be found in the Hydrological Management section.

DEVELOPED

Desired future condition: Development that does not detract from, nor overshadow, the splendor of surrounding natural and cultural resources, but is integrated in such a way as to enhance visitor experiences and provide essential infrastructure. Cover from invasive exotic plants should be less than 5 percent.

Description and assessment: Numerous roads and trams were built during the period of timber removal. Certain ones are used as visitor access roads such as Janes' Scenic Drive, or as service roads. Additional development has been identified and is planned for Big Cypress Bend and further development and at the park headquarters in Copeland. The upland areas adjacent to the former borrow pit mines described above are also included as developed. If feasible, restoration work on the borrow pits will alter the developed acreage.

General management measures: Development should not interfere with resource management activities such as prescribed burning and hydrological restoration, or with cultural resource management. In addition, continue to treat invasive exotic plant species to prevent spread into the adjacent natural community. Occasional mowing and maintenance of developed areas is often beneficial to various species of birds such as killdeer, common nighthawk, and Chuck-will's widow as they serve as resting and nesting areas.

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.

There are 71 designated plant species and 44 designated animal species recorded within the park boundary. Fakahatchee Strand is arguably one of the most diverse and species dense natural systems in all of Florida. With the convergence of two biomes, the park is conducive to the survival of many species of both tropical and temperate origin resulting in this region's high biodiversity.

Fakahatchee boasts the largest stand of Florida royal palms in the United States. This is one of only four locations in southern Florida where this tree occurs naturally

and one of only two sites in the world where you can find bald cypress and royal palms in the same natural community. The largest diversity and population density of orchid species in North America are also found here. The highest number of bromeliad species in the U.S. and the second highest number of native fern species in Florida can be found within the Fakahatchee Strand Preserve State Park. Ten of the 14 species of bromeliads within the park are vulnerable to the Mexican bromeliad weevil, a known threat dating back to March 2002.

The Fakahatchee Strand is also the habitat for at least five species of plants found nowhere else in North America. They are: tiny orchid (*Lepanthopsis melanantha*), dwarf epidendrum (*Prosthechea pygmaea*), Acuna's star orchid (*Epidendrum blancheanum*), hanging club-moss (*Huperzia dichotoma*), and nodding catopsis (*Catopsis nutans*). The park also provides habitat for four additional plant species known to survive at only two or three sites in the United States; tall liparis (*Liparis nervosa*), leafless orchid (*Campylocentrum pachyrrhizum*), matted epidendrum (*Epidendrum strobiliferum*), and leafy beaked ladies tresses (*Sacoila lanceolata* var. *paludicola*). Each species is exceedingly rare and would be valued by collectors.

The cowhorn orchid is state listed as endangered, with less than 30 wild plants documented within the park. Annual surveying should be continued to locate other individuals or populations. Surveying should be focused in the strand swamps and marl prairies at the park. This species has served as a good candidate for population augmentation with immature plants. Research is being conducted on a cowhorn orchid augmentation, where nursery grown young plants are being placed in suitable habitat at the park, with follow-up monitoring for success and documentation of mortality. At this time the project has had encouraging results, with over 80 percent survival to date. Also, restoring the hydrology will improve the habitat and possibly increase the survival rate of these orchids. This species is showy, and easily observed so it is vulnerable to poaching by orchid collectors.

Ghost orchid (*Dendrophylax lindenii*) is state listed as endangered and is most certainly the flagship plant species of the park. More than 350 of these plants have been documented within the deep sloughs of the Fakahatchee. These plants are regularly monitored but despite best efforts from park staff and volunteers, poaching by orchid collectors continues to be a major threat to this species. Pursuing the federal listing of this species as either threatened or endangered is recommended to ensure overall protection.

Several overgrown trams now serve as prime habitat for imperiled species of plants, some of which are rare even in the park. Therefore, overgrown trams should not be cleared unless it serves a well-defined need, and does not threaten any imperiled plants. The overgrown trams have been surveyed for imperiled plant species. The survey should be repeated at 10-year intervals to record changes that might have occurred.

The American alligator is another charismatic component of the park and serves as the focal point of many visitors to South Florida. This reptile shapes the wetland

landscape of the Big Cypress Swamp ecosystem through its predatory interactions in the food web as well as the wallowing activities during the dry season to maintain deeper water in "gator holes". Another reptile with a tropical affinity is the federally threatened American crocodile, found in low numbers in the southern end of the park within the tidal mangrove swamp south of US-41. There have been no specific surveys within the park recently, but there have been 24 reported crocodile sightings within park boundaries since 2000.

Several listed wading birds are observed in the marshes, mangroves, and waterways of the park, and a known colonial wading bird nesting colony and night roost is present at the entrance to the East River. Species include the limpkin (*Aramus guarauna*), great white heron (*Ardea herodias occidentalis*), little blue heron (*Egretta caerulea*), reddish egret (*E. rufescens*), snowy egret (*E. thula*), tricolored heron (*E. tricolor*), white ibis (*Eudocimus albus*), wood stork (*Mycteria americana*), great egret (*Ardea alba*), glossy ibis (*Plegadis falcinellus*) and roseate spoonbill (*Platalea ajaja*). Monthly monitoring is being conducted for these species, and the removal of trash and fishing debris (line, lures, hooks) around the boat launch and other waterways benefits these species by reducing the risk of accidental entanglement causing injury or death. The major threat that will impact these populations in the near and foreseeable future is the invasion into the park by Burmese pythons (*Python bivittatus*). There are passive python eradication programs currently in place, which is expected to be improved to a systematic removal program conducted by professional government agencies.

Red-cockaded woodpecker (*Picoides borealis*) is a federally endangered species recorded historically "on the edge of a very large pine island on the west side of the Fakahatchee Swamp" (The Florida Naturalist, v.20 1947). The FWC feels that there is good quality fire-maintained mesic and wet flatwoods for RCW foraging and nesting habitat. The park would be a good candidate for reintroduction of RCW, or there is a chance of the park being colonized by birds from the nearby Big Cypress National Preserve and the Florida Panther National Wildlife Refuge. Maintaining optimum open "park-like" conditions with low groundcover, few trees or shrubs in the understory, and a widely-spaced mature slash pine canopy, through the frequent use of prescribed fires is essential for having habitat available for this species. Participating in RCW reintroduction efforts and managing the resource with frequent fire will also benefit the Big Cypress fox squirrel (*Sciurus niger avicennia*), rarely observed within the park with only 23 observations recorded in 19 years.

Bald eagles (*Haliaeetus leucocephalus*) are no-longer federally- or state-listed, however there are still guidelines for the protection of nesting eagles. There is a nest near the Big Cypress Boardwalk, which is monitored for nesting activity annually. Protocol involves documentation of the date of arrival of adults back to the nest site, weekly notes on eaglet activity and number of eaglets fledged during April and May. FWC has records of the number of eggs and the number of eaglets alive in March from 1991 through 2005. Dedicated volunteers have monitored this nest from November through April since 2003.

The Florida black bear and the Everglades mink are two noteworthy subspecies found in the Fakahatchee Strand. Both have been studied in the park. FWC completed a bear study for the region in 1992. This study found that the most important foods consumed by black bears in southwest Florida on an annual basis were cabbage palm fruits (26 percent), Brazilian pepper fruits (14 percent), and pickerel weed leaves and stems (9 percent) (Maehr, et al 1992). The Everglades mink population at Fakahatchee Strand Preserve State Park is one of the best documented in South Florida. The Everglades mink observations total 164 from October 1993 through March 2014. The Florida Fish and Wildlife Conservation Commission is preparing to conduct a research project that includes the Fakahatchee Strand as a primary area of study of the Everglades mink.

Perhaps the best known of the endangered animals of the park is the Florida panther. Beginning in 1981, panthers became the focus of an intensive study, and many panthers in Florida have included at least part of the Fakahatchee Strand within their range at one time or another. The Fakahatchee Strand is the largest hardwood forest in southern Florida, and the extensive cover provided by its dense vegetation offers an attractive environment for both panthers and their prey. The number of fawns observed by park staff increased significantly between 2003 and 2014, indicating increased fawn production in the park. This increase may be attributed to an improved prescribed fire program, which has resulted in burning an average of nearly 9,000 acres per year across more management zones for longer periods throughout the year.

West Indian manatee (*Trichechus manatus*) is federally listed as endangered. Manatees are seen periodically along US-41, in the East River, Faka-Union Canal, Fakahatchee River, and Fakahatchee Bay. Manatees at the park would benefit by improved signage along waterways and increased enforcement of speed zones that are also designated to protect recreational users in canoes and kayaks. Boat strikes are the biggest threat to manatees. Education and outreach will also improve protection of the manatees.

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.

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

Table 2: Imperiled Species Inventory

Common and Scientific Name	Imperiled Species Status				Management Actions	Monitoring Level
	FW CC	USF WS	FDA CS	FNAI		
PLANTS						
Golden leather fern <i>Acrostichum aureum</i>			LT	G5/S3	4	Tier 1
Paurotis palm <i>Acoelorrhaphe wrightii</i>			LT		4	Tier 2
Auricled spleenwort <i>Asplenium erosum</i>			LE	G5/S2	4,10	Tier 2
Wild birdnest fern <i>Asplenium serratum</i>			LE	G4/S1	4,10	Tier 2
Sinkhole fern <i>Blechnum occidentale</i> <i>var. minor</i>			LE	G5/S1	4,10	Tier 2
Pine-pink orchid <i>Bletia purpurea</i>			LT		1,2,4,10	Tier 2
Rat-tail orchid <i>Bulbophyllum pachyrachis</i>			LE	G3G5/SX	4,10	Tier 2
Fakahatchee burmannia <i>Burmannia flava</i>			LE	G5/S1	1,2,4,10	Tier 1
Ribbon orchid <i>Campylocentrum pachyrrhizum</i>			LE	G4/S1	4,10	Tier 2
Narrow strap fern <i>Campyloneurum angustifolium</i>			LE	G4G5/S1	4,10	Tier 2
Tailed strap fern <i>Campyloneurum costatum</i>			LE	G5/S1	4,10	Tier 2
Powder strap airplant <i>Catopsis berteroniana</i>			LE	G5/S1	4,10	Tier 2
Many-flowered airplant <i>Catopsis floribunda</i>			LE	G3G5/S1	4,10	Tier 2
Nodding catopsis <i>Catopsis nutans</i>			LE	G5/S1	4,10	Tier 2
Satinleaf <i>Chrysophyllum oliviforme</i>			LT		2,4,10	Tier 2

Common and <i>Scientific Name</i>	Imperiled Species Status				Management Actions	Monitoring Level
	FW CC	USF WS	FDA CS	FNAI		
Moss orchid <i>Cranichis muscosa</i>			LE	G4G5/S1	2,4,10	Tier 2
Florida tree fern <i>Ctenitis sloanei</i>			LE	G5/S2	2,4,10	Tier 2
Brown-hair comb fern <i>Ctenitis submarginalis</i>			LE	G5/S1	2,4,10	Tier 2
Cowhorn orchid <i>Cyrtopodium punctatum</i>			LE	G5/S1	2, 4 10, 14	Tier 5
Ghost orchid <i>Dendrophylax lindenii</i>			LE	G2G4/S2	4, 10	Tier 4
Narrow-leaved Carolina scalystem <i>Elytraria caroliniensis</i> <i>var. angustifolia</i>			LE	G4T2/S2	1, 2, 4	
Dingy-flowered epidendrum <i>Epidendrum anceps</i>			LE		4,10	Tier 2
Acuna's star orchid <i>Epidendrum</i> <i>blancheanum</i>			LE	G3G5/SX	4,10	Tier 2
Umbelled epidendrum <i>Epidendrum floridense</i>			LE		4,10	Tier 2
Night-scented epidendrum <i>Epidendrum nocturnum</i>			LE	G4G5/S2	4,10	Tier 2
Rigid epidendrum <i>Epidendrum rigidum</i>			LE		4,10	Tier 2
Matted epidendrum <i>Epidendrum</i> <i>strobiliferum</i>			LE	G4/S1	4,10	Tier 2
Fakahatchee guzmania <i>Guzmania monostachia</i>			LE	G4G5/S1 S2	4,10	Tier 2
Hammock rein orchid <i>Habenaria distans</i>			LE	G5/S1	2,4,10	Tier 2
Snowy orchid <i>Habenaria nivea</i>			LT		1,4,10	Tier 2
Threadroot orchid <i>Harrisella porrecta</i>			LT		4,10	Tier 2
Hanging clubmoss <i>Huperzia dichotoma</i>			LE	G5/S1	4,10	Tier 2

Common and <i>Scientific Name</i>	Imperiled Species Status				Management Actions	Monitoring Level
	FW CC	USF WS	FDA CS	FNAI		
Delicate ionopsis <i>Ionopsis utricularioides</i>			LE	G4G5/S1	4,10	Tier 2
Tiny orchid <i>Lepanthopsis melanantha</i>			LE	G3G4/SH	4,10	Tier 2
Small's flax <i>Linum carteri</i> var. <i>smallii</i>			LE	G2T2/S2	1,2,4,10	Tier 2
Tall twayblade <i>Liparis nervosa</i>			LE		4,10	Tier 2
Hidden orchid <i>Maxillaria crassifolia</i>			LE	G4/S1	4,10	Tier 2
Minnie-max orchid <i>Maxillaria parviflora</i>			LE		4,10	Tier 2
Simpson's stopper <i>Myrcianthes fragrans</i>			LT		2,4,10	Tier 2
Giant sword fern <i>Nephrolepis biserrata</i>			LT		2,4,10	Tier 2
Florida oncidium <i>Oncidium ensatum</i>			LE	G2Q/S1	2,4,10	Tier 2
Hand fern <i>Ophioglossum palmatum</i>			LE	G4/S2	2,4,10	Tier 2
Pineland passionvine <i>Passiflora pallens</i>			LE	G3G4/S2	2,4,10	Tier 2
Swamp plume polypody <i>Pecluma ptilodon</i> var. <i>bourgeauana</i>			LE	G5?/S2	4,10	Tier 2
Pelexia <i>Pelexia adnata</i>			LE		4,10	Tier 2
Cypress peperomia <i>Peperomia glabella</i>			LE	G4G5/SH	4,10	Tier 2
Low peperomia <i>Peperomia humilis</i>			LE	G5/S2	4,10	Tier 2
Florida peperomia <i>Peperomia obtusifolia</i>			LE	G5/S2	4,10	Tier 2
Round peperomia <i>Peperomia rotundifolia</i>			LE		4,10	Tier 2

Common and <i>Scientific Name</i>	Imperiled Species Status				Management Actions	Monitoring Level
	FW CC	USF WS	FDA CS	FNAI		
Frosted-flower orchid <i>Pleurothallis gelida</i>			LE	S1	4,10	Tier 2
Greater yellowspike orchid <i>Polystachya concreta</i>			LE		4,10	Tier 2
Dollar orchid <i>Prosthechea boothiana</i> <i>var. erythronioides</i>			LE	G4T4Q/S 1	2, 4 10, 14	Tier 2
Florida clamshell orchid <i>Prosthechea cochleata</i>			LE	G4G5T2/ S2	2,4,10	Tier 2
Dwarf encyclia <i>Prosthechea pygmaea</i>			LE	G4G5/S1	2,4,10	Tier 2
Florida royal palm <i>Roystonea regia</i>			LE	G2G3/S2	2,4,10	Tier 2
Leafy beaked ladies tresses <i>Sacoila lanceolata var.</i> <i>paludicola</i>			LT	G4T1/S1	2,4,10	Tier 2
Tall Neottia <i>Spiranthes elata</i>			LE	G4G5/SH	2,4,10	Tier 2
Lace-lip ladies tresses <i>Spiranthes laciniata</i>			LT		1,2,4,10	Tier 2
Long-lip ladies tresses <i>Spiranthes longilabris</i>			LT		1,2,4,10	Tier 2
Broad halberd fern <i>Tectaria heracleifolia</i>			LT		4,10	Tier 2
Stately maiden fern <i>Thelypteris grandis</i>			LE	G4G5/S1	2,4,10	Tier 2
Lattice-vein fern <i>Thelypteris reticulata</i>			LE		2,4,10	Tier 2
Toothed lattice-vein fern <i>Thelypteris serrata</i>			LE	G5/S1	2,4,10	Tier 2
Reflexed wildpine; northern needleleaf <i>Tillandsia balbisiana</i>			LT		4,10, 14	Tier 2
Stiff-leaved wildpine; cardinal airplant <i>Tillandsia fasciculata</i>			LE		4,10, 14	Tier 2
Twisted airplant <i>Tillandsia flexuosa</i>			LT	G5/S3	4,10, 14	Tier 2

Common and <i>Scientific Name</i>	Imperiled Species Status				Management Actions	Monitoring Level
	FW CC	USF WS	FDA CS	FNAI		
Fuzzy-wuzzy airplant <i>Tillandsia pruinosa</i>			LE	G4/S1	4,10, 14	Tier 2
Giant airplant <i>Tillandsia utriculata</i>			LE		4,10, 14	Tier 5
Soft-leaved wildpine <i>Tillandsia variabilis</i>			LT		4,10, 14	Tier 2
Chiggery grapes <i>Tournefortia hirsutissima</i>			LE		2,4,10	Tier 2
Leafy vanilla <i>Vanilla phaentha</i>			LE	G4/S1	4,10	Tier 2
INVERTEBRATES						
Berry's skipper <i>Euphyes berryi</i>				G1G3/S1 S2	1,2,4,10	Tier 2
Malachite <i>Siproeta stelenes</i>				G5/S2	1,2,4,10	Tier 2
Scalloped Sooty Wing <i>Staphylus hayhurstii</i>				G5/S2	1,2,4,10	Tier 2
Martial hairstreak <i>Strymon martialis</i>				G3G5/S2 S3	1,2,4,10	Tier 2
FISH						
Smalltooth sawfish <i>Pristis pectinata</i>	FE	LE			4, 10, 13	Tier 1
REPTILES						
American alligator <i>Alligator mississippiensis</i>	LS	SAT		G5/S4	4,10	Tier 2
American crocodile <i>Crocodylus acutus</i>	FT	LT		G2S2	4,10	Tier 5
Eastern indigo snake <i>Drymarchon couperi</i>	FT	LT		G3/S3	1,4,10	Tier 1
Common kingsnake <i>Lampropeltis getula</i>				G5/S2S3	1,4,10	Tier 1
BIRDS						
Limpkin <i>Aramus guarauna</i>	LS			G5/S3	4,10	Tier 1
Great White Heron <i>Ardea herodias occidentalis</i>				G5T2/S2	4,10	Tier 1

Common and <i>Scientific Name</i>	Imperiled Species Status				Management Actions	Monitoring Level
	FW CC	USF WS	FDA CS	FNAI		
Short-tailed Hawk <i>Buteo brachyurus</i>				G4G5/S1	1,4,10	Tier 1
Crested Caracara <i>Caracara cheriway</i>	FT	LT		G5/S2	1,4,10	Tier 1
Little Blue Heron <i>Egretta caerulea</i>	LS			G5/S4	4,10	Tier 3
Reddish Egret <i>Egretta rufescens</i>	LS			G4/S2	4,10	Tier 1
Snowy Egret <i>Egretta thula</i>	LS			G5/S3	4,10	Tier 3
Tricolored Heron <i>Egretta tricolor</i>	LS			G5/S4	4,10	Tier 3
Swallow-tailed Kite <i>Elanoides forficatus</i>				G5/S2	1,4,10	Tier 1
White Ibis <i>Eudocimus albus</i>	LS			G5/S4	4,10	Tier 3
Merlin <i>Falco columbarius</i>				G5/S2	1,4,10	Tier 1
Peregrine Falcon <i>Falco peregrinus</i>				G4/S2	1,4,10	Tier 1
Magnificent Frigatebird <i>Fregata magnificens</i>				G5/S1	4,10	Tier 1
Florida Sandhill Crane <i>Grus canadensis pratensis</i>	LT			G5T2T3/S 2S3	1,4,10	Tier 1
Worm-eating Warbler <i>Helmitheros vermivorum</i>				G5/S1	1,4,10	Tier 1
Black Rail <i>Laterallus jamaicensis</i>				G3G4/S2	1,4,10	Tier 1
Wood Stork <i>Mycteria americana</i>	FT	LT		G4/S2	1,4,10	Tier 1
White-crowned Pigeon <i>Patagioenas leucocephala</i>	LT			G3/S3	2,4,10	Tier 1
Brown Pelican <i>Pelecanus occidentalis</i>	LS			G4/S3	4,10	Tier 1

Common and <i>Scientific Name</i>	Imperiled Species Status				Management Actions	Monitoring Level
	FW CC	USF WS	FDA CS	FNAI		
Red-cockaded Woodpecker <i>Picoides borealis</i>	FE	LE		G3/S2	1,2,3,4	Tier 5
Roseate Spoonbill <i>Platalea ajaja</i>	LS			G5/S2	4,10	Tier 1
American Avocet <i>Recurvirostra americana</i>				G5/S2	4,10	Tier 1
Snail Kite <i>Rostrhamus sociabilis plumbeus</i>	FE	LE		G4G5T2/ S2	1,4,10	Tier 1
Black Skimmer <i>Rynchops niger</i>	LS			G5/S3	4,10	Tier 1
Louisiana Waterthrush <i>Seiurus motacilla</i>				G5/S2	4,10	Tier 1
American Redstart <i>Setophaga ruticilla</i>				G5/S2	4,10	Tier 1
Least Tern <i>Sterna antillarum</i>	LT			G4/S3	1, 4, 7, 10, 11, 13	Tier 1
Sandwich Tern <i>Thalasseus sandvicensis</i>				G5/S2	1, 4, 7, 10, 11, 13	Tier 1
MAMMALS						
Sherman's short-tailed Shrew <i>Blarina shermani</i>	LS			G1/S1	1,2,4,10	Tier 1
Florida Bonneted Bat <i>Eumops floridanus</i>	FE	LE		S1	2,4,10	Tier 2
Everglades Mink <i>Neovison vison evergladensis</i>	LT			G5T2Q/S 2	2,4,10	Tier 2
Florida Panther <i>Puma concolor coryi</i>	FE	LE		G5T1/S1	1,2,4,10,13	4 FWC
Big Cypress (Mangrove) Fox Squirrel <i>Sciurus niger avicennia</i>	LT			G5T2/S2	1,2,4,10	Tier 2
Florida Manatee <i>Trichechus manatus</i>	FE	LE		G2/S2	4,10, 13	Tier 1
Florida Black Bear <i>Ursus americanus floridanus</i>				G5T2/S2	1,2,4,10,13, 14	Tier 1

Management Actions:

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

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. Thus, the policy of the DRP is to remove exotic species from native natural communities.

Of the greater than 550 vascular plant species documented in the park, over 100 are non-native. Of the 101 non-native plant species, 49 are on the FLEPPC list (36 Category I and 13 Category II). Eight of the 49 plant species on the FLEPPC list have been eliminated (4 Category I, and 4 Category II), leaving 41 non-native plant species on the FLEPPC list currently present in the park (32 Category I, and 9 Category II).

The most widespread plant pest in the park is Brazilian pepper. Its abundance and the difficulty of access in remote areas will make it the most troublesome of plants to eliminate. Over 100,000 Brazilian pepper were treated in the northwest portion of the park from the footprint of the plugged Prairie Canal to 0.25 mile east by a contractor funded by a FWC-Invasive Plant Management Section (IPMS) grant between February and April 2009.

Melaleuca trees are treated as they are found. Approximately eight acres of Melaleuca have been treated since 2000, four acres in Four Stake Prairie and four acres in northwestern prairies. Follow-up treatment is required to maintain the sites. Several hundred small Melaleuca trees are scattered throughout wet prairie and strand swamp habitat. Several hundred Melaleuca have been eliminated since 2010 with more treatments scheduled each year. More large Melaleuca trees have been found and are scheduled to be cut and treated with herbicide over the next several years.

Fewer than one hundred Australian pine trees are located on park land. Air potato, another aggressive plant pest, has been eliminated from one of seven sites. The six remaining air potato sites will be treated by a combination of hand removal and herbicide and should be at maintenance level within two to three years. Even more recently cogon grass and climbing fern have appeared. Because of a high potential for rapidly spreading, these plants must be vigorously attacked wherever found. Cogon grass has been treated aggressively since 2000, and several sites require follow-up treatment to reach maintenance conditions (~2 acres).

Napier grass has been treated along Janes' Scenic Drive and is decreasing. Maintenance level is attainable along Janes' Scenic Drive within one to two years. Torpedo grass has expanded in two regions within ORV trails used to access groundwater monitoring wells for monthly water levels. Treatments are in the planning stages to attempt to reduce the area covered within these two ORV trails on marl prairie. Mexican petunia was vouchered with an herbarium specimen collected along Janes' Scenic Drive in July 1998. It has spread to several patches along Janes' Scenic Drive, and has colonized three trams with dense, scattered patches. Staff has made attempts to control this Category I plant with measurable success through 2013.

Christmas senna was vouchered with an herbarium specimen in April 2000 along Jones Grade. This species has been expanding in recent years to include the area around the Harmon office building. Control efforts have been ongoing and intensified during 2009, reaching maintenance condition in 2010. Rosary pea was found and treated in April 2009 by a contractor working on a Brazilian pepper project funded by an IPMS grant. It was located east of the Prairie Canal in the northwest portion of the park. Annual follow-up inspection and treatments will continue.

Old World climbing fern was first documented in the park during a Resource Management Evaluation in October 1993. Since 1993, about 30 sites have been found within the Fakahatchee Strand during epiphyte surveys. The GPS location is

recorded and the number of colonies and size of the area to be treated is noted. Most of the sites have only one plant about 3 feet wide and 10 to 20 feet high, however two sites contain 10 to 20 colonies ranging from 2 to 10 feet wide and 10 to 25 feet high. The best time to treat these distant sites within the strand swamp is from January through May when lower water levels render them more accessible. In 2007 about 20 *Lygodium* sites were treated with herbicide by a contractor with a grant from IPMS. All known *Lygodium* sites have been revisited for follow-up herbicidal treatment by a Contractor with an IPMS grant in 2011. Larger sites are visited and re-treated annually by park staff when live plants are found. Each site is monitored for several years after treatment to ensure that the fern has been fully removed.

Table 3 contains a list of the Florida Exotic Pest Plant Council (FLEPPC) Category I and II invasive, exotic plant species found within the park (FLEPPC 2009). The table also identifies relative distribution for each species and the management zones in which they are known to occur. An explanation of the codes is provided following the table. 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
PLANTS			
Rosary pea <i>Abrus precatorius</i>	I	1	FS-F5, FS-B4
Earleaf acacia <i>Acacia auriculiformis</i>	I	1	FS-D2
Orchid tree <i>Bauhinia variegata</i>	I	1	FS-B4, FS-D2
Bishopwood <i>Bischofia javanica</i>	I	0	FS-A5
Suckering Australian pine <i>Casurina glauca</i>	I	2	FS-B3, FS-C3
Wild taro <i>Colocasia esculenta</i>	I	1	FS-E4
Latherleaf <i>Colubrina asiatica</i>	I	2	FS-D2
Air potato <i>Dioscorea bulbifera</i>	I	2	FS-A3, FS-A6, FS-B3, FS-E2, FS-E3, FS-F10-(Distrib.3)
Water-hyacinth <i>Eichhornia crassipes</i>	I	2	FS-A6
Surinam cherry <i>Eugenia uniflora</i>	I	1	FS-A3, FS-C2
Laurel fig <i>Ficus microcarpa</i>	I	0	FS-B3, FS-F10, FS-E2

Common and Scientific Name	FLEPPC Category	Distribution	Management Zone
Hydrilla <i>Hydrilla verticillata</i>	I	2	FS-A1, FS-A2, FS-D2
West Indian marsh grass <i>Hymenachne amplexicaulis</i>	I	?	FS-E4
Cogon grass <i>Imperata cylindrica</i>	I	3	FS-A1, FS-A2, FS-A4, FS-B2, FS-C1, FS-C3, FS-E1, FS-E3, FS-F1, FS-F2, FS-F5, FS-F7
Lantana <i>Lantana camara</i>	I	2	FS-A1, FS-A2, FS-A4, FS-C1, FS-E1
Peruvian primrosewillow <i>Ludwigia peruviana</i>	I	6	FS-A4, FS-A5, FS-A6, FS-B1, FS-B2, FS-E1, FS-E4, FS-F9, FS-F10
Old World climbing fern <i>Lygodium microphyllum</i>	I	1	FS-A1, FS-A3(2), FS-B1, FS-C1, FS-C2, FS-C3, FS-E4, FS-F4, FS-F6, FS-F10(2)
Sapodilla <i>Manilkara zapota</i>	I	1	FS-E4
Melaleuca <i>Melaleuca quinquenervia</i>	I	2	FS-A2, FS-A4, FS-A5, FS-B3, FS-C1, FS-C2, FS-C3, FS-D1, FS-D2, FS-E2, FS-E3, FS-E4, FS-F2, FS-F3, FS-F5, FS-F6, FS-F9, FS-F10
Natal grass <i>Melinis repens</i>	I	2	FS-E1
Asian sword fern <i>Nephrolepis brownii</i>	I	2	FS-D2
Burma reed <i>Neyraudia reynaudiana</i>	I	1	FS-E3, FS-F5
Torpedo grass <i>Panicum repens</i>	I	2	FS-A5, FS-A7, FS-B4, FS-C2, FS-D3, FS-E3, FS-E4
Napier grass <i>Pennisetum purpureum</i>	I	2	FS-A5, FS-E1, FS-E4, FS-F9
Water lettuce <i>Pistia stratiotes</i>	I	2	FS-A5, FS-A6, FS-F10

Common and Scientific Name	FLEPPC Category	Distribution	Management Zone
Guava <i>Psidium guajava</i>	I	6	FS-A1, FS-A3, FS-A5, FS-B1, FS-C2, FS-C3, FS-E4, FS-F2, FS-F4, FS-F7, FS-F10
Mexican petunia <i>Ruellia simplex</i>	I	6	FS-A1, FS-A3, FS-A5, FS-B1, FS-B3, FS-F10
Water spangles <i>Salvinia minima</i>	I	2	FS-B1
Queensland umbrella tree <i>Schefflera actinophylla</i>	I	1	FS-A7, FS-B4, FS-C1, FS-C3
Brazilian pepper <i>Schinus terebinthifolius</i>	I	3	All
Christmas senna <i>Senna pendula var. glabrata</i>	I	1	FS-A4, FS-B4
Tropical soda apple <i>Solanum viarum</i>	I	0	FS-B4, FS-F10
Arrowhead vine <i>Syngonium podophyllum</i>	I	1	FS-A5
Java plum <i>Syzygium cumini</i>	I	1	FS-A2, FS-A4, FS-B2
Seaside mahoe <i>Thespesia populnea</i>	I	1	FS-D2
Caesar's weed <i>Urena lobata</i>	I	6	FS-A1, FS-A3, FS-A5, FS-B1, FS-C2, FS-C3, FS-E4, FS-F2, FS-F4, FS-F7, FS-F9, FS-F10
Para grass <i>Urochloa mutica</i>	I	2	FS-F2, FS-F4
Rubber vine <i>Cryptostegia madagascariensis</i>	II	1	FS-D2
Durban crowfoot grass <i>Dactyloctenium aegyptium</i>	II	?	?
Lead tree <i>Leucaena leucocephala</i>	II	1	FS-A2(0), FS-A4(0), FS-D2
Bottlebrush <i>Melaleuca viminalis</i>	II	1	FS-B4
Balsom apple <i>Momordica charantia</i>	II	2	FS-B1, FS-C1, FS-E1
Guinea grass <i>Panicum maximum</i>	II	?	?
Chinese ladder brake fern <i>Pteris vittata</i>	II	6	FS-B1, FS-E1, FS-E4, FS-F9

Common and Scientific Name	FLEPPC Category	Distribution	Management Zone
Castor bean <i>Ricinus communis</i>	II	0	NA
Green shrimp plant, Browne's Blechum <i>Ruellia blechum</i>	II	1	FS-F9
Bowstring hemp <i>Sansevieria hyacinthoides</i>	II	0	FS-B4
Wedelia <i>Sphagneticola trilobata</i>	II	2	FS-A7, FS-B3, FS-C1, FS-E2, FS-E4
Rose apple <i>Syzygium jambos</i>	II	1	FS-E4
Caesar's weed <i>Urena lobata</i>	II	6	FS-A1, FS-A3, FS-A5, FS-B1, FS-C2, FS-C3, FS-E4, FS-FS-F2, FS-F4, FS-F7, FS-F9, FS-F10
Elephant ear <i>Xanthosoma sagittifolium</i>	II	1	FS-C1, FS-F10(0)

Distribution Categories:

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

Exotic animal species include non-native wildlife species, free-ranging domesticated pets or livestock, and feral animals. Because of the negative impacts to natural systems attributed to exotic animals, the DRP actively removes exotic animals from state parks, with priority being given to those species causing the most ecological damage. Park staff will explore the possibility of allowing a wider range of methods for trapping or removing Burmese pythons and other exotic species found in the park.

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

One egg mass of the island apple snail (*Pomacea maculata*) was removed from a slough in the northern portion of the Fakahatchee Strand managed by the Florida Panther National Wildlife Refuge (FPNWR) on September 30, 2008 (Larry Richardson, personal communication). Several of the snails have also been removed upstream of the park in the Florida Panther National Wildlife Refuge. Staff and volunteers are collaborating in an effort to prevent the invasion of the park by the island apple snail. We are monitoring areas with island apple snail eggs at the FPNWR and in the Barron River canal along the east side of SR 29 and removing egg masses when possible. The culverts under SR 29 and north of I-75 are conveying water from the Barron River canal as well as allowing the invasion of the island apple snail into the FPNWR upstream of the park.

The imported red fire ant (*Solenopsis invicta*) occurs mainly in marl prairie and wet flatwoods, where there mounds are most visible after fire and occur at densities from 18 to 122 mounds per acre (Fire Transect File, unpublished data). In habitat that has been subject to hydrological disturbance the mound densities are higher. As a result, fire ant mounds are more prevalent in the prairies west of the strand swamp than those east of the strand swamp. The parasitic phorid "decapitating" fly (*Pseudacteon* spp.) that has been available as a biocontrol in Florida since 1999 should be considered for release in the park.

The Mexican bromeliad weevil (*Metamasius callizona*) was documented within the park by March 2002 (Olan Ray Creel and Mike Owen, March 20, 2002). Harry Luther observed several Giant airplants (*Tillandsia utriculata*) fallen to the ground on the East Main tram that were heavily mined by Mexican bromeliad weevil larvae on May 5, 2001 (Harry Luther, personal communication). The Mexican bromeliad weevil fly (*Lixadmontia frankii*) has been introduced on several occasions during 2008 and 2009 in an attempt to establish a bio-control population to reduce the negative impacts of the weevil on the abundant epiphytic bromeliad populations in the park.

At least nine exotic, non-native fish species occur in the park, but no management actions are planned for these established species. Monitoring will continue for the occurrence of new exotic fish species. Exotic fish include brown hoplo (*Hoplosternum littorale*), pike killifish (*Belonesox belizanus*), black acara (*Cichlasoma bimaculatum*), Mayan cichlid (*Cichlasoma urophthalmum*), blue tilapia (*Oreochromis aureus*), spotted tilapia (*Tilapia mariae*), Oscar (*Astronotus ocellatus*), walking catfish (*Clarias batrachus*), African jewel cichlid (*Hemichromis bimaculatus*), and a large South American suckermouth armored catfish "pleco" species (*Hypostomus* sp., or *Pterygoplichthys* sp.) (Ian Bartoszek et al. 2004).

Cuban tree frogs (*Osteopilus septentrionalis*) were first reported in the park on July 7, 1979. The number of Cuban tree frogs has dramatically increased since 2002 (Fakahatchee Wildlife Observation File). Frog call surveys were conducted during the summer months of 2001 through 2003 along Old Pump Road in Dan House Prairie. No Cuban tree frogs were heard or observed during this survey in 2001 but by the summer of 2003 Cuban tree frogs were observed or heard at all 5 stations. A monthly monitoring program was established in summer 2003 by placing PVC poles at 12 locations near groundwater monitoring wells. Cuban tree frogs have been collected at most of these locations from 2004 through 2010 and are reported quarterly.

Three large non-native snake species have been documented within the park. On December 8, 2004 a 98-inch long green anaconda (*Eunectes murinus*) was collected dead from US-41 at 5.8 miles west of SR 29. A live Burmese python (*Python bivittatus*) was captured on January 21, 2007 at the northeast borrow pits. A red-tailed boa constrictor (*Boa constrictor*) was captured alive on December 22, 2008 from Janes' Scenic Drive at 2.2 miles north of the Copeland Fire tower. A dead Burmese python was documented floating in the canal north of US-41 at 1.4 miles east of the Faka-Union canal on January 4, 2012. Snake tracks exceeding 4.75 inches wide were documented in 2012; one by a Fakahatchee Park Ranger and the other by a biologist with Big Cypress National Preserve, familiar with these tracks from his experience around the Loop Road area (Mike Owen, Fakahatchee Wildlife Observation File). Since the capture locations are close to roadways, it is not clear if these were captive snakes released at the park, or are part of an established wild population.

The Eurasian collared dove (*Streptopelia decoacto*) was first observed in the park near the Copeland fire tower on April 1, 1999. The Eurasian collared dove was also observed over the western part of Dan House Prairie in May 2008 (Fakahatchee Breeding Bird Point Count 2008).

Coyote (*Canis latrans*) scent stations were used to monitor presence/absence from 1998 through 2005. Although none were detected at ten scent stations over eight years, coyotes are present in the park as indicated by a road kill on February 10, 1998, and observations of one coyote heard calling on February 17, 2006, and coyote tracks observed on March 28, 2006.

Wild pigs (*Sus scrofa*) were more common in the park in the 1990s, but now rarely occur since an inholding that supported a livestock farm was added to the park. Wild pig populations may also be impacted by the Florida panther population. Currently no management of this exotic species is required but monitoring for its presence should continue.

Removals of exotic animals, such as large snakes, Cuban tree frogs, Mexican bromeliad weevil larvae, and apple snail egg masses upstream of the park, have been performed in-house and as opportunity allowed. 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.

Special Natural Features

This state park stands apart when measured by its unusual number of natural features, striking in character, which have been documented by investigators in the natural sciences. Its groves of Florida royal palm are the most abundant in the world, and it is one of two rare royal palm and bald cypress forests in the world. Collectively its orchids are the greatest in variety of any site in North America, as are its bromeliads. The strand swamp community is the largest and most biologically diverse in Florida. Nine species of plants in the Fakahatchee Strand occur in North America only in this swamp. The large wading bird rookery, south of US-41 at the headwaters of the East River, is also a special natural feature.

As well as providing habitat for rare tropical plants, the park also provides habitat for Florida's rarest mammal, the Florida panther. By current estimates based on video surveillance up to five or six different panthers may occur in the park at any given time (David Shindle, personal communication 2007). Florida panthers are a special natural feature of this park.

The Big Cypress Bend site contains a remnant 215 acres of old-growth Bald Cypress that escaped the logging that was carried out in the rest of the strand swamp in the 1940s and 1950s. Also located at this site is a Bald Eagle nest. The old-growth strand swamp at Big Cypress Bend is a registered National Natural Landmark.

Cultural Resources

This section addresses the cultural resources present in Fakahatchee Strand Preserve State Park which may include archaeological sites, historic buildings and structures, cultural landscapes, and collections. The Florida Department of State 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 which appear to be eligible for listing in the National Register of Historic Places. Addendum 7 contains the management procedures for archaeological and historical sites and properties on state-owned or controlled properties, the criteria used for evaluating eligibility for listing in the National Register of Historic Places and the Secretary of Interior's definitions for the various preservation treatments (restoration, rehabilitation, stabilization, and preservation). For the purposes of this Unit 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 which will become 50 years old during the term of this plan. The following is a summary of the FMSF inventory and the related evaluation of significance (Phase 1 Archeological Survey 2007).

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: There are 77 known archaeological sites at Fakahatchee Strand Preserve State Park listed on the Florida Master Site File. Most of the archaeological sites are difficult to access. They can be found in the middle of the park which requires hiking/wading through Strand Swamp or several sites require a boat to access. Most are shell middens of varying size, probably representing seasonal occupation. Some contain animal bones, shell tools, and pottery. This type of site was common to the Circum-Glades cultural period (500 Before Common Era [B.C.E.] to European contact).

At the southern tip of the park, on a point where the Fakahatchee River and East River empty into the Fakahatchee Bay, are the remains of a shell mound and early pioneer settlement known as Daniels' Point (Downs Place) (8CR00019). The site has several cisterns (imprinted with the year 1919), a sugar boiler, a cattle dipping vat, and pillars where a house once stood. This is where John Daniels raised his family and scratched out a living until the 1940s. Across Fakahatchee Bay, on Fakahatchee Island, there was once a large settlement that accommodated several families and a school. It was attended by the Daniels children.

Other significant (NR eligible) sites include Royal Palm Lake (8CR00544), Port of the Islands #1 (POTI #1) (8CR00852), FK1-22 (8CR01025), and FK1-26 (8CR01027). These sites are prehistoric, the latter three dating to the Glades, 1000 BCE – CE 1700. They are in fair condition where condition is known. The age of the Port of the Islands #1 site is described as formative and indeterminate. Besides these sites, there are also ruins and remains of hunting camps scattered within the park.

Condition Assessment: Evaluating the condition of archaeological sites 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 stability and physical wholeness, where there is no identifiable, ongoing deterioration from vegetation or animal intrusion, exposure of artifacts, looting, or erosion. "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 such as vegetative or animal threat, lack of vegetation to contain erosion, minor erosion, potential or minor looting, or continued exposure of artifacts. 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. Examples include severe erosion, heavy vegetative or animal damage, major looting including large pits, or development impact. A resource in poor condition suffers obvious declines in physical integrity from year to year. The determination that site is in poor condition indicates that immediate action is needed to reestablish physical stability.

The nine sites that have been visited frequently appear to be in fair or good condition (see Table 4 list of sites and associated condition codes). The other 68 sites are either in poor or unknown condition. One of the objectives in the Resource

Management Program discussed below is to visit and assess the condition of all 77 sites.

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

Five archaeological sites within the park are considered significant and potentially eligible for the National Register: Daniels' Point (Downs Place) (8CR00019), Port of the Islands #1 (POTI #1) (8CR00852), FK1-22 (8CR01025), and FK1-26 (8CR01027). Daniels Point (Downs Place) (8CR00019) is considered eligible as an individual site and/or part of a potential Ten Thousand Islands archeological district due to the abundance of both prehistoric (Glades period) and historic (19th and early 20th century) surface artifacts and their potential to provide information on settlement and habitation patterns (National Register Criterion D). Port of the Islands #1 (POTI #1) (8CR00852) is considered significant for its information potential of both the chronology and function of faunal bone middens in interior wetlands in southwestern Florida (National Register Criterion D) and its association with Native American hunting, fishing and camping practices (National Register Criterion A). Royal Palm Lake (8CR00544), FK1-22 (8CR01025), and FK1-26 (8CR01027) are considered eligible under National Register Criterion D, for their potential to yield information important in prehistory: Royal Palm Lake (8CR00544), in relation to aboriginal subsistence economy in the Strand, and FK1-22 (8CR01025) and FK1-26 (8CR01027), in regard to architectural patterns and thermal features at interior earth midden sites.

Eighteen archaeological sites were considered ineligible for the National Register. Of these, 15 [FK1-15 (8CR00996), FK1-29 (8CR00999), FK2-1 (8CR01000), FK2-2 (8CR01001), FK2-3 (8CR01002), FK2-8 (8CR01004), FK2-9 (8CR01005), FK2-10 (8CR01006), FK2-11 (8CR01007), FK2-12 (8CR01008), FK2-18 (8CR01010), FK2-19 (8CR01011), FK3-2 (8CR01012), FK3-5 (8CR01014), and FK3-7 (8CR01017)] were originally determined ineligible (NS) due to their construction date; they had not reached 50 years of age at the time of the survey. However, these resources may now be considered significant in association with the Gladesmen and their traditional hunting and fishing practices as well as their use of the abandoned tram beds to access additional lands and build cabins. These sites will need to be reassessed for significance in light of this association.

A draft study by New South Associates for the U.S. Army Corps of Engineers entitled *Ethnographic Study and Evaluation of Traditional Cultural Properties of the Gladesmen Culture*, Comprehensive Everglades Restoration Plan (CERP), Southern Florida "You Just Can't Live Without It" identifies the Gladesmen as a traditional cultural group which has used Fakahatchee and the Everglades for generations of historical subsistence and sporting activities. While the National Park Service for

purposes of managing the National Park has recognized this traditional cultural community, the community has not been listed as a traditional community by the National Register of Historic Places or the Florida Department of State. According to the National Register Bulletin, Guidelines for Evaluating and Documenting Traditional Cultural Properties: "A traditional cultural property" can be defined generally as one that is eligible for inclusion in the National Register because of its association with cultural practices or beliefs of a living community that (a) are rooted in the community's history, and (b) are important in maintaining the continuing cultural identity of the community." If the Gladesmen become designated as a traditional cultural community, sites and structures in the park as well as traditional uses of the park which relate to the Gladesmen will need to be identified and evaluated for their significance.

General management measures: Visit and assess the condition of all sites during this plan cycle. Corrective measures will be taken to stabilize and protect where necessary.

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: There are 14 historic structures, one historic structures resource group, and three linear resource group recorded in the Florida Master Site File for the park. Five of the recorded historic structures (FK1-31 (8CR00983), FK1-18 (8CR00987), FK3-4 (8CR00988), FK1-30 (8CR00989), and FK1-16 (8CR00997)) are late 1950's hunting cabins. Four other structures in the vicinity of the park headquarters will become 50 years of age during the plan period. One is the former shop/office building (8CR01098) located on Janes Scenic Drive. The other three structures are former Florida Division of Forestry buildings which comprise the Copeland Division of Forestry Structures Resource Group (8CR01112): the Copeland Fire Tower (8CR01099), a ranger residence (8CR01100), and a pump house/storage shed (8CR01101). Two of the recorded historic structures, FK1-4 (8CR00992), and FK3-3 (8CR01013), are 20th century dump sites.

The park's three recorded linear resource groups are US-41 (8CR00927), the Tamiami Canal (8CR00928) and FK1/Lee Tidewater Fakahatchee Logging Tram System (8CR01016). The Tamiami canal was built to provide road material for the construction of the Tamiami Trail (US-41). The Lee-Tidewater Cypress constructed and used the tram system from 1944 to 1957 to facilitate logging in the Fakahatchee Strand.

Condition Assessment: Evaluating the condition of historic structures and landscapes is accomplished using a three-part evaluation scale, expressed as good, fair, and poor. These terms describe the present condition, rather than comparing what exists to the ideal condition. "Good" describes a condition of structural stability and physical wholeness, where no obvious deterioration other than normal

occurs. "Fair" describes a condition in which there is a discernible decline in condition between inspections, and the wholeness or physical integrity is and continues to be threatened by factors other than normal wear. A "fair" assessment is usually cause for concern. "Poor" describes an unstable condition where there is palpable, accelerating decline, and physical integrity is being compromised quickly. A resource in poor condition suffers obvious declines in physical integrity from year to year. A poor condition suggests immediate action is needed to re-establish physical stability.

The condition of hunting camps and cabins varies significantly from site to site. These will be visited during the period of this plan to update the information in Table 3.

The historic structures found within the park, including the shop/office building (8CR01098), Copeland Fire Tower (8CR01099), ranger residence (8CR01100), pump house/storage shed (8CR01101) are in varying condition. The buildings that are actively used are in good condition but the Copeland Fire Tower and pump house/shed are in poor condition. Both structures need immediate stabilization and rehabilitation to reinforce the integrity of the structures and protect them from the elements. Specifically, both buildings need new windows and the fire tower needs several stair steps replaced.

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

The remnants of the FK1/Lee Tidewater Fakahatchee Logging Tram System (8CR01016) comprise the largest and one of the most culturally and environmentally significant features of Fakahatchee Strand. The tram system is considered eligible under National Register Criterion A in that it reflects the intensive logging practices of the 1940's and its dramatic effect on the natural environment ("take all, leave nothing"), Criterion C as a demonstration of how human activity in wartime situations (the harvesting of cypress for use by the military) can have a profound cultural effect at the expense of the environment , and Criterion D for its potential to yield information as to the changing attitudes of man towards the natural environment.

The late 1950s hunting cabins (FK1-31 (8CR00983), FK1-18 (8CR00987), FK3-4 (8CR00988), FK1-30 (8CR00989), and FK1-16 (8CR00997)) were originally determined ineligible (NS) due to their construction date; they had not reached 50 years of age at the time of the survey. However, these resources may now be considered significant in association with the Gladesmen and their traditional hunting and fishing practices as well as their use of the abandoned tram beds to access additional lands and build cabins. These structures will need to be re-assessed for significance in light of this association. (See Prehistoric and Historic

Archaeological Sites, Level of Significance for additional discussion of significance for properties associated with the Gladesmen culture).

The Copeland Florida Division of Forestry Resource Group (8CR1102) is comprised of the following structures: the Copeland Fire Tower (8CR01099), ranger residence (8CR01100), and pump house/storage shed (8CR01101). While each of the three structures lack the architectural context to be considered individually eligible for the National Register, as a group, they are potentially significant as an assemblage of remaining Florida forestry structures. The shop/office building (8CR01098) is a standard metal building with no historic context or associated structures and therefore is not significant.

General management measures: During the life of this plan, the hunting camps and cabins will be evaluated for their condition and for the measures needed where preservation is the goal. The tram will be protected from ground disturbing activities, and from activities that may cause unnatural erosion. Buildings associated with park operations will be maintained as needed. The table below indicates which treatments (restoration, rehabilitation, stabilization, or preservation) will be applied in general to particular significant historic buildings, structures, and landscapes. Most buildings and structures in parks which are being used for every day park functions such as shops, offices and picnic areas would be designated for rehabilitation treatments which are much less rigid or formal. A recommended treatment will be indicated in the table for each site listed as NRL, NR, or NE.

In some cases, the DRP may elect to demolish or otherwise remove an historic structure. In these cases, a specific case shall be made to justify removal of the structure. Measures to document the structure prior to removal will also be discussed here. Those historic structures slated for demolition shall be so indicated in the table below.

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: An informal Natural History collection is stored in the ranger station on shelves occupying about 40 cubic feet. This collection includes various animal bones, snake skins, turtle shells, and specimens stored in alcohol.

A herbarium collection was started at Fakahatchee Strand Preserve State Park in 1997. The herbarium cabinet is stored in the air-conditioned ranger station. Currently 397 vascular plant species are represented by a voucher specimen at Fakahatchee and the District 4 Herbarium. These specimens are in various stages of the voucher process from pressed to mounted and labeled.

Archaeological artifacts include railroad spikes collected from Janes' Scenic Drive

after road work and are stored in plastic bags to reduce exposure to moisture. The railroad spikes were used during the Bald Cypress logging of the Fakahatchee Strand during the 1940s up to 1954.

Over 600 slides are stored in a slide cabinet in the ranger station. Some of the slides date back to the early 1980s. Many of the slides have been scanned to digital images for archival storage.

A collection of aerial photographs from 1940, 1953, 1963, 1973, and 1984 are stored in a chart cabinet at the ranger station. The 1940 and 1953 black and white aerial photographs have been scanned and digitized for archival storage (Charles Roberts 1998).

Condition Assessment: The natural history collection, herbarium collection, archaeological artifacts, slides, and aerial photographs are currently stored in the air-conditioned ranger station. These collections are in good condition.

Level of Significance: Criteria do not exist which helps in the evaluation of the significance of collections or archival material. Usually, significance of a collection is based on what or who 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. Likewise, a high quality collection of artifacts from a significant archaeological site would be of important significance. A large herbarium collected from a specific park over many decades could be valuable to resource management efforts. Archival records are most significant as a research source. Any records depicting critical events in the park's history, including construction and resource management efforts, would all be significant.

The herbarium collection and the informal natural history collection provide a representation of the park's flora and fauna. These collections are important for research purposes, as well as for interpretation of the park's rich biodiversity. The herbarium is particularly valuable as a comprehensive record of plant species that occur, or have occurred, in the park. The Archaeological collection is more general in nature, and consists of randomly collected artifacts representing aspects of the history of land use on the area encompassed by the park. Finally, the collections of slides and aerial photographs are important as records of the past appearance of the park's resources. Slides can provide a photographic record of the park's natural and altered groundcover, and landscape aspect. Sometimes, they can provide insight into cultural resource history. Likewise, aerial photographs provide a record of historic landscape features, particularly with regard to past natural resource characteristics. These photographic collections are often valuable in guiding present-day management of resources, and are also valuable for both research and interpretation.

General management measures:

With assistance from the Bureau of Natural and Cultural Resources, a plan will be prepared to transfer the collection of Archaeological artifacts to the Bureau of Archaeological Research, Division of Historical Resources, where they will be

curated and cataloged. The Park will also prepare a Scope of Collections Statement to determine whether some artifacts should be returned to the Park on loan for display or interpretation.

Other collections will continue to be maintained in the air-conditioned ranger station. Control of insect pests and climate are the main management measures undertaken. Periodic collection management assessments are needed to evaluate the success of management measures and changing inventory.

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

Table 4: Cultural Sites Listed in the Florida Master Site File					
Site Name and FMSF #	Culture/Period	Description	Significance	Condition	Treatment
Daniels Point (Downs Place) 8CR00019	Pre-Columbian, 19 th century American, 1821-1899, 20 th century American, 1900-present, Glades I, 1000 BCE – CE 750, Glades II, CE 750-1200, Prehistoric, Spanish-1st Period, 1513-1763	Archaeological Site	NR	F	P
Fakahatchee River 8CR00020	Pre-Columbian, Prehistoric	Archaeological Site	NE	P	P
Youman's Place Shell Camp 8CR00068	Pre-Columbian, Glades, 1000 BCE – CE 1700, Glades II, A.D. 750-1200, Glades III, CE 1000-1700	Archaeological Site	NE	P	P
Big Cypress 2 8CR00069	Pre-Columbian, Prehistoric	Archaeological Site	NE	?	P
Big Cypress 11 8CR00071	Pre-Columbian, Glades, 1000 BCE – CE 1700, Prehistoric	Archaeological Site	NS	P	P

Big Cypress 10 8CR00075	Pre-Columbian, Indeterminate	Archaeological Site	NE	?	P
Big Cypress 3 8CR00084	Pre-Columbian, Prehistoric	Archaeological Site	NE	?	P
Oak Ring 8CR00186	Pre-Columbian, Glades II, CE 750- 1200, Glades III, A.D. 1000-1700	Archaeological Site	NE	?	P
Remuda Ranch South 2 8CR00192	Prehistoric with pottery	Archaeological Site	NE	?	P
Royal Palm Lake 8CR00544	Formative, Indeterminate, Prehistoric	Archaeological Site	NR	F	P
Miles City Prairie 8CR00732	Prehistoric, Glades Unspecified	Archaeological Site	NE	G	P
West Main Tram 8CR00733	Prehistoric, Glades Unspecified	Archaeological Site	NS	P	P
South Twelve Mile Prairie 8CR00734	Prehistoric, Glades Unspecified	Archaeological Site	NE	F	P
East Lake 8CR00735	Prehistoric, Glades Unspecified	Archaeological Site	NE	G	P
Justin-Toby Mound 8CR00743	Glades II, CE 750- 1200	Archaeological Site	NE	G	P
Simarouba 8CR00744	Prehistoric, Unspecified	Archaeological Site	NS	?	P
Five Oaks 8CR00745	Prehistoric, Unspecified	Archaeological Site	NE	?	P
Dutoit 8CR00746	Prehistoric, Unspecified	Archaeological Site	NE	?	P
POTI #1 8CR00852	Glades, 1000 BCE – CE 1700, Glades I, 1000 BCE – CE 750, Prehistoric	Archaeological Site	NR	?	P
No Name 8CR00924	Prehistoric	Archaeological Site	NS	?	P
US-41 8CR00927	20th century American, 1900- present	Resource Group – Linear Resource	NR	G	P
Tamiami Canal 8CR00928	20th century American, 1900- present	Resource Group – Linear Resource	NR	G	P
Picayune Strand Tram Lines 8CR00977	20th century American, 1900- present	Historic Landscape	NE	G	P

FK1-31 8CR00983	20th century American, 1900- present	Historic Structure	NS	?	P
FK1-18 8CR00987	20th century American, 1900- present	Historic Structure	NS	P	P
FK3-4 8CR00988	20th century American, 1900- present	Historic Structure	NS	P	R
FK1-30 8CR00989	20th century American, 1900- present	Historic Structure	NS	?	P
FK3-1 8CR00990	Prehistoric, Unspecified	Archaeological Site	NE	?	P
FK1-4 8CR00992	20th century American, 1900- present	Historic Structure	NS	?	P
FK1-8 8CR00994	20th century American, 1900- present	Historic Structure	NS	P	P
FK1-15 8CR00996	20th century American, 1900- present	Archaeological Site	NS	P	P
FK1-16 8CR00997	20th century American, 1900- present	Historic Structure	NS	P	P
FK1-29 8CR00999	20th century American, 1900- present	Archaeological Site	NS	P	P
FK2-1 8CR01000	20th century American, 1900- present	Archaeological Site	NS	?	P
FK2-2 8CR01001	20th century American, 1900- present	Archaeological Site	NS	?	P
FK2-3 8CR01002	20th century American, 1900- present	Archaeological Site	NS	P	P
FK2-8 8CR01004	20th century American, 1900- present	Archaeological Site	NS	P	P
FK2-9 8CR01005	20th century American, 1900- present	Archaeological Site	NS	?	P
FK2-10 8CR01006	20th century American, 1900- present	Archaeological Site	NS	?	P
FK2-11 8CR01007	20th century American, 1900- present	Archaeological Site	NS	P	P

FK2-12 8CR01008	20th century American, 1900- present	Archaeological Site	NS	P	P
FK2-18 8CR01010	20th century American, 1900- present	Archaeological Site	NS	P	P
FK2-19 8CR01011	20th century American, 1900- present	Archaeological Site	NS	?	P
FK3-2 8CR01012	20th century American, 1900- present	Archaeological Site	NS	?	P
FK3-3 8CR01013	20th century American, 1900- present	Historic Structure	NS	P	R
FK3-5 8CR01014	20th century American, 1900- present	Archaeological Site	NS	?	P
FK3-8 8CR01015	20th century American, 1900- present	Archaeological Site	NS	?	P
FK1-33 /Lee Tidewater Fakahatchee Logging Tram System 8CR01016	20th century American, 1900- present	Resource Group – Linear Resource	NR	F	P
FK3-7 8CR01017	20th century American, 1900- present	Archaeological Site	NS	P	P
FK1-6 8CR01018	Prehistoric	Archaeological Site	NE	?	P
FK1-9 8CR01019	Prehistoric	Archaeological Site	NE	?	P
FK1-10 8CR01020	Prehistoric	Archaeological Site	NE	?	P
FK1-13 8CR01021	Prehistoric	Archaeological Site	NE	?	P
FK1-14 8CR01022	Glades, 1000 BCE – CE 1700	Archaeological Site	NE	?	P
FK1-19 8CR01023	Prehistoric	Archaeological Site	NE	?	P
FK1-20 8CR01024	Glades, 1000 BCE – CE 1700	Archaeological Site	NE	?	P
FK1-22 8CR01025	Glades, 1000 BCE – CE 1700	Archaeological Site	NR	F	P
FK1-23 8CR01026	Prehistoric	Archaeological Site	NE	?	P
FK1-26 8CR01027	Glades, 1000 BCE – CE 1700	Archaeological Site	NR	F	P

FK1-27 8CR01028	Prehistoric	Archaeological Site	NE	?	P
FK1-28 8CR01029	Glades, 1000 BCE – CE 1700	Archaeological Site	NE	?	P
FK1-32 8CR01030	Prehistoric	Archaeological Site	NE	?	P
FK2-7 8CR01031	Prehistoric	Archaeological Site	NE	?	P
FK2-13 8CR01032	Prehistoric	Archaeological Site	NE	?	P
FK2-15 8CR01033	Prehistoric	Archaeological Site	NE	?	P
FK2-16 8CR01034	Prehistoric	Archaeological Site	NE	?	P
FK2-17 8CR01035	Prehistoric	Archaeological Site	NE	?	P
FK1-17 8CR01036	Glades, 1000 BCE – CE 1700	Archaeological Site	NE	?	P
FK2-21 8CR01037	20th century American, 1900-present	Archaeological Site	NS	P	P
FK2-22 8CR01038	20th century American, 1900-present	Archaeological Site	NS	?	P
FK3-6 8CR01039	20th century American, 1900-present	Archaeological Site	NS	?	P
FK2-20 8CR01040	Prehistoric	Archaeological Site	NE	?	P
FSP18 8CR01041	20th century American, 1900-present	Archaeological Site	NE	?	P
FSP17 8CR01042	20th century American, 1900-present	Archaeological Site	NE	?	P
FSP1 8CR01043	20th century American, 1900-present	Archaeological Site	NE	?	P
FSP2 8CR01044	20th century American, 1900-present	Archaeological Site	NE	?	P
FSP3 8CR01045	20th century American, 1900-present	Archaeological Site	NE	?	P
FSP4 8CR01046	20th century American, 1900-present	Archaeological Site	NE	?	P

FSP5 8CR01047	20th century American, 1900- present	Archaeological Site	NE	?	P
FSP6 8CR01048	20th century American, 1900- present	Archaeological Site	NE	?	P
FSP7 8CR01049	20th century American, 1900- present	Archaeological Site	NE	?	P
FSP8 8CR01050	20th century American, 1900- present	Archaeological Site	NE	?	P
FSP9 8CR01051	20th century American, 1900- present	Archaeological Site	NE	?	P
FSP10 8CR01052	20th century American, 1900- present	Archaeological Site	NE	?	P
FSP11 8CR01053	20th century American, 1900- present	Archaeological Site	NE	?	P
FSP12 8CR01054	20th century American, 1900- present	Archaeological Site	NE	?	P
FSP13 8CR01055	20th century American, 1900- present	Archaeological Site	NE	?	P
FSP14 8CR01056	20th century American, 1900- present	Archaeological Site	NE	?	P
FSP15 8CR01057	20th century American, 1900- present	Archaeological Site	NE	?	P
FSP16 8CR01058	20th century American, 1900- present	Archaeological Site	NE	?	P
Shop/Office Building 8CR01098	20th century American, 1900- present	Historic Structure	NS	G	RH
Copeland Fire Tower 8CR01099	20th century American, 1900- present	Historic Structure	NR	P	RH
Ranger Residence 1 8CR01100	20th century American, 1900- present	Historic Structure	NR	G	RH
Pump House/Storage Shed 8CR01101	20th century American, 1900- present	Historic Structure	NR	P	RH
Copeland Florida Division of Forestry Structures 8CR01102	20th century American, 1900- present	Resource Group – Historic Structures	NR	F	RH

Significance

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

Recommended Treatment

RS Restoration
RH Rehabilitation
ST Stabilization
P Preservation
R Removal

Condition

G Good
F Fair
P Poor

RESOURCE MANAGEMENT PROGRAM

Management Goals, Objectives, and Actions

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

While, the Division of Recreation and Parks 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 long-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.

Goals, objectives, and actions identified in this management plan will serve as the basis for developing annual work plans for the park. As the plan is based on conditions existing at the time the plan is composed, annual work plans will provide the flexibility needed to adapt to future conditions as they change during the 10-year management planning cycle. As the park's annual work plans are implemented during the ten-year cycle, it may become necessary to adjust the management plan's priority schedules and cost estimates to reflect these changing conditions.

Natural Resource Management

Hydrological Management

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

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

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

Monitoring of the park's hydrological characteristics began in 1989 and should continue as hydrological features are modified in the park and on adjacent lands. During the period of record, groundwater level, surface water level, rainfall, pan evaporation, daily weather, and flow rates have been measured.

Objective B: Restore natural hydrological conditions and functions to approximately 3,000 acres of Marl Prairie and Strand Swamp natural communities.

Phase 2 of the Picayune Strand Hydrologic Restoration Project was started in spring 2010, and will include the plugging of the canal that currently intercepts and diverts sheet flow away from Dan House Prairie resulting in a reduced hydroperiod for the marl prairie. The tomato field berms and ditches will continue to disrupt sheet flow and reduce the hydroperiod on approximately 1,000 acres on the east side of Dan House Prairie even after the completion of the second Phase of the Picayune Strand Hydrologic Restoration Project. It will be necessary to level 10,000 feet of berm by returning the soil to the adjacent drainage ditch which was excavated for tomato farming during the 1930s. Leveling of the berm will allow historic sheet flow through the marl prairie community and return the hydroperiod to near historic levels. A one-mile long berm runs east from the North-South canal in southern Dan House Prairie and intercepts sheet flow heading into the southeast portion of the prairie. In order to restore approximately 400 acres of marl prairie and strand swamp communities to near historic hydroperiods, the entire length of the berm should be pushed into the adjacent ditch.

A one-mile long North-South canal located at the south end of Dan House Prairie is reducing the hydroperiod of marl prairie and strand swamp communities on approximately 400 additional acres. It is recommended that this canal be filled with 1 or 2 plugs to reduce the hydrologic impact on the surrounding plant communities.

A 1.7-mile long road running from west to east from the Faka-Union Canal into the center of Dan House Prairie provides maintenance access to 3 pumps that provide drinking water for the Port of the Islands development adjacent to the west side of the park. This road is known as Old Pump Road and intercepts sheet flow going southward into marl prairie, strand swamp, dome swamp, and wet flatwoods communities. It is suggested that 12 to 18 culverts may need to be added under this road to convey the increased sheet flow anticipated with the completion of Phase 2 of the Picayune Strand Hydrologic Restoration Project. This will enhance the hydrologic benefits of this project while preserving Old Pump Road which is needed for resource management access. The hydrological conditions of 1,200 acres of natural communities south of this road will be restored to a condition that more closely approaches historic hydroperiods. In addition, in the southeastern portion of the park, it may be necessary to level 5,000 feet of berm to attain near historic water flow and hydroperiod and reduce saltwater intrusion.

Objective C: Collect baseline data that characterize the Class III Outstanding Florida Waters of the park for future reference.

Baseline water quality data supporting the classification of waters in the park as Class III Outstanding Florida Waters should be collected to understand the impact of future changes that may occur in the watershed. Water quality samples have been collected in a swamp lake in the northern portion of the Fakahatchee Strand since 1994. The Collier County Pollution Control Department monitors this site four times per year with staff assistance. Collier County's guidance will be requested to expand the water quality monitoring program to ensure protection of the park's water quality under the Class III Outstanding Florida Waters designation.

Natural Communities Management

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

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

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

All prescribed burns in the Florida state park system are conducted with authorization from the Florida Department of Agriculture and Consumer Services, Forest Service (FFS). Wildfire suppression activities in the park are coordinated with FFS.

The park is partitioned into burn zones, and burn prescriptions are implemented on the prescribed burn cycle for each zone (see Management Zones Map). The park's burn plan is updated annually because fire management is a dynamic process. To provide adaptive responses to changing conditions, fire management requires careful planning based on annual and very specific burn objectives. Each annual burn plan is developed to support and implement the broader objectives and actions outlined in this ten-year management plan.

In order to track fire management activities, the DRP maintains a statewide burn database. The database allows staff to track various aspects of each park's fire management program including individual burn zone histories and fire return intervals, staff training/ experience, backlog, if burn objectives have been met, etc. The database is also used for annual burn planning which allows the DRP to document fire management goals and objectives on an annual basis. Each quarter the database is updated and reports are produced that track progress towards meeting annual burn objectives.

Objective A: Within 10 years, have 23,000 acres of the park maintained within the optimum fire return interval.

Next to hydrology, the most important management need is prescribed burning. It is the conjunctive influence of fire, water, and topography that structures natural communities and dominates ecosystem function in this region. The extensive marl prairies are, paradoxically, seasonally flooded wetlands, but also pyric communities in dry months of the year. The fine fuels that cover them burn readily and recover quickly. The roads and canals which have segmented the Big Cypress landscape during the 1900s obstruct the movement of fires that once traveled long distances. On wet prairies, where fires have been excluded young pine and cypress trees can be observed in the early stages of transforming open terrain to a forested state.

There are 6 types of fire-adapted natural communities in the park and they are, in decreasing acreage, marl prairie, wet flatwoods, estuarine salt marsh, narrow strand swamp, mesic flatwoods, and dome swamp. Some strand swamp typically identified by its elongated juxtaposition with marl prairie is included as a fire-dependent community for this park because the natural process of fire functions similar to that of fire in a dome swamp. Twenty-nine of the thirty management zones include some fire-type acres. Fire breaks are located predominately along roads, canals, or rivers. The interior fire breaks consist of mowed or lightly tilled lines which have much less impact on the hydrological sheet flow and are less likely to facilitate exotic plant recruitment than plowed lines. Fire preparation work includes maintenance of the mowed lines after the water level has dropped sufficiently to allow tractor access as well as vegetation clearing along the boundary of the burn zones.

Grasses and sedges constitute the principle ground cover in these six communities, providing a fine fuel that burns easily when ignited. However, since the park consists largely of wetland, it cannot be burned when surface water is present. November through May are commonly the months most conducive to fire, except

when conditions become so dry that authorizations to burn cannot be secured from FFS. Furthermore, the burnable tracts are so large that helicopter assistance or assistance from outside agencies is essential to success. Having these assets available at the time preferred makes prescribed burning a challenge.

The burn program at Fakahatchee benefits greatly from the close association/collaboration with the burn crews at the BCNP and the FPNWR as well as the District 4 burn team.

The special concerns when burning at Fakahatchee include difficulty with smoke management due to the close proximity of three highways along the park boundaries, shifting winds with afternoon sea breezes, and water levels that make vehicular travel around the burn zones difficult, which can increase the risk. Another concern related to smoke management are the adjacent landowners at the communities of Copeland, Lee Cypress, Jerome, Rock Island, Port of the Islands, and Orchid Cove. The Ochopee Fire Control District is available for structure protection and has a large vehicle for a water source during fires.

Several species of imperiled animals found in the park require natural communities maintained by relatively frequent fire. These fire-dependent animals include; Florida panther, Florida black bear, Big Cypress fox squirrel, Everglades snail kite, and Florida sandhill crane. Also many wading birds designated on the State List as Species of Special Concern or Endangered are frequently observed in recently burned areas of marl prairie and estuarine tidal marsh, including white ibis and wood stork. Imperiled plants, such as Small's flax (*Linum carteri* var. *smallii*) endemic to pinelands of south Florida, as well as Fakahatchee burmannia (*Burmannia flava*), and snowy orchid (*Habenaria nivea*), both found on marl prairie, also require fire at frequent intervals.

Table 5 contains a list of all fire-dependent natural communities found within the park, their associated acreage and optimal fire return interval, and the annual average target for acres to be burned.

Table 5: Prescribed Fire Management

Natural Community	Acres	Optimal Fire Return Interval (Years)
<i>Mesic Flatwoods</i>	~166	1-3
<i>Marl Prairie</i>	~13,738	1-3
<i>Wet Flatwoods</i>	~5,251	2-4
<i>Strand Swamp</i>	~600	1-3
<i>Estuarine Salt Marsh</i>	~2,988	3-5
<i>Dome swamp</i>	~163	1-3
Annual Target Acreage	~6,800-18,300	

The objective of prescribed burning in this unit is to burn fire-adapted communities at the appropriate interval. Most dome swamps are 1 acre or less, and the smaller strand swamps are virtually an integral component of the marl prairies. Frequent and regular burning of the marl prairies is particularly important because seedlings of pine and cypress trees are always encroaching at the prairie edge. Frequent fires kill the seedlings, but when a few years pass without burning, they grow to a height that allows them to become impervious to fire. Fires in strand swamps associated with the marl prairie control understory shrubs such as wax myrtle.

Resource management objectives are set for each prescribed fire, and soon after the fire is completed the burn area is monitored to determine which measurable objectives were met. This is later followed by another post-burn review after one growing season to verify the objectives being met.

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

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

Following are the natural community/habitat restoration and maintenance actions recommended to create the desired future conditions in the altered landcover community.

Objective A: Develop a plan for borrow lake restoration that identifies priorities, feasibility, and partnership/funding opportunities, and enhances them for fish, wildlife, and passive recreational users.

The two borrow areas in the park are of lower habitat quality than the adjacent natural communities. To improve the lakes and adjacent uplands for fish wildlife and passive recreation, a restoration plan needs to be developed outlining the desired outcome; documenting the existing conditions; identifying potential restoration projects; looking into the feasibility of different projects; outlining a budget for each project and phase; prioritizing project schedule; and establishing a list of potential partnership and funding opportunities.

The first area is a 400-acre site formerly used as a borrow area for the construction of I-75 during the late 1980s. Thereafter, it was transferred to Florida DEP for management. Prior to the transfer, construction debris and exotic plants such as *Melaleuca* were removed by scraping the area clean. Since then the 100 acres that is not open water has remained relatively barren with a few exotics reappearing and requiring treatment. Water fills the 15 to 20 feet deep pits which support both native and exotic fish species.

The second is the 200 acres of property owned by the Harmon Brothers Rock Company that was acquired in 2004 as an addition to the park, near the main entrance on Janes' Scenic Drive. Some contouring of the shoreline was completed as a permit requirement for the mine, however additional improvements can be made to create better habitat.

During the development of the restoration plan, the construction of one or more potential wading bird rookery islands should be considered. Such a rookery would involve creating an island with fill material, grading the island shoreline to an appropriate slope, and vegetating the island area with appropriate plant species. By following island creation research developed by White et al (2012), Park Service personnel can choose a design that will benefit the nesting wading bird populations within the park. Based on previous research, it has been determined that a productive rookery island that would be attractive to wading birds would need to be designed according to guidelines including being located at least 50 meters from shore, surrounded by water deeper than 0.5 meters during the breeding season, being at least two hectares in size, containing a shallow water littoral shelf, and being vegetated with both large cypress or maple and smaller willow or holly to encourage nesting sites.

Restoration plans will need to be coordinated with land use development plans for public access and may require low-level recreational use where restoration is in progress.

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

Objective A: Conduct natural community/habitat improvement activities on approximately 500 acres of wet flatwoods, marl prairie, and small strand swamps.

This habitat improvement site is adjacent to the former Prairie Canal that previously drained the area, but was plugged in 2006. During the roughly 36 years that the canal was operational, the hydroperiod of the natural communities was reduced. This resulted in increased fire intensity and consumption of the upper muck layer in the region. Consequently, conditions favoring the recruitment and survival of cabbage palm allowed this species to become dominant in some of the nearby marl prairies and more common in the wet flatwoods communities, especially within 0.5

mile east of the Prairie Canal. Cabbage palms tolerate fire very well and are responsible for carrying fire into the pine canopy where it causes higher pine mortality. Increased density of cabbage palm also creates more shade in the marl prairie and wet flatwoods communities, causing a decrease in the herbaceous layer.

The desired herbaceous component of the marl prairie at the site should support many herbivores and the wet flatwoods community should support a high level of plant species diversity. These natural communities are home to white tailed deer, wild turkey, Big Cypress fox squirrel, Florida panther, Florida black bear, and eastern diamondback rattlesnake.

Selective removal of cabbage palms can be accomplished by application of herbicide directly to the terminal bud at the top of the tree. The palm trees should be left standing to provide habitat and to prevent hot spots during fires. This also precludes the need for heavy equipment which causes ground disturbance and openings for invasive exotics like cogon grass.

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 which 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 A: Periodically update imperiled species occurrence inventory lists for plants and animals.

The baseline imperiled species occurrence inventory lists are complete for the 2014 Management Plan revision. The inventory lists will be updated as needed during the next 10 years.

Objective B: Monitor and document 11 selected imperiled animal species in the park.

Monthly data at a night roost on the East River for four imperiled species of wading birds have been collected since 1996. Monitoring protocol follows that developed by National Audubon Society personnel for other colonial wading bird sites in Collier County (Ted Below, personal communication). This protocol involves the enumeration of wading birds by species as they descend to the night roost from one hour before sunset to a few minutes afterwards. The imperiled species utilizing the night roost include little blue heron, snowy egret, tricolored heron, and white ibis. In addition great egrets and glossy ibis utilize this roost and are also counted. This same site serves as a nesting rookery for up to 250 pairs of tricolored herons as well as a few nesting pairs of snowy egrets and white ibis.

Besides wading birds seven other imperiled vertebrates are monitored in the park. Weekly alligator counts along Janes' Scenic Drive are done in conjunction with hydrological data collection. Protocol includes recording date, time, location, and estimated size from a vehicle on the roadway. Data will be analyzed for trends in alligator abundance within size classes. The monitoring is typically performed by the same volunteer or a staff member throughout the year.

Big Cypress fox squirrels have been studied since 2007 via radio telemetry by NPS biologists on the adjacent Big Cypress National Preserve (John Kellum, BCNP). Florida Park Service staff at Fakahatchee Strand Preserve State Park propose to adopt NPS protocols to inventory and monitor for fox squirrels. Staff would initially partner with NPS to conduct an annual two to three day survey for the presence of fox squirrels. This will be important baseline data to measure the response of the population to hydrological restoration and natural community improvement and maintenance.

The Everglades mink was studied during 2010 by biologists with the Conservancy of Southwest Florida. Video surveillance and limited radio telemetry are being employed to monitor the mink population within the park. Opportunistic radio telemetry of an injured Everglades mink taken to the Conservancy of Southwest Florida and returned to Fakahatchee Strand on March 31, 2010 yielded new data on movements in the wild. Park staff will continue to contribute opportunistic observations.

Studies of the Florida panther have been conducted in South Florida since the 1970s. The lead agency in management of the Florida Panther population has been the FWC. Panthers have been captured and fitted with radio collars within and adjacent to Fakahatchee Strand Preserve State Park. Park personnel have assisted with this project and will continue to assist as appropriate.

The Florida black bear is no-longer listed as state-threatened, however bear are an important component of the Fakahatchee Strand ecosystem. FWC conducted a 3-year Statewide Assessment of Road Impacts on Florida black bears from 2001 through 2003. This study included the Fakahatchee Strand Preserve State Park and resulted in a population estimate of 500 to 700 bears in southwest Florida. Park staff will continue to document opportunistic black bear observations.

The American crocodile has been documented in waterways south of US-41 that are the most often traveled by park staff. In order to understand more about the distribution and abundance of the American crocodile within the park, additional survey work is proposed. The East River and the mouth of the Fakahatchee River will be surveyed annually for American crocodiles during January to March. A monitoring protocol may be adopted from one currently in use by Rookery Bay National Estuarine Research Reserve. The protocol involves a night survey that uses a spotlight to detect eye shine. However, if this procedure proves ineffective, an early morning survey after cool nights in January and February may be attempted.

The final species recommended for detailed survey and monitoring is the red-cockaded woodpecker. This species has historically occurred in the park, but has not been observed in the park for decades. Park staff will collaborate with NPS biological staff to determine the appropriate monitoring protocol for the park (Deborah Jansen, Big Cypress National Preserve). Monitoring will likely involve an annual survey to determine the presence of the bird and whether additional management actions are necessary.

Objective C: Monitor and document 71 selected imperiled plant species in the park.

These 71 plant species are included in the list of Table 2. For all those ranked as Tier 2, the protocol for monitoring has involved a systematic annual survey that, over the years, has sampled the strand swamp and slough communities along a transect from north to south. In addition, these species are monitored along the route of weekly swamp walks conducted from October through March. Survey parties gather on 8 to 10 additional occasions annually to inventory new locations and monitor a few known sites. These efforts involve the work of knowledgeable volunteers under the direct supervision of the park biologist. The protocol typically involves an intensive search along transects defined by the course of the particular slough being surveyed. The size of the survey party typically allows a transect 50 feet wide for the length of the slough. Observations for a suite of species are recorded, including bromeliads, ferns, peperomias, and orchids. Most records include abundance, plant height, host tree species, water depth, reproductive status, and robustness.

Of the 71 plant species, one is ranked as Tier 4, the Ghost Orchid. Monitoring of the ghost orchid involves collecting data on host tree species, diameter at breast height of the host tree, height above ground, current water depth, estimate of mean annual high water, number of alive and dead roots, length of the longest root, number of active growing tips, side of tree to nearest cardinal direction, number of new and old spikes, buds, flowers, number of seed pods, and overall health. When a ghost orchid is located the entire population within a 100-foot radius is surveyed. These populations are monitored at least annually and demographic characteristics are recorded.

The remaining 2 of the 71 plant species, giant airplant and cowhorn orchid, are Tier 5. In March 2008 giant airplants in the northern portion of the park were found to be infested with Mexican bromeliad weevils. An inventory of giant airplants along 7 miles of JSD was completed in January 2009. More than 500 plants were located and continue to be monitored annually during the winter months for damage caused by the Mexican bromeliad weevil. Data collected on each plant include GPS location, height, tree species, side of tree, general size, color, condition, bloom spike, and size. This dataset is gathered largely by volunteer help and should provide an early warning of areas with weevil damage. This quantitative data can also be used as baseline for comparison with future conditions if the weevil continues to spread and reduce bromeliad populations within the park. It has become clear from this data that the giant airplant is undergoing a catastrophic decline from 870 to 140 plants in the 84 acres surveyed along Janes' Scenic Drive. A collaborative project with the Naples Botanical Garden and Marie Selby Botanical Garden to rescue some of the remaining genetic diversity within the giant airplant population at Fakahatchee Strand was initiated in March 2014. Permits were acquired to temporarily remove about 150 giant airplants from the Fakahatchee Strand and safeguard the plants from the Mexican bromeliad weevil. Each year any giant airplants that produce a bloom spike will be returned to the same tree to allow the seeds to spread back into the strand. This project should allow the giant airplant to persist another 5 to 10 years at Fakahatchee Strand Preserve State Park although in considerably lower numbers than recent data would suggest. It may be necessary to grow some giant airplants from seeds in order to allow some of the genetic diversity of this population to continue into the future.

The cowhorn orchid is also Tier 5 and is the subject of a population augmentation project in collaboration with the Atlanta Botanical Garden (ABG), with a Florida DEP Research/Collecting Permit. Only 25 cowhorn orchids are known to occur in the Fakahatchee Strand. Attempts to cross pollinate several cowhorn orchids within the Fakahatchee Strand were made in 2007 and 2008 resulting in the production of one seed pod in April 2009. The seed pod was sent to ABG for in vitro seed germination and thousands of seedlings germinated in June 2009. On June 9, 2009 the seed pod was returned above the parent plant to allow the remaining seeds to disperse by the wind into the surrounding strand swamp and slough communities. Additional cross pollination attempts were conducted in April 2009 producing 14 seed pods. During 2 days in April 2010 six of these pods were removed for in vitro seed germination at ABG's tissue culture lab. These 6 seed pods will be returned above the parent plants to allow potential recruitment of seedlings into the Fakahatchee

Strand. This project will return hundreds of cowhorn orchid seedlings of known genetic origin to the Fakahatchee Strand and document survival rates as well as improve our knowledge of the role of mycorrhizal fungi in facilitating recruitment of seedlings (Matt Richards, ABG). As of May 2013, over 600 young cowhorn orchids have been placed on trees in several sites within the Fakahatchee Strand. Each April a significant sample of these plants is monitored for survival rates and has exceeded 80 percent up to the 2013 April sampling period. The plan is to plant 200 additional young cowhorn orchids each May in 2014 and 2015. This will allow the establishment of over 1,000 young cowhorn orchids back into the Fakahatchee Strand. Continuing to monitoring for survival and eventual blooming of this species will provide new information to help inform future wild orchid restoration attempts.

Objective D: Evaluate the impacts of recreational use on the East River wading bird roost/nesting rookery, and take corrective measures for any negative impacts.

Monitoring is essential to measure the effects of recreational use on the imperiled species utilizing this roost and rookery. Negative effects will require modification of recreational use such as exclusion zones and designation of canoe routes past the roost/rookery. Signs designating protected areas and reduced carrying capacities may also be required. Some constraints on recreational use may be seasonal.

Objective E: Investigate opportunities for the reintroduction of Red-cockaded woodpeckers to the park.

The park biologist was contacted by a Collier County government biologist about the potential for translocation of red-cockaded woodpeckers to the park. The park biologist will seek guidance and potential opportunities for reintroduction from the FWC and USFWS.

Objective F: Repeat the biological surveys of overgrown trams at 10-year intervals to record changes that may have occurred.

The overgrown trams were surveyed for 71 imperiled plant species from September 1996 through March 2004. Of the 71 imperiled plant species found in the park, 43 were documented along the 140 overgrown trams. Many of these plants are tropical and are therefore vulnerable to frost or drought events. Repeating the imperiled plant species survey of the 43 imperiled plant species known to occur on the overgrown trams will provide the data necessary to determine any population changes as well as changes in species composition of those imperiled plant species.

Exotic Species Management

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

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

Objective A: Annually treat 20 acres of exotic plant species in the park.

About 15 acres of Brazilian pepper along with about 4 acres of melaleuca, 0.2 acre of lygodium, 0.8 acre of Cogon grass, and 0.5 acre of air potato are targeted annually, for treatment at Fakahatchee Strand Preserve State Park. However, these acres may be adjusted after invasive exotic surveys and by setting treatment priorities and goals in the annual work plan, and as grant funding becomes available. Treated sites should be inspected annually for follow-up treatment. At a minimum the park should have an invasive exotic plant survey updated to ensure information on coverage and species is accurate. To augment invasive exotic species control activities, park staff will continue to pursue diverse opportunities, such as improving education and involvement with Southwest Florida Cooperative Invasive Species Management Area (CISMA), regarding exotic species and interpretive outreach for staff, volunteers, and visitors.

Objective B: Implement control measures on three nuisance and exotic animal species in the park, the imported red fire ant.

Baseline information is being collected on the density of imported red fire ant mounds in marl prairie. Initial results indicate that fire ant mounds occur at significant densities. A new bio-control, the fire ant phorid “decapitating” fly, will be evaluated as a means of controlling this exotic species. In the meantime, post-fire monitoring of the density of fire ant mounds will continue in marl prairies within several weeks after a burn.

Continue collaboration with Dr. Ron Cave at the University of Florida Biocontrol Facility at Ft. Pierce to release Mexican bromeliad weevil flies as an attempt to establish a bio-control for the Mexican bromeliad weevil.

Continue the island apple snail monitoring and egg mass removal in collaboration with staff at the Florida Panther National Wildlife Refuge in an attempt to prevent the downstream spread of this aquatic invader as well as document the range expansion and imminent invasion of the island apple snail into the park.

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. 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. Long-term management goals for forest communities in the state park system are 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 the previous 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. Consideration of current timber resources resulted in a similar determination and conclusion for this management plan cycle. Timber management will be re-evaluated during the next revision of the management plan.

Arthropod Control Plan

All DRP lands are designated as “environmentally sensitive and biologically highly productive” in accordance with Ch. 388 and Ch. 388.4111 Florida Statutes. If a local mosquito control district proposes a treatment plan, the DRP works with the local mosquito control district to reach consensus. By policy of DEP since 1987, aerial adulticiding is not allowed, but larviciding and ground adulticiding (truck spraying in public use areas) is typically allowed. The DRP does not authorize new physical alterations of marshes through ditching or water control structures. Mosquito control plans temporarily may be set aside under declared threats to public or animal health, or during a Governor’s Emergency Proclamation.

The park is located in a remote area, disconnected from significant population centers, so an arthropod control plan has not been requested or developed.

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 DRP’s adaptive management response to future conditions, including the effects of sea level rise, as they develop.

Additional Considerations

The use of off highway vehicles (OHV) in the park is prohibited. Private landowners may be given written permission to access their property by OHV via authorized park roads or trails. Unauthorized entry by OHV continues to be a significant management challenge at numerous points along SR 29 where OHV frequently access the park. Land acquisition and cooperation with private landowners has reduced the number of uncontrolled access points in recent years, but many points of access remain uncontrolled. Uncontrolled access can result in adverse impacts to natural communities, hydrology, and wildlife populations.

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 Division of Recreation and Parks is implementing the following goals, objectives, and actions, as funding becomes available, to preserve the cultural resources found in Fakahatchee Strand Preserve State Park.

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

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 Florida Department of State, Division of Historical Resources (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, or 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 Division of Recreation and Parks 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 Division of Recreation and Parks 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 A: Assess and evaluate 77 of 93 recorded cultural resources in the park.

There are 77 known archaeological sites at Fakahatchee Strand Preserve State Park listed on the Florida Master Site File. All 77 archaeological sites will be visited for assessments/evaluations within four years of the completion of the Unit Management Plan, 20 per year. Each site assessment will include: current condition, notation of any threats to the site's condition, photo points for comparison with previous evaluations and GPS location. The results of the assessments/evaluations will be used to determine a priority list for preservation and stabilization. Nine of the archaeological sites are difficult to access through Strand Swamp and eight sites require a boat or moderate hiking to access.

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

All newly discovered, or previously unrecorded, sites will be entered in the Florida Master Site File. Additional cultural inventory in this large park should be guided by a predictive model being developed by the University of South Florida, indicating areas of high, medium, and low sensitivity for potential cultural site occurrence. A scope of collections statement is also needed.

Objective C: Bring 3 of 93 recorded cultural resources into good condition.

The Copland Fire Tower (8CR01099) and two associated structures (8CR01101 and 8CR01102) (see last several entries in Table 4) should be brought into good condition during the term of this unit plan. Cyclical maintenance programs for these structures should be implemented. Design and implementation of a monitoring program should be undertaken once the assessment of the resources is far enough advanced.

Objective D: Prepare a collections management plan and a catalog of all natural history, archaeological, and historic objects at the park.

This task should be completed as soon as possible to insure the integrity of all collected objects within the park. Chapter 12 of the Operations Manual provides guidance. The archaeological collection should be sent to the Division of Historical Resources for curating and cataloging. A conservation schedule and Scope of Collections Statement should also be prepared. Training in the care of collection objects will be provided by the DRP's Bureau of Natural and Cultural Resources.

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.

Fakahatchee Strand Preserve State Park was subject to a land management review on July 12, 2013. The review team made the following determinations:

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

LAND USE COMPONENT

Introduction

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

The general planning and design process begins with an analysis of the natural and cultural resources of the unit, and then proceeds through the creation of a conceptual land use plan that culminates in the actual design and construction of park facilities. Input to the plan is provided by experts in environmental sciences, cultural resources, park operations, 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.

Fakahatchee Strand Preserve State Park is located within Collier County, about 40 miles southeast of the city of Naples in the southwest region of the state.

Existing Use of Adjacent Lands

South and east of the preserve is the Everglades National Park, and due east is the Big Cypress National Preserve. To the west, sharing the park boundary north of Tamiami Trail (U.S. Highway 41), is the Picayune Strand State Forest, which consists of 78,615 acres. Multiple small residential communities and a tactile training facility are located along State Road 29, between the eastern park boundary and Big Cypress Preserve. The park is

bounded on the north by the portion of I-75 known as "Alligator Alley". The northern park boundary is shared with the Florida Panther National Wildlife Refuge, which is 26,400 acres in size. Majority of the land north of the park, including the Florida Panther Refuge, is federally managed area, except for areas north of the Picayune Strand State Forest, which are privately held. The town of Copeland and a lime rock mining operation are located near State Road 29 at the entrance in the southeastern corner of the park. A large number of privately owned parcels exist within the park, some of which contain small hunting and fishing camps. Port of the Islands, a resort community, exists at the intersection of Tamiami Trail and the west park boundary. The community features a marina, single and multi-family residential development, a gun club, several hotels, numerous boating and fishing operations, and other tourism-centered activities.

The Picayune Strand State Forest, located to the west of the park, is approximately 7 miles wide by 11 miles long. It consists of wilderness terrain crisscrossed by 45 miles of canals and 227 miles of roads managed by the Florida Forest Service. Originally used for cypress logging in the 1940s and 1950s, it later became the site of a large-scale real estate development enterprise during the 1960s. This 57,000-acre tract, known officially as South Golden Gate, and colloquially as the "the blocks," became a CARL-funded land acquisition project. Due to the large number of property owners, land purchasing continued to advance slowly until 1998 when the State received Federal assistance to complete the acquisition. The process was also accelerated due to assistance from the Conservancy of Southwest Florida, a conservation organization based in Collier County.

Planned Use of Adjacent Lands

The park is located directly south of the east-west bound segment of I-75 Alligator Alley. Proximity of the park to I-75 makes it easily accessible to the neighboring areas, which include the population centers of Cape Coral, Fort Myers, Bonita Springs, and Naples. In 2010, the Cape Coral-Ft. Myers and Naples-Marco Island metropolitan statistical areas comprised an estimated population of nearly 1 million.

Collier County is ranked fifteenth and thirty-third out of Florida's 67 counties in terms of total population and population density, respectively. At approximately 2,025.5 square miles, it is the largest county in the state. Of the total land area, nearly 1,284 square miles (over 63 percent) are state or federally managed lands. The county has experienced times of rapid population growth throughout its history, with the population more than doubling every decade from 1950 to 1980. In the past three decades, population growth has slowed significantly, but Collier County remains one of the fastest growing counties in the state. In 2011, the estimated permanent population was over 321,000 residents. The population of Collier County is projected to grow by another 14 to 30 percent by 2025. Due to the large area of protected land to the east, urban development and population growth will primarily occur in the densely populated coastal areas west of the park.

The county has adopted language into its Land Development Code (LDC), which limits development in favor of natural resource protection. Development restrictions most likely to affect the park are those that relate to protection of groundwater quality and the area's rare, threatened, or endangered species and their habitat. Specific criteria regarding installation of lighting and other features proximal to protected resources is also contained in the LDC.

Adjacent lands have been identified for acquisition by the State of Florida to expand the conservation and management functions of the park. Development in these needed buffers may create problems for acquisition at a future date. However, the character of the surrounding land, state and federal regulations on wetlands, and the designation of this area as the Big Cypress Area of Critical State Concern may limit large-scale commercial, industrial, agricultural, or residential developments in the future. Two planned public projects may assist the Division in educating the public about the park.

Areas of the Picayune Strand State Forest are undergoing restoration to block approximately 45 miles of canal and remove 227 miles of roadway that were installed as part of the prospective development activity that took place in the 1960s. This restorative action is necessary in order to restore the vital sheet flow of freshwater through the strand into the low-lying southern areas within and adjacent to the park, including the Ten Thousand Islands National Wildlife Refuge and the Rookery Bay National Estuarine Research Reserve. Despite the restorative initiative that is underway, the Collier County Future Land Use Map (updated January 8, 2013) classifies the Picayune Strand area as Estates Designation (or Estates District, according to the LDC), which provides for the development of low-density rural or semi-rural residential development and other uses.

Several areas within the Port of the Islands community are under development, including facilities for a 50-acre residential property adjacent to the park. In the county's Future Land Use Map (updated October 14, 2008), the Port of the Islands community is designated as an Urban Residential Sub-district.

The Collier Metropolitan Planning Organization, 2035 Long Range Transportation Plan (LRTP) proposes several projects near Fakahatchee Strand Preserve State Park. The LRTP was initially adopted December 10, 2010 and revised with minor updates March 8, 2013. Among the more significant proposed projects is the construction of a new I-75 interchange at Everglades Boulevard. Although initially identified as a priority project, The MPO Board recommends deferring construction of the new I-75 interchange until the later years of the LRTP. The project development, environmental study, and preliminary engineering phases for the interchange are not programmed within the next five years. Tamiami Trail is to be widened from 2 to 6 lanes between Collier Boulevard and Greenway Road. It will include pedestrian and bicycle facilities. This project is fully funded through 2014. Tamiami Trail, as identified in the Minor Update Cost Feasible Plan, is to be widened from 2 to 4 lanes between Greenway Road

and 6L Farm Road between 2021 and 2025. It will include pedestrian and bicycle facilities.

In addition to the pedestrian and bicycle facilities proposed as part of the 2035 LRTP Tamiami Trail improvements, the River of Grass Greenway Feasibility Study and Master Plan is looking at ways to connect the national and state park lands of the area by a 12 to 14-foot wide hard-surfaced path near US-41 with spur trails to nearby historic and cultural centers, including Everglades City and the Miccosukee Indian Village. The pathway is proposed to be designed and built with minimal hydrological or ecological impacts. Accounting for needs and interests of Fakahatchee Strand Preserve State Park has been emphasized in the conceptual planning of the River of Grass Greenway.

Another development within the vicinity of the park is the Town of Big Cypress, a proposed 2,800-acre Development of Regional Impact (DRI) that will be located southwest of the Town of Ave Maria, near the intersection of Oil Well Road (County Road 858) and Desoto Boulevard, approximately 15 miles due north of the park's northern boundary. The DRI will include a mixed-use development with approximately 9,000 residential units.

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

Large areas of land throughout the park are subject to flooding during the rainy season. The predominant wetlands create unique constraints on recreation and developing the property for public access. The most appropriate functions of public access and facilities for this unit will be for interpretation and environmental education regarding wetland ecosystems, endangered species, and wilderness experience.

Water Area

Open water may be found within the park at scattered swamp lakes and creeks north of US-41 and in the tidal estuary system south of US-41. Access to the swamp lakes is limited as these lie within the large strand swamp community that is permanently flooded. Access to the estuary system is possible by paddling. East River is a designated paddling trail. The launch is located south of US-41.

Shoreline

The shoreline of the southern estuary system extends for approximately eight to ten miles, all of which is vegetated by mangrove and other tidal swamp species, providing limited access for recreation.

Natural Scenery

The park offers a unique assortment of visual resources. The most scenic of the natural communities on this property are the strand swamp and slough communities, with their profusion of epiphytic plants, ferns, royal palms and occasional swamp lakes. Swamp walk or wade tours of the strand are guided by rangers and naturalists. Janes' Scenic Drive traverses the strand, providing open views of less densely forested portions of the park. Up-close experiences of the interior are generally found by the more adventurous visitors. For visitors with disabilities, or whose time in the park is limited, a boardwalk at Big Cypress Bend allows a brief and comfortable visit to the interior of the swamp. Other natural communities in the park also offer viewing experiences of interest.

Significant Habitat

The Fakahatchee Strand Preserve State Park is a rich wildlife habitat because of its large size, extensive marine and freshwater wetlands, and contrasting vegetation types: open prairies abutting the largest hardwood forest in southern Florida. Twenty-four species of vertebrates listed by federal and state agencies have been recorded. The Florida panther and the Everglades mink are the most publicized and significantly threatened of the listed species that inhabit the park. The Florida black bear is commonly seen and West Indian manatees are found in the waters along the park's shore. Bald eagles and ospreys nest in the park. River otters and bobcats are common, as are white-tailed deer. Sandhill cranes, the Big Cypress fox squirrel, and peregrine falcons have also been seen on occasion.

Other interesting species include the South Florida king snake, the swallow-tailed kite, the king rail (abundant on the wet prairies in summer), and the American bittern (sometimes common in winter). The black-whiskered vireo nests here, which is uncommon so far south. Wood warblers typically forage for food in the hardwood forest during migration.

Natural Features

The strand swamp community with its bromeliads, orchids, and royal palms is the outstanding natural feature of the park. Interpretation of the geologic origin of the strand and the unique ecology and listed species of the site

should continue to be incorporated in educational and interpretive programs. Other unique natural features of the park are the dark night sky and natural soundscape. As Florida's urban environment has developed, fewer locations in the state offer a night sky that is unaffected by artificial light for stargazing and astronomical study. Large units in the state park system, such as the Fakahatchee Strand Preserve State Park, are becoming more important to the state's citizens who enjoy astronomy activities. The dark sky resource of the park should be protected by the DRP's management decisions and activities, to the extent feasible.

Archaeological and Historic Features

Prehistoric sites, mostly consisting of shell midden, have been identified on the property. Local historic sites include the logging trams, the Daniels' settlement located south of Tamiami Trail, the stand of virgin cypress at Big Cypress Bend, and Weaver's Station on Tamiami Trail (which is included in the optimum boundary). The prehistoric and historic features of the property should continue to be interpreted through park programs.

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.

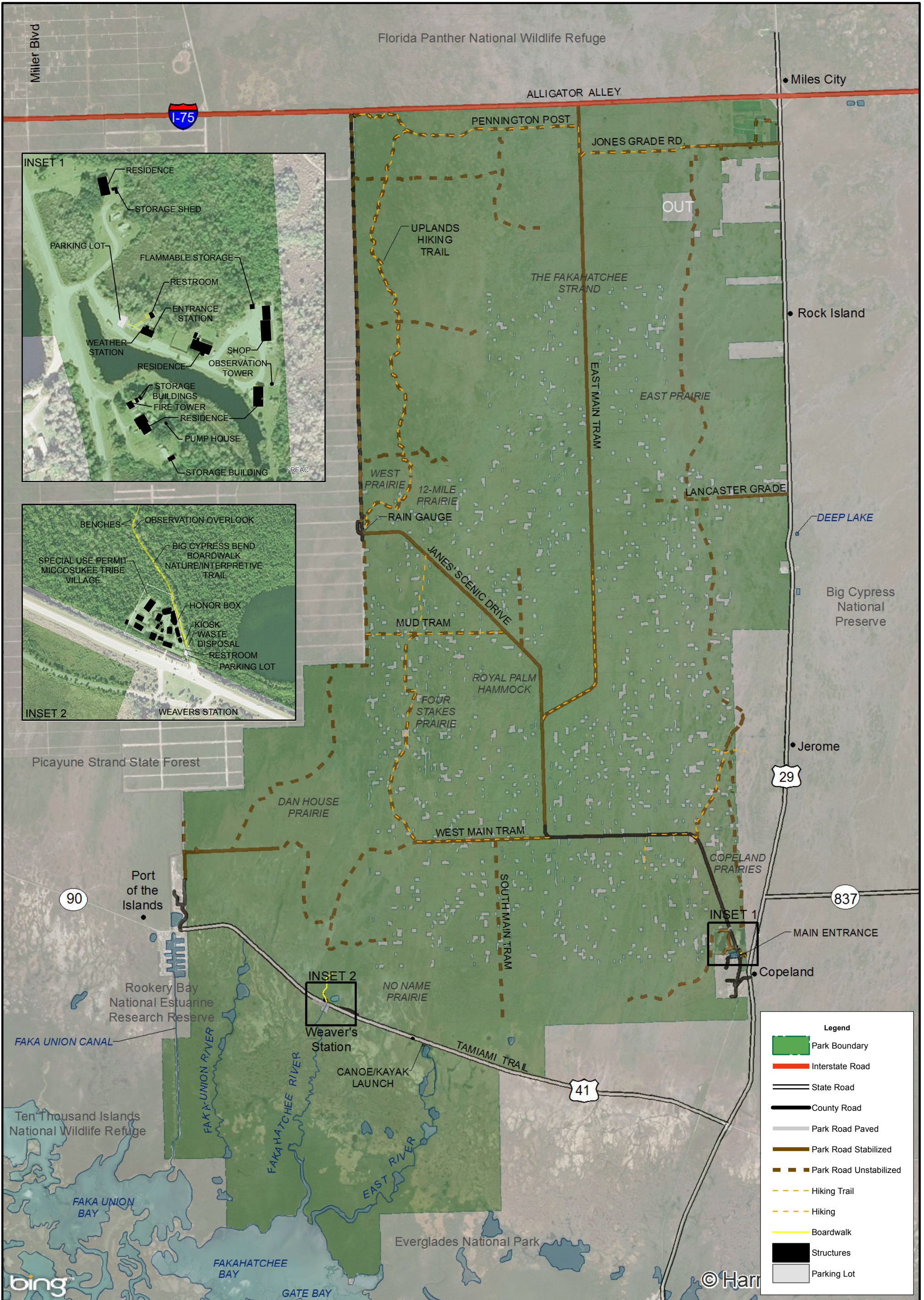
Past Uses

The extensive logging activity that occurred on this property during the 1940s and 1950s is discussed in the resource management component. The former logging trams that extend through the strand swamp, now provide the primary means of access for recreational access to the interior of the park.

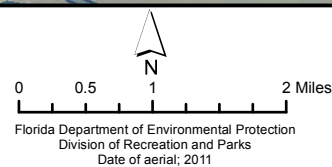
Future Land Use and Zoning

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

Collier County Comprehensive Plan and Future Land Use Map designate the park as conservation land. Adjacent federal public lands, including Florida Panther National Wildlife Refuge and Big Cypress National Preserve are also designated as conservation land.



FAKAHATCHEE STRAND PRESERVE STATE PARK



BASE MAP

Legend	
	Park Boundary
	Interstate Road
	State Road
	County Road
	Park Road Paved
	Park Road Stabilized
	Park Road Unstabilized
	Hiking Trail
	Hiking
	Boardwalk
	Structures
	Parking Lot

Current Recreational Use and Visitor Programs

Park staff and volunteer naturalists seasonally offer guided half-day hikes through the cypress and mixed hardwood swamps of the strand. Various other interpretive programs are also organized by park staff throughout the year. Additionally, the Friends of Fakahatchee offer a number of trips and tours throughout the year such as tram rides, boardwalk tours, guided hikes, research/educational expeditions, and paddling tours.

Fakahatchee Strand Preserve State Park recorded 119,760 visitors in fiscal year (FY) 2012-2013. By DRP estimates, the FY 2012-2013 visitors contributed \$5.5 million in total direct economic impact, the equivalent of adding 88 jobs to the local economy (FDEP 2013).

Other Uses

A cellular phone communications tower was erected on state property near the intersection of SR 29 and I-75, in the early 1990s. When the tower is no longer needed, the state lands easement agreement requires that it will be taken down and wetlands will be restored by removing all fill, including the access road.

As of 2013, an easement granted the rights to the municipality of Everglades City to construct and maintain water wells on a 1.6 acres area near the Copeland entrance and support area.

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. By classification as a preserve, the entire park is managed with emphasis on protection of the unique natural resources it contains. Natural communities included in the designated protected zones are the prairie hammock, marl prairie, rockland hammock, dome swamp, slough, swamp lake, and wet flatwoods communities (see Natural Communities Map).

The presence of protected biota within or proximal to the park will determine which areas are subject to the development limitations outlined in the land use plan. In addition, high aquifer recharge areas will be subject to the limitations established for the protection of groundwater quality.

Existing Facilities

Recreation Facilities

A boardwalk approximately 2,300 feet long is located just off Tamiami Trail at Big Cypress Bend. A canoe-kayak launch to access the East River is located just south of US-41, east of the Big Cypress Bend site. Four trails,

East Main Tram, West Main Tram, Uplands Trail, and Jones Grade are designated for shared use, including hiking and bicycling. No trailhead facilities are provided at the canoe-kayak launch or trails.

Support Facilities

Management facilities for the park include an administrative office, visitor center, restrooms, shop, equipment storage building, and flammable storage building in the Copeland Entrance and Support Area. Three mobile home residences and three volunteer campsites are also located in this area. Two additional residences are located at the northeast corner of the park.

Big Cypress Bend Boardwalk

Parking
Portable Restrooms
Boardwalk

East River Canoe Launch

Parking
Canoe-kayak Launch

Shared Use Trails

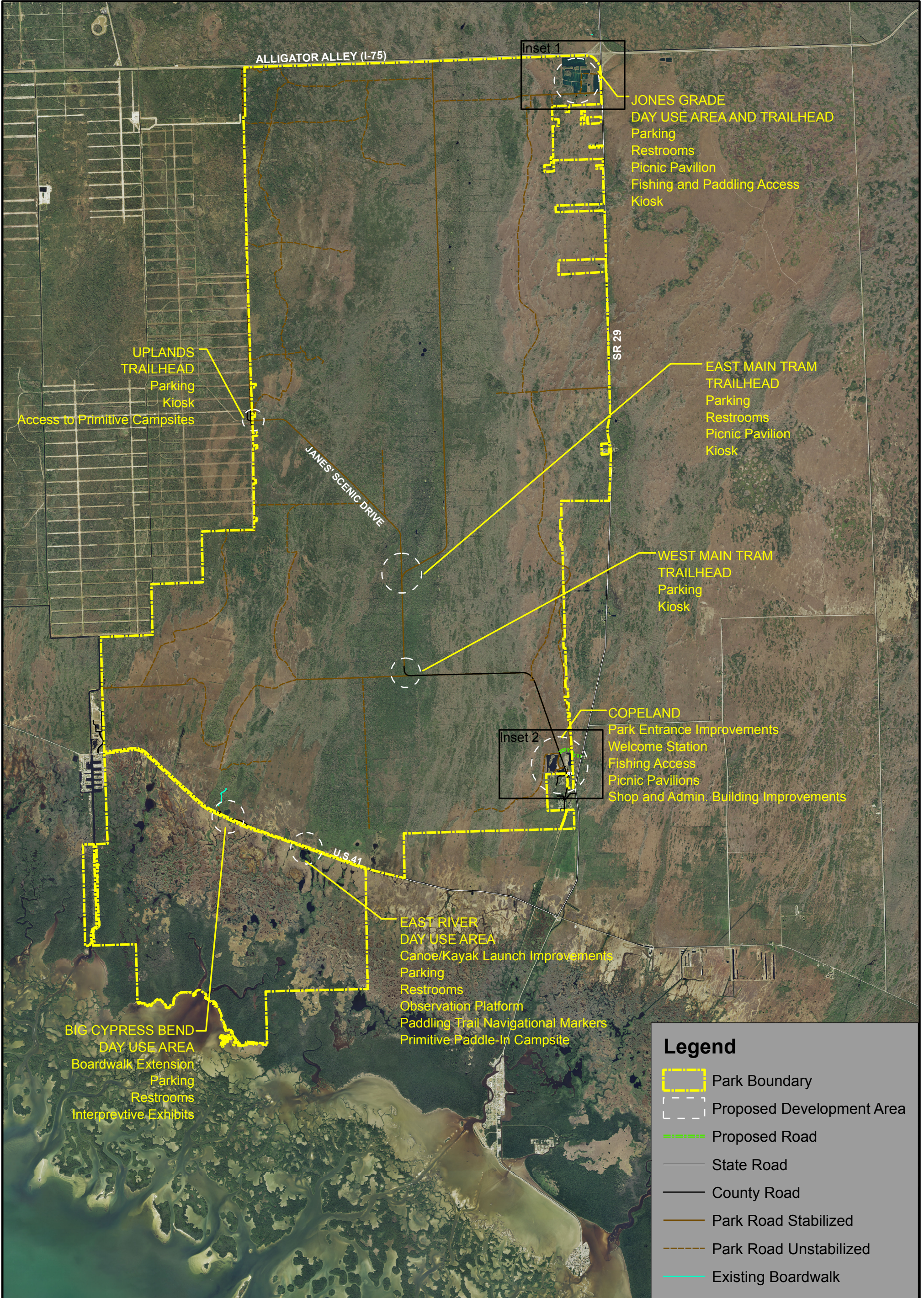
East Main Tram
West Main Tram
South Main Tram
Uplands Trail
Mud Tram
Jones Grade Trail
East Prairie Trail

Copeland Entrance and Support Area

Visitor Center
Restrooms
Park Offices
Shop Building
Equipment Storage
Flammable Storage
Ranger Residences
Volunteer Campsites

Conceptual Land Use Plan

The following narrative represents the current conceptual land use proposal for this park. The conceptual land use plan is the long-term, optimal development plan for the park, based on current conditions and knowledge of the park's resources, landscape and social setting (see Conceptual Land Use Plan). The conceptual land use plan is modified or amended, as new information becomes available regarding the park's natural and cultural resources or trends in recreational uses, in order to adapt to changing conditions. Additionally, the acquisition of new parkland may provide opportunities for alternative or expanded land uses. The DRP develops a detailed development plan for the park and a site plan for specific facilities based on this conceptual land use plan, as funding becomes available. During the development of the conceptual land use plan, the DRP assessed the potential impact of proposed uses or development on the park resources and applied that analysis to determine the future physical plan of the park as well as the scale and character of proposed development. Potential resource impacts are also identified and assessed as part of the site planning process once funding is available for facility development. At that stage, design elements (such as existing topography, 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



UPLANDS TRAILHEAD
 Parking
 Kiosk
 Access to Primitive Campsites

Inset 1

JONES GRADE DAY USE AREA AND TRAILHEAD
 Parking
 Restrooms
 Picnic Pavilion
 Fishing and Paddling Access
 Kiosk

EAST MAIN TRAM TRAILHEAD
 Parking
 Restrooms
 Picnic Pavilion
 Kiosk

WEST MAIN TRAM TRAILHEAD
 Parking
 Kiosk

Inset 2

COPELAND Park Entrance Improvements
 Welcome Station
 Fishing Access
 Picnic Pavilions
 Shop and Admin. Building Improvements

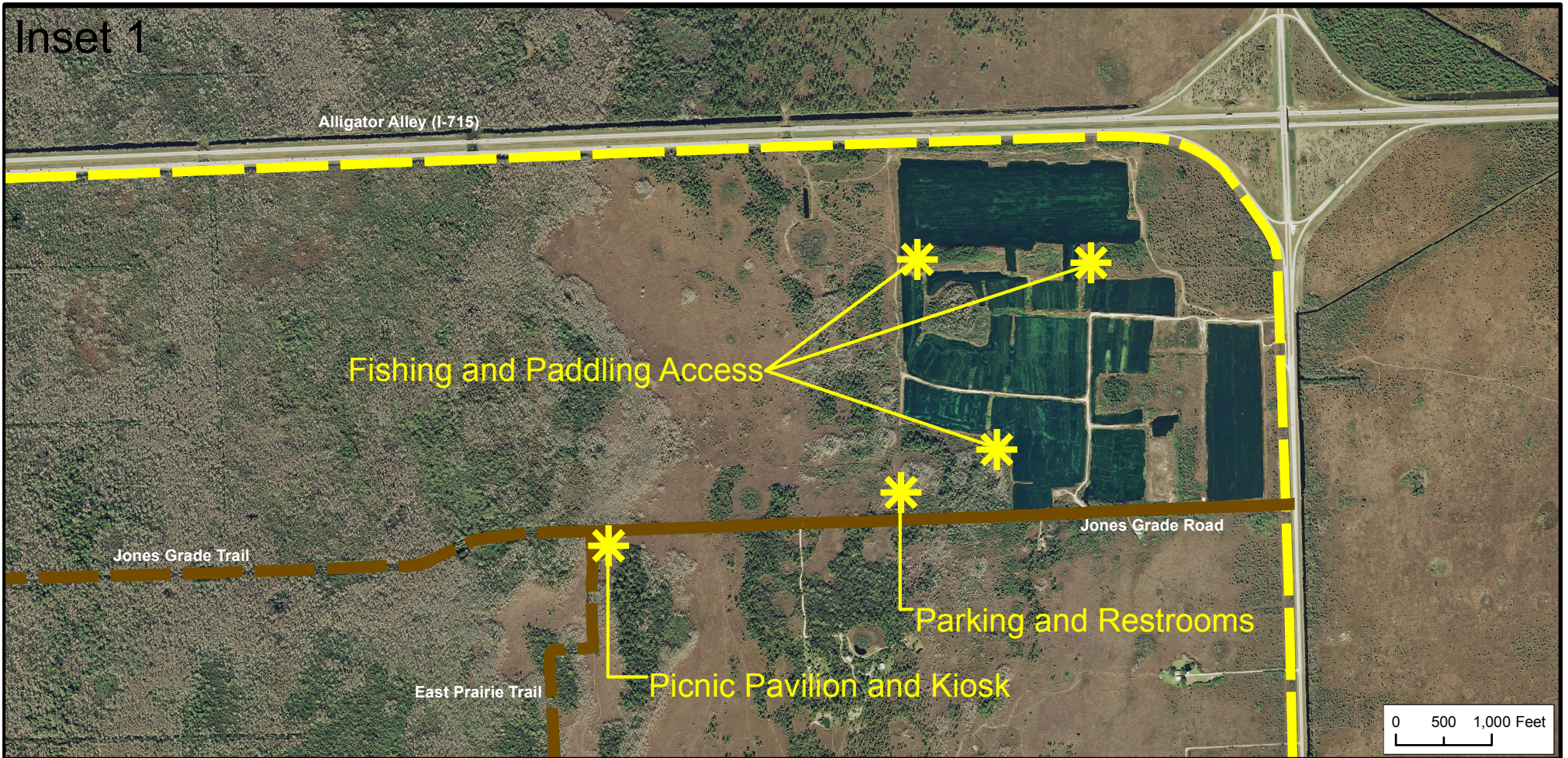
EAST RIVER DAY USE AREA
 Canoe/Kayak Launch Improvements
 Parking
 Restrooms
 Observation Platform
 Paddling Trail Navigational Markers
 Primitive Paddle-In Campsite

BIG CYPRESS BEND DAY USE AREA
 Boardwalk Extension
 Parking
 Restrooms
 Interpretive Exhibits

Legend






- Park Boundary
- Proposed Development Area
- Proposed Road
- State Road
- County Road
- Park Road Stabilized
- Park Road Unstabilized
- Existing Boardwalk

Inset 1



Inset 2

Legend

-  Park Boundary
-  Proposed Improvements
-  Proposed Road
-  Park Road Stabilized
-  Park Road Unstabilized



bing™

© 2014 Bing. All rights reserved. Image courtesy of Google Earth. Earthstar Geographics. © 2014 Microsoft Corporation.

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

There is a potential to expand the recreational, interpretive, and educational uses of the park. Activities such as hiking, swamp walks, nature study, photography, and scientific research can be accommodated in improved ways following the development of trailhead amenities to more formally support these popular activities. The addition of approximately 80 acres of altered landcover used for mining of fill for the I-75 construction project at the northern boundary provides a unique opportunity to provide facilities for public access to the park.

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. Improved activities and programs are also recommended and discussed below.

Objective: Maintain the park's current recreational carrying capacity of 1,085 users per day.

The park currently contains five trailheads for hiking or bicycling along trails or trams, one paddling launch for canoes or kayaks, and one accessible boardwalk for nature study and wildlife observation.

Throughout the park, the plan recommends improving the existing trailheads, from which visitors frequently begin hiking and bicycling, by adding stabilized parking, restrooms, picnic pavilions, informational or interpretive kiosks, and additional recreational facilities. These improvements will serve to maintain current recreational activities but also generate increased use and potential new recreational opportunities.

The Big Cypress Bend Boardwalk will be similarly improved to improve accommodation of its many visitors and enhance the visitor experience.

The East River Use Area will be improved by upgrading the existing paddling launch for canoes and kayaks, stabilizing and expanding the parking area, constructing permanent composting restrooms, adding an observation platform, and posting navigational markers at periodic points along the East

River paddling trail. A new park entrance and welcome area will be developed at the Copeland support and administration area.

Objective: Expand the park's recreational carrying capacity by 942 users per day.

Improved interpretive kiosks are recommended at four designated trailheads – East Main Tram, West Main Tram, Uplands Hiking Trail, and Jones Grade.

Improved and expanded parking will increase the numbers of visitors who can access each of these trails.

New recreational opportunities will be provided throughout the park at use areas where the facilities to support specific activities do not currently exist. These recreational opportunities that will become supported by new facilities or development are, primitive camping at various designated sites (such as along the Uplands Trail), fishing at the Copeland and Jones Grade use areas, picnicking at the East Main Tram trailhead, picnicking at the Jones Grade and Copeland use areas, hiking and paddling trails from the Jones Grade Use Area, and expanded interpretive exhibits and nature walking opportunity along the Big Cypress Bend Boardwalk.

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

The park routinely offers two interpretive and recreational programs – guided swamp walks through portions of the strand. The tour is both on and off-trail and takes visitors through difficult to access portions of the park that are seasonally inundated. No additional facilities or development are required to continue providing this program, however, trained staff or volunteers are needed to serve as guides.

Multimedia programs and presentations are provided both on and off site throughout the year. Park staff interprets the natural and cultural history of the Fakahatchee Strand for various educational and recreational user groups.

The Friends of Fakahatchee help augment efforts to improve interpretive, educational, and recreational programs by providing introductory tours, swamp walks, guided hikes, and tram rides on a regular basis. Other programs such as guided paddling trips and boardwalk tours are available by request.

Recognizing the potential for human-wildlife interactions within the park, staff will continue to educate visitors about avoidance of hazardous encounters and adoption of wildlife-friendly waste management practices.

Proposed Facilities

Capital Facilities and Infrastructure

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

Fakahatchee Strand Preserve is the largest Florida state park, but has not yet developed certain amenities typically found in state parks. The park does not currently have a formal entrance, a designated park drive, or much of the signage or interpretative materials that facilitate access and recreation. Proposals for improvements and new facilities are generally intended to enhance visitor orientation and ease of access.

The existing facilities of this state park are appropriate to the natural and cultural resources contained in the park and should be maintained. New construction, as discussed further below, is recommended to improve the quality and safety of the recreational opportunities, to improve the protection of park resources, and to streamline the efficiency of park operations. The following is a summary of objectives to improve the facilities needed to implement the conceptual land use plan for Fakahatchee Strand Preserve State Park:

Objective: Improve eight existing facilities and use areas.

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

Significant improvements to the accessibility and functionality of existing developed areas are recommended at the Big Cypress Bend Boardwalk, Copeland Support/Day Use Area, East River Day Use Area, three of the park's established trailheads accessed from Janes' Scenic Drive (East Main Tram, West Main Tram, and the Uplands Trail), and the Jones Grade Day Use Area.

Proposed new development at these existing sites includes an extension of the Big Cypress Bend boardwalk, a new entrance and welcome station at Copeland, stabilized parking, restrooms, and an observation platform at the East River Day Use Area, and trailhead amenities at East Main Tram, West Main Tram, Uplands Trail, and Jones Grade Trail. Each of the four trailhead facilities will include stabilized parking, wayfinding signage, and informational kiosks. Additionally, the trailheads at East Main Tram and Jones Grade will each include one small to medium sized picnic pavilion and composting restrooms.

The following is a discussion of the recommended improvements, organized by distinct features, existing use areas, or facilities within the park.

Big Cypress Bend Boardwalk

The 2,300-foot Big Cypress Bend boardwalk is located on the north side of US-41 in the southern portion of the park. Accessibility of the site makes it the most popularly visited site in the park. To improve the use area's capacity to accommodate current and future attendance rates, the parking lot must be redeveloped and permanent restrooms must be added. A potential site for the new parking area and restrooms has been identified on the north side of US-41, approximately one-quarter mile east of the existing parking area. To improve the visitor experience, interpretive exhibits and signage should be added to the boardwalk. Additionally, the boardwalk is proposed to be extended as a loop, potentially including spur trails at various points of interest.

Copeland Day Use Area

This area currently serves primarily for administration and park support. The plan identifies this as a potential site for an improved park entrance from SR 29 and welcome station. As the entrance is reconstructed and additional recreational opportunity is provided, the office area should be redesigned to separate administration from recreational or educational activity. The current park operations area is built on the former site of the Harmon Mine. Former mining pits have become naturally reclaimed as ponds and small lakes, containing an abundant fish population. Improved access to these water features is proposed to support fishing and picnicking.

Janes' Scenic Drive Trailheads

Janes' Scenic Drive offers visitors driving access through the interior of the park. Multiple raised railway beds or trams of the former logging train still crisscross the Fakahatchee Strand, including East Main Tram, West Main Tram, and the Uplands Trail.

These trams stem from Janes' Scenic Drive and create a grid of trails, which are maintained for hiking and bicycling. Improvements to the trailheads are needed. Recommended improvements include stabilized parking, informational kiosks, and a picnic pavilion. The primary trailhead is proposed at the East Main Tram, which is currently the meeting place for the park's guided swamp walks and other special programs. Additional recommended development at the East Main Tram includes a small picnic pavilion and restrooms. Trailheads at which picnic pavilions are constructed, should provide wildlife-resistant trash bins.

The addition of primitive campsites is recommended along trails stemming from Janes' Scenic Drive. Locations of the primitive campsites should be determined based on accessibility and potential impacts on natural communities. Accessibility is significant for both visitor safety and management of the sites. Impacts on natural communities will be assessed as potential sites are identified. Footprints of the designated sites should be small to accommodate a maximum of only two tents. Sites would only be accessible to visitors by hiking or bicycling and no amenities would be provided at the sites. Sites would be closed as needed when flooded or during prescribed burns.

Jones Grade

This use area contains a large remnant borrow pit, which is suitable for fishing and wildlife observation. Located in the northeastern most corner of the park, it is isolated from the other use areas. A trailhead at Jones Grade, including wayfinding signage, interpretive information, restrooms, and improved parking, would facilitate visitor access to northern portions of the park that are currently difficult to access. These amenities should be located along Jones Grade Road, near the north ends of the East Prairie Trail and East Main Tram, which stem from this point. Current use of this area includes paddling and fishing, although no formal facilities exist to accommodate these recreational activities. Proximity to I-75 makes it convenient for a picnic wayside. One small picnic pavilion is recommended at Jones Grade.

East River Day Use Area and Paddling Trail

This is the primary access area for the portion of the park located south of US-41. Proposed improvements to the East River Use Area include expanded and stabilized parking, composting restrooms, and an observation platform. Parking should be designed to alleviate traffic congestion and improve visitor safety while unloading/loading canoes and kayaks. The observation platform should feature integrated interpretive exhibits and be designed for activities that are currently popular at the site, such as bird watching and photography. Additionally, the designated paddling trail, which begins at the East River canoe-kayak launch, should be marked to guide paddlers through the mangrove swamp and to Daniels' Point, Fakahatchee Island, and the Ten Thousand Islands. A small primitive campsite, consisting of only a small clearing and tent pad, should be developed where there is suitable upland to support paddlers along the Florida Circumnavigational Saltwater Paddling Trail.

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.

Fill material is required to patch or grade portions of Janes' Scenic Drive. Complete replacements of multiple road culverts are needed at hydrologically significant points along Janes' Scenic drive, especially where the road obstructs southbound water flow (i.e., east-west bound segments of the road).

Few sections of the boundary, primarily on the eastern boundary, are currently well-marked. Signage along the west, north, and south boundaries has become vandalized, stolen, or obscured by vegetation. Points along the boundary where new boundary signs are needed include trailheads, waysides, and various designated and undesignated entry points.

Informational and interpretive signage should be increased and maintained throughout the park. Navigational or wayfinding signage and information kiosks should be maintained on trails and waterways.

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:

Big Cypress Bend Boardwalk

Parking Redesign
Restroom
Boardwalk Loop Extension
Interpretive Exhibits

Copeland

Park Entrance
Welcome Station
Administration Area Redesign
Interpretive Exhibits
Fishing Facilities
Picnic Pavilion

East River

Parking
Restrooms
Paddling Launch
Observation Platform
Paddling Trail Navigational
Markers
Primitive Paddle-in Campsite (1)

East Main Tram

Parking
Restrooms
Picnic Pavilion
Kiosk

West Main Tram

Parking
Kiosk

Uplands Trail

Parking
Kiosk
Primitive Campsites (Up to 3)

Jones Grade

Parking
Restrooms
Picnic Pavilion
Kiosk
Fishing Facilities
Paddling Launch

Parkwide

Boundary Signs
Fencing

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						
	Existing Capacity*		Proposed Additional Capacity		Total Capacity	
Activity/Facility	One Time	Daily	One Time	Daily	One Time	Daily
Hiking/Bicycling						
East Main Tram	40	120			40	120
West Main Tram	40	120			40	120
South Main Tram	10	30			10	30
Uplands Trail	40	120			40	120
Mud Tram	10	30			10	30
Jones Grade Trail	10	30	20	60	30	90
Nature Walking/ Interpretation						
Big Cypress Bend Boardwalk**	150	600	150	600	300	1,200

Table 6: Recreational Carrying Capacity

Activity/Facility	Existing Capacity*		Proposed Additional Capacity		Total Capacity	
	One Time	Daily	One Time	Daily	One Time	Daily
Picnicking						
East Main Tram			8	32	8	32
Jones Grade			8	32	8	32
Copeland			40	160	40	160
Fishing						
Jones Grade			10	20	10	20
Copeland			5	10	5	10
Canoeing/Kayaking						
Jones Grade Area			5	10	5	10
East River	10	20			10	20
Primitive Camping			18	18	18	18
Guided Tours	15	15			15	15
Total	325	1,085	264	942	589	2,027

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

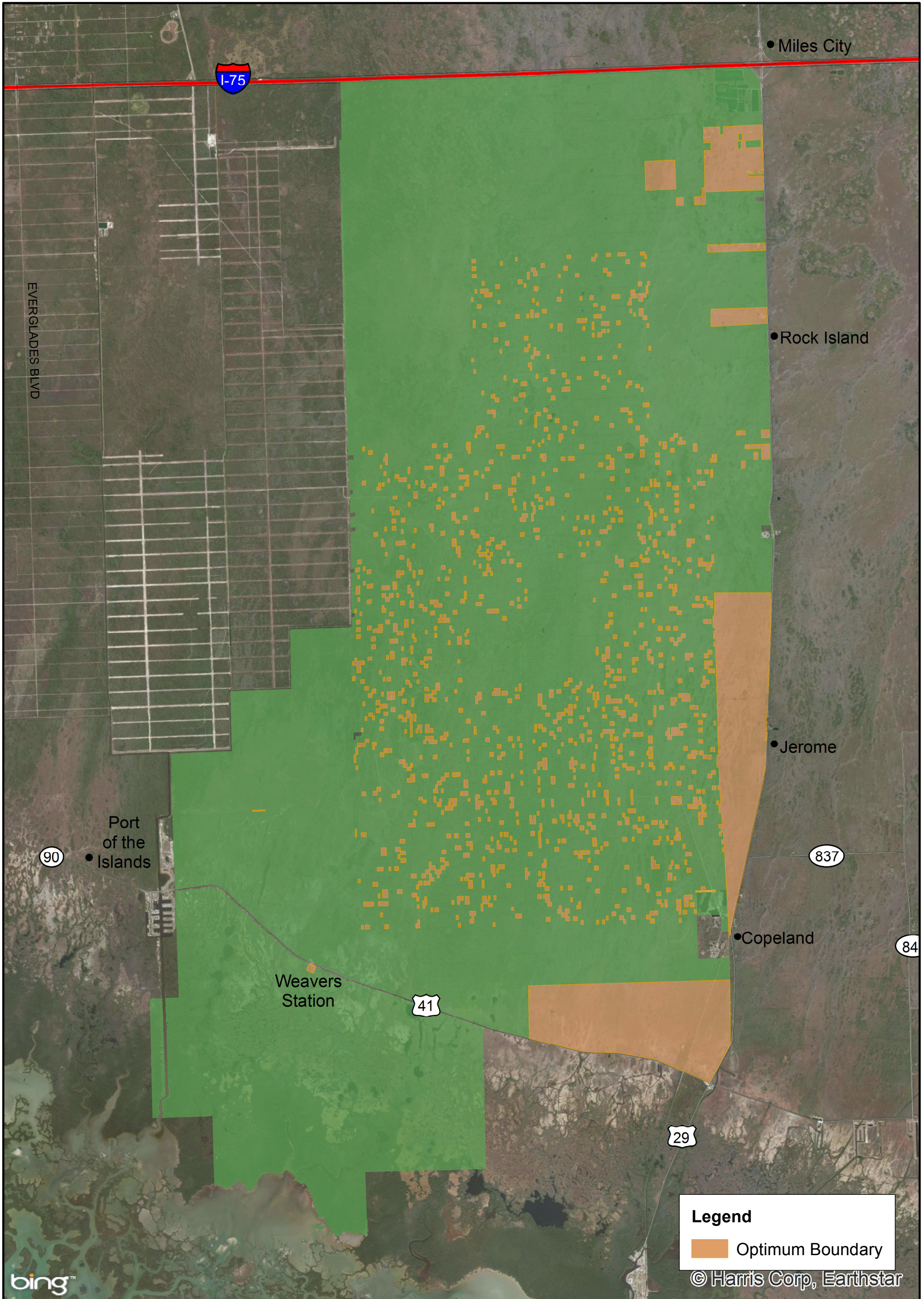
** Estimated carrying capacity figures for the Big Cypress Bend Boardwalk have been revised based on actual visitor use. Ease of access and the unique natural features of this site attract a larger number of visitors than similar facilities in the state park system.

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.

Within the proposed optimum boundaries for the park, 990 private inholdings total approximately 3,183 acres (see Optimum Boundary Map). Most of the parcels are located in the core of the park, greatly complicating the managers' efforts for resource management and law enforcement activities vital to the state park's purposes, goals, and objectives. The DRP continues to pursue completion of these acquisitions. Additions to expand the Fakahatchee Strand boundary are included in the CARL priority project (Mega/Multi-parcel Project 5). Strand swamps, wet pinelands, and wet prairies are the principal natural communities on the properties proposed for acquisition to expand the state park boundary. These areas are significant for buffering the core of the park, expanding managed habitat areas for the Florida Panther and other wildlife, protecting quality of water that flows to the Ten Thousand Islands, and providing additional lands for public recreation and interpretation in this unique part of Florida. At this time, no lands within the park are identified as potentially surplus to DRP management needs.



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 Fakahatchee Strand Preserve State Park in 2000, significant work has been accomplished and progress made towards meeting the DRP's management objectives for the park. These accomplishments fall within three of the five general categories that encompass the mission of the park and the DRP.

Acquisition

- The park has acquired 841 private inholdings by purchase and donation, comprising 1,482 acres since 2000.

Park Administration and Operations

- The Citizen Support Organization, the Friends of Fakahatchee Inc., continues to expand membership, fundraising activities, programs, and support for overall park operations. The organization has more than tripled in size since 2000 and is considering the feasibility of a capital campaign to assist the Division with development and construction of improvements at the Big Cypress Bend Boardwalk.
- Park staff moved administrative operations to a larger building that is fully ADA accessible. The park is now able to adequately store files and collections as well as host meetings on site due to the improved accommodations. The former administration building has been repurposed as an environmental education classroom and meeting space for guided tours of the park.
- Three residential volunteer sites have been established within the park. This addition has yielded countless volunteer hours and support with daily operations for maintenance of facilities, resource management, and visitor services.

Resource Management

Natural Resources

- Since 2000, a total of 91,964 acres have been burned across 29 of the park's management zones. Nearly 57 percent of the above total was backlogged prior to burning. Staff administered prescribed burns in 27 of the park's management zones that had been in back-log status over the past ten years.
- More than 100 miles of fire lines have been established or improved. Many of these now serve as multi-use trails for park staff and the general public.
- More than seven miles of drainage canals have been plugged, as part of the ongoing effort to restore the natural hydrology of the area.
- Portions of the south and eastern edges have been surveyed and boundary signs were placed at the property edge in these areas.
- Exotic plant surveys have been conducted on a regular basis with information reflected in the park's database monthly, at a minimum. Exotic plant inventory data also submitted to the Division every two years.
- The park conducts at least six surveys each year of colonial wading birds coming to a night roost and seasonal rookery within the Preserve.
- The park participates in annual Christmas Bird Counts within the park since December of 2000. There are areas or regions covered as a part of this initiative.
- Breeding Bird Point Counts began in 2001 to conduct baseline quantitative data and to monitor changes in non-game birds in the footprint of the comprehensive Everglades restoration.
- The park has continued to support and facilitate current Florida Panther research and management priorities in conjunction with the FWC and NPS, recent efforts have been to collaborate with agencies and volunteers to set up trail cameras known panther travel corridors.
- Since January, 2007 there have been five Burmese pythons documented within the park. Park staff actively participates in committees, symposia, and on the ground efforts to manage and monitor this invasion.
- The Mexican bromeliad weevil was documented within the park in March, 2002. Multiple monitoring areas were established in 2007 and the selected population was wiped out within the year. An annual survey of the Giant air plants along Janes' Scenic Drive began in 2008. This population of approximately 850 plants started to decline in December 2010 but the estimated number of remaining plants in this capture area is under 200.
- Laurel Wilt observations were reported in isolated areas of the park 2013. Evidence of the Ambrosia beetle was documented in December 2013.

- Efforts to restore populations of rare native orchids that have been severely depleted within the park began in 2007. Active partnerships with the Atlanta Botanical Garden, FWC, FDACS, and DEP are ongoing. Over 600 plants have been reintroduced into the Fakahatchee Strand since April, 2011.

Cultural Resources

- In 2006 a Type I Archaeological and Historical Resources Survey was completed by the University of South Florida.
- 3D modeling of archaeological sites was conducted on the Royal Palm Lake (*CR00544) and Port of the Islands (8CR01025).

Recreation and Visitor Services

- Park staff continues to offer over 70 interpretive and educational programs, lectures, and trips both on and off-site annually.
- Volunteers and the park's Citizen Support Organization, the Friends of Fakahatchee Inc. augment education and interpretive opportunities and recreational activities by offering over 50 programs and excursions annually.
- The former park office at the entrance to Janes' Scenic Drive has been converted into a small visitor center providing an introduction to the park as well as an area for visitors to collect detailed information and orientation to the Fakahatchee Strand region and resources.

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
Fakahatchee Strand Preserve State Park Ten-Year Implementation Schedule and Cost Estimates
Sheet 1 of 4**

Goal I: Provide administrative support for all park functions.		Measure	Planning Period	Estimated Manpower and Expense Cost* (10-years)
Objective A	Continue day-to-day administrative support at current levels.	Administrative support ongoing	C	\$530,000
Objective B	Expand administrative support as new lands are acquired, new facilities are developed, or as other needs arise.	Administrative support expanded	UFN	\$1,060,000
Goal II: Protect water quality and quantity in the park, restore hydrology to the extent feasible, and maintain the restored condition.		Measure	Planning Period	Estimated Manpower and Expense Cost* (10-years)
Objective A	Conduct/obtain an assessment of the park's hydrological needs.	Assessment ongoing	C	\$104,000
Action 1	Continue to measure period of record, groundwater level, surface water level, rainfall, pan evaporation, daily weather, and flow rates.	Assessment ongoing	C	\$104,000
Objective B	Restore natural hydrological conditions and function to approximately 3,200 acres of marl prairie and strand swamp natural communities.	# Acres restored or with restoration underway	UFN	\$290,000
Action 1	Remove 15,000 feet of berm associated with the old tomato fields in the southwest corner of the preserve in Danhouse Prairie to restore hydrology to 1,400 acres.	# feet removed	UFN	\$200,000
Action 2	Add culverts to Old Pump Road to restore hydrology to about 1,200 acres downslope.	# of culverts installed	UFN	\$40,000
Action 3	Plug sections of the one-mile north to south canal in the southern end of Danhouse Prairie to restore hydrology to 400 acres.	# of canal feet plugged	UFN	\$50,000
Objective C	Collect baseline data that characterize the Class III Outstanding Florida Waters of the preserve for future reference.	Data collection implemented	LT	\$5,000
Action 1	Work with Collier County to explore options for expanding water quality data collection.	Data collection ongoing	LT	\$5,000
Goal III: Restore and maintain the natural communities/habitats of the park.		Measure	Planning Period	Estimated Manpower and Expense Cost* (10-years)
Objective A	Within 10 years have 23,000 acres of the park maintained within optimal fire return interval.	# Acres within fire return interval target	LT	\$506,000
Action 1	Develop/update annual burn plan.	Plan updated	C	\$16,000
Action 2	Manage fire dependent communities for ecosystem function, structure and processes by burning between 6,800 - 18,300 annually, as identified by the annual burn plan.	Average # acres burned annually	C	\$490,000
Objective B	Develop a restoration plan for the borrow area lakes and disturbed uplands.	# Acres restored or with restoration underway	LT	\$29,000
Action 1	Develop a restoration plan for the borrow area lakes and disturbed uplands that improves the area for fish, wildlife, and passive recreation.	Plan developed and implemented	UFN	\$24,000
Action 2	Continue to monitor for the presence of invasive exotic plant species and conduct follow-up treatments as necessary.	Monitoring underway	C	\$5,500
Objective C	Conduct habitat/natural community improvement activities on 500 acres of Wet Flatwoods, Marl Prairie, and Strand Swamp communities.	# Acres improved or with improvements underway	UFN	\$282,000
Action 1	Selective removal of unnaturally abundant sabal palms.	# removed/treated	UFN	\$282,000

* 2013 Dollars
ST = actions within 2 years
LT = actions within 10 years
C = long term or short term actions that are continuous or cyclical
UFN = currently unfunded need

**Table 7
Fakahatchee Strand Preserve State Park Ten-Year Implementation Schedule and Cost Estimates
Sheet 2 of 4**

Goal IV: Maintain, improve, or restore imperiled species populations and habitats in the park.		Measure	Planning Period	Estimated Manpower and Expense Cost* (10-years)
Objective A	Periodically update imperiled species occurrence inventory lists for plants and animals.	List updated	C	\$11,000
Objective B	Monitor and document 11 selected imperiled animal species in the park.	# Species monitored	C	\$44,900
Action 1	Continue to monitor and document 8 imperiled animal species in the park.		C	\$20,400
Action 2	Develop monitoring protocol for the red-cockaded woodpecker.	# Protocols developed	ST	\$8,200
Action 3	Implement new monitoring protocols for 2 imperiled animal species including the Big Cypress fox squirrel and the American crocodile.	# Species monitored	C	\$16,300
Objective C	Monitor and document 71 selected imperiled plant species in the park.	# Species monitored	C	\$53,000
Action 1	Continue to implement monitoring protocols for 71 imperiled plant species with particular emphasis on the ghost orchid, giant airplant, and cowhorn orchid.	# Species monitored	C	\$40,800
Action 2	Continue support and collaboration with researchers on cross-pollination efforts, seedling recruitment, and documentation of seedling survival rates for the cowhorn orchid.		C	\$12,300
Objective D	Evaluate the impacts of recreational use on the East River wading bird/roost/nesting rookery	Evaluation complete	C	\$5,000
Action 1	Monitor the impacts of recreational use on the wading bird rookery across from the East River canoe-kayak launch and recommend corrective actions as necessary.	Monitoring underway	ST	\$5,000
Objective E	Investigate opportunities for the reintroduction of red-cockaded woodpeckers to the preserve.	Opportunities identified	LT	\$20,000
Action 1	Work with local and state agencies to develop opportunities for the reintroduction of the red-cockaded woodpecker.	Coordination ongoing	LT	\$20,000
Objective F	Repeat the biological surveys of overgrown trams at 10-year intervals to record changes that may have occurred.	Opportunities identified	LT	\$42,000
Action 1	Primarily focus on surveying listed plants when implementing a tram survey.	Coordination ongoing	LT	\$42,000

* 2013 Dollars
ST = actions within 2 years
LT = actions within 10 years
C = long term or short term actions that are continuous or cyclical
UFN = currently unfunded need

**Table 7
Fakahatchee Strand Preserve State Park Ten-Year Implementation Schedule and Cost Estimates
Sheet 3 of 4**

Goal V: Remove exotic and invasive plants and animals from the park and conduct needed maintenance control.		Measure	Planning Period	Estimated Manpower and Expense Cost* (10-years)
Objective A	Annually treat 20 acres of exotic plant species in the park.	# Acres treated	UFN	\$365,000
Action 1	Annually develop/update exotic plant management work plan.	Plan developed/updated	C	\$16,000
Action 2	Implement annual work plan by treating up to 20 acres in park, annually, and continuing maintenance and follow-up treatments, as needed.	Plan implemented	UFN	\$350,000
Objective B	Implement control measures on one exotic and nuisance animal species in the park.	# Species for which control measures implemented	LT	\$42,100
Action 1	Develop and implement management protocols for imported red fire ants	Protocols/developed and implemented	ST	\$16,300
Action 2	Continue to monitor for the presence of feral pigs, Eurasian collared doves, coyotes, non-native snakes, non-native amphibians, and non-native fish to determine if management action is necessary.	Monitoring ongoing	C	\$10,600
Action 3	Continue to support and facilitate monitoring of Mexican bromeliad weevil control activities.	Collaboration ongoing	C	\$3,200
Action 4	Continue control activities and monitoring of island apple snails.	Collaboration ongoing	C	\$12,000
Goal VI: Protect, preserve, and maintain the cultural resources of the park.		Measure	Planning Period	Estimated Manpower and Expense Cost* (10-years)
Objective A	Assess and evaluate 80 of 96 recorded cultural resources in the park.	Documentation complete	LT	\$9,800
Action 1	Complete 80 assessments/evaluations of archaeological sites. Prioritize preservation and stabilization projects.	Assessments complete	LT	\$9,800
Objective B	Compile reliable documentation for all recorded historic and archaeological sites.	Documentation complete	UFN	\$3,710,000
Action 1	Ensure all known sites are recorded or updated in the Florida Master Site File.	# Sites recorded or updated	ST	\$4,900
Action 2	Complete a predictive model for high, medium, and low probability of locating archaeological sites within the park.	Probability Map completed	UFN	\$3,700,000
Action 3	Develop and adopt a Scope of Collections Statement.	Document completed	ST	\$2,500
Objective C	Bring 3 of 96 recorded cultural resources into good condition.	# Sites in good condition	UFN	\$60,300
Action 1	Design and implement regular monitoring programs for 80 cultural sites	# Sites monitored	C	\$9,800
Action 2	Create and implement a cyclical maintenance program for each cultural resource.	Programs implemented	C	\$500
Action 3	Develop plan and specifications for stabilization and rehabilitation of the Copeland Fire Tower and two associated structures.	Project completed	UFN	\$50,000
Objective D	Prepare a collections management plan and a catalog of all natural history, archaeological, and historic objects at the park.	Project completed	ST	\$2,300
Action 1	With assistance from the Bureau of Natural and Cultural Resource, prepare a plan to send the collection of Archaeological artifacts to the Division of Historical Resources for curation and cataloging.	Artifacts sent to DHR	ST	\$800
Action 2	Obtain training and assistance from the Bureau of Natural and Cultural Resources in preparing a collections management plan and a catalog of objects.	Project completed	ST	\$1,500

* 2013 Dollars
ST = actions within 2 years
LT = actions within 10 years
C = long term or short term actions that are continuous or cyclical
UFN = currently unfunded need

**Table 7
Fakahatchee Strand Preserve State Park Ten-Year Implementation Schedule and Cost Estimates
Sheet 4 of 4**

Goal VII: Provide public access and recreational opportunities in the park.		Measure	Planning Period	Estimated Manpower and Expense Cost* (10-years)
Objective A	Maintain the park's current recreational carrying capacity of 1,085 users per day.	# Recreation/visitor opportunities per day	C	\$530,000
Objective B	Expand the park's recreational carrying capacity by 942 users per day.	# Recreation/visitor opportunities per day	LT	\$75,000
Objective C	Continue to provide the current repertoire of 2 interpretive, educational, and recreational programs on a regular basis.	# Interpretive/education programs	C	\$25,000
Goal VIII: Develop and maintain the capital facilities and infrastructure necessary to meet the goals and objectives of this management plan.		Measure	Planning Period	Estimated Manpower and Expense Cost* (10-years)
Objective A	Maintain all public and support facilities in the park, including park roads.	Facilities maintained/Miles of Road	C	\$962,000
Objective B	Continue to implement the park's transition plan to ensure facilities are accessible in accordance with the American with Disabilities Act of 1990.	Plan implemented	ST	\$43,000
Objective C	Improve 8 existing facilities as identified in the Land Use Component.	# Facilities/Miles of Trail/Miles of Road	LT	\$1,180,000
Objective D	Expand maintenance activities as existing facilities are improved and new facilities are developed.	Facilities maintained	C	\$800,000
Summary of Estimated Costs				

Management Categories

- Resource Management
- Administration and Support
- Capital Improvements
- Recreation Visitor Services
- Law Enforcement Activities*

Total Estimated Manpower and Expense Cost* (10-years)
\$5,581,400
\$1,590,000
\$1,223,000
\$2,392,000

***Law enforcement activities in Florida State Parks are conducted by FWC Law Enforcement and local law enforcement agencies.**

* 2013 Dollars
ST = actions within 2 years
LT = actions within 10 years
C = long term or short term actions that are continuous or cyclical
UFN = currently unfunded need

Addendum 1—Acquisition History

Purpose of Acquisition:

The Board of Trustees of the Internal Improvement Fund (Trustees) of the State of Florida purchased the initial area of Fakahatchee Strand Preserve State Park for the use and benefit of the Outdoor Recreational Development Council of the State of Florida.

Sequence of Acquisition:

On June 14, 1974, the Board of Trustees of the Internal Improvement Trust Fund (the Trustees) obtained title to property that later became Fakahatchee Strand Preserve State Park. The property was purchased under Environmentally Endangered Lands (EEL) program. Since 1974, the Trustees have acquired many individual parcels and incorporated them into Fakahatchee Strand Preserve State Park. The acquisitions were funded by EEL, LATF, SOC, CARL, or P2000. Currently, Fakahatchee Strand is comprised of 3,639.90 upland acres and 71,274.33 wetland/submerged acres for a total of 74,915.11 acres.

Title Interest:

The Trustees hold fee simple title to Fakahatchee Strand Preserve State Park, and DRP manages the property under Lease No. 2840.

Lease Agreement:

On June 2, 1975, the Trustees transferred its management authority of Fakahatchee Strand Preserve State Park to the Department of Environmental Protection, Division of Recreation and Parks (DRP) under Lease No. 2840 for a period of ninety-nine (99) years. The lease expires on June 2, 2074.

According to Lease No. 2840, the DRP manages Fakahatchee Strand Preserve State Park for the purpose of preserving, developing, operating and maintaining the property for outdoor recreational, park, conservation, and related purposes.

Special Conditions on Use:

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

Outstanding Reservations:

The DRP's lease from Trustees stipulates that all the property be used for public outdoor recreation and related purposes. The following is a list of outstanding rights, reservations and encumbrances that apply to Fakahatchee Strand Preserve State Park.

Instrument: Special Use Permit
Instrument Holder: Florida Department of Environmental Protection (Department of Natural Resources at the time of permit issuance).
Beginning Date:..... January 6, 1977
Ending Date: February 6, 2027
Outstanding Rights, Uses, Etc.: The permit allows fifteen (15) members of the Buster and Henry families to use a parcel of land for residential and/or gifts shop purposes.

Instrument: Easement (No. 25948)
Instrument Holder: Board of Trustees
Beginning Date:..... June 7, 1979
Ending Date: No ending date is given.
Outstanding Rights, Uses, Etc.: The easement allows the Department of Transportation to construct, improve, and maintain a portion of Alligator Alley(I-75) to clear, excavate, and construct a water distribution system upon and through the subject lands.

Instrument: Special Warranty Deed
Instrument Holder: The Nature Conservancy
Beginning Date:..... January 15, 1982
Ending Date: No ending date is given.
Outstanding Rights, Uses, Etc.: The Nature Conservancy conveyed the property subject to the express condition that the premises conveyed would be held as a nature preserve. Should the premises cease to be used solely as provided, the property may revert to the instrument holder. Moreover, the Trustees agree to erect and maintain a plaque that reads the area was acquired with the assistance of The Nature Conservancy.

Instrument: Special Warranty Deed
Instrument Holder: The Nature Conservancy
Beginning Date:..... February 1, 1984
Ending Date: No ending date is given.
Outstanding Rights, Uses, Etc.: The deed states that if the Trustees sells the property, any net proceeds after reasonable expenses for sale shall be divided equally between the Trustees and the instrument holder. Moreover, the Trustees agree to erect and maintain a plaque that reads the area was acquired with the assistance of The Nature Conservancy.

Instrument: Lease Agreement
Instrument Holder: Collier County
Beginning Date:..... February 14, 1984
Ending Date: February 14, 2034
Outstanding Rights, Uses, Etc.: The instrument holder leased the subject property to DNR (now DEP) subject to the express condition that the property is used for development and public outdoor recreation area and related purposes.

Instrument: Easement 32527
Instrument Holder: Board of Trustees of the Internal Improvement Trust Fund
Grantee: City of Everglades City
Beginning Date:..... August 7, 2013
Ending Date: August 6, 2063
Outstanding Rights, Uses, Etc.: This easement grants the right to the City to construct and maintain water wells on 1.6 acres of park land. As payment for the easement, the City is providing a package of goods/services to the park, including [a] a donation to the State of fee-simple ownership of the City's 3.2-acre old wellfield site (subsequent to the wells' proper plugging and capping), [b] removal of exotic vegetation from the Old wellfield site, [c] purchase of \$7,500 of native vegetation to serve as a landscaping screen along the edge of the new wellfield site (this easement area), and [d] recontouring the grade of the old wellfield site to a more natural elevation.

Addendum 2—Advisory Group Members and Report

**Department of Environmental Protection
Division of Recreation and Parks**

Fakahatchee Strand Preserve State Park
Unit Management Plan Amendment
Advisory Group
April 3, 2014

Local Government Representatives

The Honorable Tom Henning, Chairman
Collier County Board of County
Commissioners
4715 Golden Gate Parkway
Naples, Florida 34116

Dennis Vasey, Chairman
Collier Soil & Water Conservation District
14700 Immokalee Road
Naples, Florida 34120

Agency Representatives

Renee Rau, Park Manager
Fakahatchee Stand Preserve State Park
137 Coastline Drive
Copeland, Florida 34137

Daniel Mitchell, District Biologist
Florida Fish & Wildlife Conservation
Commission

Big Cypress and Picayune District
298 Sabal Palm Road
Naples, Florida 34114

Kevin Podkowka, Forestry Resources
Administrator

Caloosahatchee District
2121 52nd Avenue Southeast
Naples, Florida 34117

Ben Nottingham, Refuge Manager
U.S. Fish & Wildlife Service
Florida Panther National Wildlife Refuge
3860 Tollgate Boulevard, Suite 300
Naples, Florida 34114

Bob DeGross, Chief of Interpretation
Big Cypress National Preserve
33100 Tamiami Trail East
Ochopee, Florida 34141

Lisa Koehler, Intergovernmental
Administrator
South Florida Water Management District
Big Cypress Basin
2660 Horseshoe Drive North
Naples, Florida 34104

Amelia Horadam, Education Manager
Florida Coastal Office
Rookery Bay National Estuarine Research Reserve
300 Tower Road
Naples, Florida 34113

**Tourist Development Council
Representative**

Ms. Kelly Green
Tourism Department
2800 North Horseshoe Drive
Naples, Florida 34104

**Environmental and Conservation
Representatives**

Ian Bartoszek, Biologist
Conservancy of Southwest Florida
1495 Smith Preserve Way
Naples, Florida 34102

Nancy Payton, Southwest Florida Field
Representative
Florida Wildlife Federation
2590 Golden Gate Parkway, Suite 105
Naples, Florida 34105

Recreational User Representatives

Chuck Wilson, Chapter President
Florida Trail Association, Alligator Amblers
11090 Harbour Yacht Court, #54B
Fort Myers, Florida 33908

Patty Huff, Director
Naples Pathways Coalition
Post Office Box 5031
Everglades City, Florida 34139

Adjacent Landowner

Ms. Gayle Norton
Post Office Box 5026
Everglades City, Florida 34139

**Citizen Support Organization
Representative**

Francine Stevens, President
Friends of Fakahatchee, Inc.
Post Office Box 35
Everglades City, Florida 34139

Fakahatchee Strand Preserve State Park Advisory Group Staff Report

The Advisory Group meeting to review the proposed unit management plan (UMP) for Fakahatchee Strand Preserve State Park was held in the auditorium of the Environmental Learning Center at Rookery Bay National Estuarine Research Reserve on Thursday, April 3 at 9:00 AM.

Carl Kepford represented the Florida Trail Association. Jack Wert represented the Collier County Tourism Department. Maureen Bonness represented the Naples Pathways Coalition and the River of Grass Greenway. Shane Maxwell and Michael Maxwell represented adjacent landowners. Representatives of the Collier County Board of County Commissioners, the Collier Soil & Water Conservation District, Florida Panther National Wildlife Refuge, and Florida Wildlife Federation were not in attendance. All other appointed Advisory Group members were present.

Attending Division of Recreation and Parks (DRP) staff members were Valinda Subic, Chris Becker, Renee Rau, Mike Owen, and Daniel Alsentzer.

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

Summary of Advisory Group Comments

Jeffrey Carter (Rookery Bay National Estuarine Research Reserve (RBNERR)) stated that RBNERR would like to increase cooperation with the park to augment management capacity. He stated that there is opportunity to lend support and share certain land management responsibilities on both the north and south sides of Highway 41. He recommended consolidating the portion of the park that exists within RBNERR; especially Fakahatchee Island. Mr. Carter commented that RBNERR has more resources for management of submerged lands and aquatic areas. He additionally noted that submitting cooperative agreements within management plans increases the competitiveness of applications for resource management grants. Mr. Carter emphasized the general value of adding language to management plans in anticipation of potential grants.

Daniel Mitchell (Florida Fish and Wildlife Conservation Commission (FWC)) complimented the plan for its in-depth descriptions of resources and land use planning, but recommended using the base map or reference map to locate the key geographic features that are referenced throughout the plan. He commented that the symbology and naming system used for the road features on the base map is unclear to the lay public. He elaborated that the maps do not clearly identify which roads or trails are intended for recreation.

Mr. Mitchell inquired whether the former logging trams, which are now multi-use trails, affect hydrological sheet flow. DRP staff responded that there are culverts and intermittent gaps in the trams where bridges formerly existed. These culverts and gaps reduce the flow rate, but do not altogether halt sheet flow.

Fakahatchee Strand Preserve State Park Advisory Group Staff Report

Mr. Mitchell inquired why only 20 acres of the park are targeted for invasive-exotic plant species removal. He commented that this is a conservative objective, but recognizes that short staffing, funding constraints, and the challenging terrain of the park limit comprehensive invasive-exotic removal. He recommends adding language to the plan to state that funding for invasive-exotic species removal is being continually sought. He states that such language may increase competitiveness of grant applications.

Mr. Mitchell inquired how park staff plans for species-specific management without objectives or actions in the plan that addresses individual plant or animal species. He recommends adding language to the plan for species such as the red cockaded woodpecker.

Mr. Mitchell inquired whether trash receptacles will be provided at the proposed picnic pavilions. He noted that some public conservation lands do not provide receptacles for trash, but that often results in litter. He also cautioned that if trash receptacles are provided, they must be wildlife resistant. Mr. Mitchell stated that the cost of wildlife proofing is initially higher than standard trash cans, but preferable to acclimating wildlife to trash as a food source and then needing to remediate.

Ian Bartoszek (Conservancy of Southwest Florida) commends the plan for its thorough coverage of a wide range of resource and land use topics. He recommends more proactive measures for exotic and nuisance species; especially prevention rather than removal. He asked what types of proactive or preventive measures could be added to the plan. DRP staff responded that the size of the park with boundaries adjacent to other public conservation lands limits the implementation of preventative measures such as fencing. Mr. Bartoszek suggested that education is an effective long-term approach to reducing introduction of exotic or nuisance species to park environments.

Carl Kepford (Florida Trail Association, Alligator Amblers Chapter) commented that the park is a popular attraction among international tourists. He concurred with the recreational development plans to improve interpretation throughout the park. He states that improved interpretation will generate a "sense of place" for visitors who are unfamiliar with the park.

Mr. Kepford commented that the parking at the East River paddling launch is unsafe, due to the blind-curve at the entrance, the lack of designated parking spaces, and insufficient space to load canoes or kayaks. He affirmed the need for permanent restrooms at each of the park's trailheads. He noted that maintenance of Janes' Scenic Drive is essential to visitor access and the quality of experience, stating that the road is nearly unnavigable when ungraded or eroded. He complimented the current condition of Janes' Scenic Drive. He recommends adding language regarding development of the River of Grass Greenway.

Bob DeGross (National Park Service, Big Cypress National Preserve) commended the plan for its reference to night sky as a significant natural feature. He recommends also including "natural soundscape" to the same section of the plan. He commented that the park's size and designation as a preserve has minimized light and noise pollution and that these characteristics should be considered in future development planning.

Mr. DeGross recommended modifying language in the plan to more clearly distinguish between "undesigned" and "closed" roads; e.g., management roads that can also be used

Fakahatchee Strand Preserve State Park Advisory Group Staff Report

as hiking and bicycling trails versus roads intended strictly for management. Mr. DeGross inquired how the park regulates or dispersed hiking. DRP staff explained that dispersed hiking is not prohibited but is also not advertised or promoted as a designated form of recreation in the park.

Mr. DeGross inquired whether the management plan could be used to establish cooperative agreements with Collier County or the Department of Transportation (DOT) to reduce the hydrological obstructions caused by the construction of U.S. 41 or S.R. 29. Likewise, he inquired whether the plan could be used to request improved road signage and turn lanes to safely direct the increased traffic that may be generated by increased park visitation.

Francine Stevens (Friends of Fakahatchee Strand Preserve) commented that the description of the programs offered by the Friends of Fakahatchee is complete and accurate. She encourages adding language to plan for road safety improvements, including the development of a deceleration lane leading to park entrances on U.S. 41. Ms. Stevens urges the DRP to specifically request these types of ancillary improvements from Collier County or DOT. She also recommends adding signage along Janes' Scenic Drive to more clearly prohibit recreational use of off-highway vehicles (OHV). She emphasizes that prohibiting OHV use is highly significant for protection of the park's fragile ecosystem. Similarly, she recommends adding language to the plan to articulate the DRP policy on OHV use. Ms. Stevens inquired whether the park intends to gate Janes' Scenic Drive. DRP staff explained that the gate is not a current consideration, but may be reconsidered when a new park entrance from S.R. 29 is developed. DRP staff stated that access, boundary control, and security will be assessed over the next 10-year planning period.

Jack Wert (Collier County Tourism Department) states that the proposed improvements in the land use plan are appropriate to the needs and character of the park. He supported improved education and interpretation in the park and agreed that international tourists are attracted to the park. He recognized that guidance for visitors has been lacking, but that this plan proposes to enhance guidance for non-local visitors. Mr. Wert emphasized the benefit of publicity through brochures, news reports, etc. for promoting park improvements. He offered support from the Tourism Development Council to further promote the park.

Maureen Bonness (Naples Pathways Coalition/River of Grass Greenway) recommended adding language to the plan regarding the multi-use pathway, River of Grass Greenway. She commented that a description of the greenway could fit well in the adjacent lands section of the land use component. Ms. Bonness stated that way-finding needs improvement throughout the park, particularly at key locations such as trailheads for Main Trams. She encouraged adding "no-outlet" signage near the northwest end of Janes' Scenic Drive. She commented that the park provides an excellent place for cycling-based enjoyment of nature, as evidenced by eco-tours that currently utilize the park, and stated that this is a potential revenue source from visitors and concession operators. Ms. Bonness recommends including considerations in the plan for cyclists as a significant user group of the park.

Shane Maxwell and Michael Maxwell (adjacent land owner) inquired how to register as licensed volunteer trapper for invasive-exotic species in the park. He agreed that way-

Fakahatchee Strand Preserve State Park Advisory Group Staff Report

finding in the park needs improvement. He commented that he frequently meets visitors who are lost and unaware that Janes' Scenic Drive does not access U.S. 41 or I-75.

Lisa Koehler (South Florida Water Management District (SFWMD), Big Cypress Basin) recommended adding clarification to the map about the boundary between the park and Picayune Strand State Forest. She stated that the Big Cypress Basin will continue to work with the DRP on hydrological restoration.

Kevin Podkowka (Florida Forest Service (FFS)) commends the plan for its comprehensive coverage of the complex management and development issues that the park requires. He recommends allowing a wider range of methods for trapping pythons and other exotic species found in the park. He stated that given the DRP's awareness of the invasive-exotic species that threaten the park environment, more varieties of removal methods should be pursued. He contrasted rules in DRP and FFS lands, regarding firearms and trapping.

Mr. Podkowka agreed that there is under-developed opportunity for fishing and concessions at the borrow lakes in Copeland at Jones Grade. Long-term natural communities restoration at these sites is needed, but the recreational opportunities should be developed in the near-term.

Mr. Podkowka commended the land use component of the UMP for its detailed descriptions of proposed future development, but found that the description of support facilities does not itemize the park's equipment or machinery. He stated that FFS management plans itemize all equipment or machinery that requires legislative budget approval (e.g., tractors, road graders, etc.). He stated that itemizing these assets in the management plan may lend additional credibility to funding requests.

Summary of Written Comments

Patty Huff (Naples Pathways Coalition) provided a written version of comments that were stated at the Public Workshop and Advisory Group meeting, including editorial corrections. She commented that bicycling is not listed as a designated recreational activity on the multi-use trails throughout the park and recommends adding bicycling as a designated activity. Additionally, Ms. Huff provided sample language for a description of the River of Grass Greenway that could be included in the land use component of the plan.

Fakahatchee Strand Preserve State Park Advisory Group Staff Report

Staff Recommendations

Division staff recommends approval of the proposed management plan for Fakahatchee Strand Preserve State Park as presented, with the following changes:

- Language will be added to the plan to identify bicycling as a designated and popular recreational activity on the park's roads and multi-use trails. A description of the future River of Grass Greenway project will be added to the land use component of the plan.
- Improved signage will be added to the list of facility or interpretive improvements in the land use component.
- Designations of park roads and trails will be clarified on the maps and in descriptions of existing facilities.
- Wildlife-resistant trash receptacles will be added to the list of proposed facilities where picnic pavilions will be constructed.

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

Notes on Composition of the Advisory Group

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

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

Advisory groups that are composed in compliance with these requirements complete the review of state park management plans. Additional members may be appointed 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. DRP's intent in making these appointments is to create a group that represents a balanced cross-section of the park's stakeholders. Decisions on appointments are made on a case-by-case basis by DRP staff.

Addendum 3—References Cited

- Bartoszek, Ian et al. 2002-2004. *Enhancing the Recovery of Threatened and Endangered Species in the South Florida Ecosystem through Aquatic Refugia*. The Conservancy of Southwest Florida.
- Below, Ted. 1996. *Personal communication*.
- Davis, J. H., Jr. 1943. *The Natural Features of Southern Florida, Especially the Vegetation and the Everglades*. Florida Geological Survey Bulletin. No. 25.
- Dean, Jonathan and Brent Weisman. 2007. *Fakahatchee Archaeological Level 1 Survey*. USF, Tampa, Florida.
- Donders, et al. 2005. *Mid- to late Holocene El Niño-Southern Oscillation Dynamics Reflected in the Subtropical Terrestrial Realm*. PNAS. Vol. 102, No. 31.
- Duever, Mike. 2009. *Personal Communication*. South Florida Water Management District.
- Fakahatchee Breeding Bird Point Count*. 2008.
- FLEPPC. 2011. *List of Invasive Plant Species*. Florida Exotic Pest Plant Council.
- Florida Exotic Pest Plant Council. 2013.
- Florida Natural Areas Inventory. 2010. *Guide to the Natural Communities of Florida*. Florida Natural Areas Inventory, Tallahassee, FL.
- Harper, R. M. 1921. *Natural Resources of Southern Florida*. Florida Geological Survey, 18th Annual Report.
- Jansen, Deborah. 2014. *Red-cockaded woodpecker*. Personal Communication.
- Kellum, John. 2007. *Pers. Comm.* Big Cypress National Preserve.
- Land, E. Darrell. 1994. *Southwest Florida Black Bear Habitat Use, Distribution, Movements, and Conservation Strategy*. Florida Game & Fresh Water Fish Commission. Tallahassee, FL.
- Luther, Harry. 2009. *Personal Communication*. Marie Selby Botanical Gardens.
- New South Associates for the USACOE. 2013. *Ethnographic Study and Evaluation of Traditional Cultural Properties of the Gladesmen Culture*. Draft.

- Richards, Matt. 2010 *Pers. Comm.* Atlanta Botanical Garden.
- Richardson, Larry. 2009. *Personal Communication*. FPNWR.
- Roberts, Charles. 1998. *Scanned black & white aerial photos from 1940 and 1953*. FAU.
- Shindle, David. 2007. *pers. comm.*, Conservancy of Southwest Florida.
- Simek, Stephanie L. et al. 2005. *Statewide Assessment of Road Impacts on Bears in Six Study Areas in Florida*. Florida Fish and Wildlife Conservation Commission.
- Swayze, L.J. and B.F. McPherson. 1977. *The effect of the Faka Union Canal System on water levels in the Fakahatchee Strand, Collier County, Florida*. USGS Water Resources Investigation, 77-61.
- The Florida Naturalist. 1947. *Red-cockaded Woodpecker*. V. 20, 49-52,

Addendum 4—Soil Descriptions

Fakahatchee Strand Preserve State Park
Soil Descriptions

(6) Riviera, limestone substratum-Copeland fine sands – These nearly level, poorly drained soils are in sloughs and cypress swamps. Individual areas are elongated and irregular in shape, and they range from 40 to 400 acres in size. The slope is 0 to 2 percent.

Typically, the Copeland soil has a surface layer of black fine sand about 6 inches thick. The subsurface layer is fine sand to a depth of about 18 inches. Limestone bedrock is at a depth of about 30 inches.

Under natural conditions, the seasonal high water table is within a depth of 12 inches for 3 to 6 months during most years. During the other months, the water table is below a depth of 12 inches, and it recedes to a depth of more than 40 inches during extended dry periods. During periods of high rainfall, the soils are covered by shallow, slowly moving water for about 7 days.

These soils are presently used for natural wetlands. The natural vegetation consists of cypress, red maple, ferns, and other wetland plants.

(11) Hallandale fine sand – This nearly level, poorly drained soil is on flatwoods. Individual areas are elongated and irregular in shape, and they range from 20 to 1,000 acres in size. The slope is 0 to 2 percent.

Typically, the surface layer is very dark gray fine sand about 3 inches thick. The subsurface layer is grayish brown fine sand to a depth of about 9 inches. The subsoil is yellowish brown fine sand to a depth of about 12 inches. Limestone bedrock is at a depth of about 12 inches.

Under natural conditions, the seasonal high water table is between a depth of 6 to 18 inches for 1 to 6 months during most years. During the other months, the water table is below a depth of 18 inches, and it recedes to a depth of more than 40 inches during extended dry periods.

The natural vegetation consists of South Florida slash pine, saw palmetto, creeping bluestem, chalky bluestem, and pineland threeawn.

(18) Riviera fine sand, limestone substratum – This nearly level, poorly drained soil is in sloughs and broad, poorly defined drainageways. Individual areas are elongated and irregular in shape, and they range from 25 to 500 acres in size. The slope is 0 to 2 percent.

Typically, the surface layer is gray fine sand about 6 inches thick. The subsurface layer is fine sand to a depth of about 32 inches. The subsoil is sandy clay loam to a depth of about 54 inches. Limestone bedrock is at a depth of about 54 inches.

Under natural conditions, the seasonal high water table is within a depth of 12 inches for 3 to 6 months during most years. During the other months, the water table is below a depth of 12 inches, and it recedes to a depth of more than 40

Fakahatchee Strand Preserve State Park Soil Descriptions

inches during extended dry periods. During periods of high rainfall, the soil is covered by shallow, slowly moving water for about 7 days.

The natural vegetation consists of scattered areas of South Florida slash pine, cypress, cabbage palm, waxmyrtle, sand cordgrass, gulf muhly, blue maidencane, South Florida bluestem, and chalky bluestem.

(20) Ft. Drum and Malabar, high, fine sands - These nearly level, poorly drained soils are on ridges along sloughs. Individual areas are elongated and irregular in shape, and they range from 10 to 200 acres in size. The slope is 0 to 2 percent.

Typically, the Ft. Drum soil has a surface layer of very dark grayish brown fine sand about 5 inches thick. The subsoil is fine sand to a depth of about 20 inches. The substratum is fine sand to a depth of about 80 inches. Typically, the Malabar, high, soil has a surface layer of dark gray fine sand about 2 inches thick. The subsurface layer is light brownish gray fine sand to a depth of about 15 inches. The subsoil extends to a depth of about 72 inches. The substratum is light gray fine sand to a depth of about 80 inches.

Under natural conditions, the seasonal high water table is at a depth of 6 to 18 inches for 1 to 6 months during most years. During the other months, the water table is below a depth of 18 inches, and it recedes to a depth of more than 40 inches during extended dry periods.

The natural vegetation consists mostly of South Florida slash pine, saw palmetto, live oak, cabbage palm, waxmyrtle, chalky bluestem, creeping bluestem, low panicum, and pineland threeawn.

(25) Boca, Riviera, limestone substratum, and Copeland fine sands, depressional - These level, very poorly drained soils are in depressions, cypress swamps, and marshes. Individual areas are elongated and irregular in shape, and they range from 100 to 3,000 acres in size. The slope is 0 to 1 percent.

Typically, the Boca soil has a surface layer of very dark gray fine sand about 4 inches thick. The subsurface layer is fine sand to a depth of about 26 inches. The subsoil is dark grayish brown fine sandy loam to a depth of about 30 inches. Limestone bedrock is at a depth of about 30 inches. The Riviera soil has a surface layer of gray fine sand about 6 inches thick. The subsurface layer is fine sand to a depth of about 32 inches. The subsoil is sandy clay loam to a depth of about 54 inches. Limestone bedrock is at a depth of about 54 inches. Copeland soil is described in (6).

Under natural conditions, these soils are ponded for 6 months or more each year. During the other months, the water table is within a depth of 12 inches, and it recedes to a depth of 12 to 40 inches during extended dry periods. They are used for natural wetlands.

Fakahatchee Strand Preserve State Park Soil Descriptions

The natural vegetation consists mostly of baldcypress, pickerelweed, rushes, fireflag, sawgrass, and Florida willow.

(31) Hilolo, Jupiter, and Margate fine sands - These nearly level, poorly drained soils are on hammocks and flatwoods. Individual areas are elongated and irregular in shape, and they range from 5 to 600 acres in size. The slope is 0 to 2 percent.

Typically, the Hilolo soil has a surface layer of very dark grayish brown fine sand about 9 inches thick. The subsurface layer is dark grayish brown fine sand to a depth of about 12 inches. The subsoil extends to a depth of about 50 inches. The substratum is light olive gray loam fine sand to a depth of about 61 inches. Limestone bedrock is at a depth of about 61 inches. The Jupiter soil has a surface layer of black fine sand about 4 inches thick. The subsurface layer is very dark grayish brown fine sand to a depth of about 10 inches. Limestone bedrock is at a depth of about 10 inches. The Margate soil has a surface layer of black fine sand about 6 inches thick. The subsurface layer is light brownish gray fine sand to a depth of about 17 inches. The subsoil is brown fine sand to a depth of about 35 inches. Limestone bedrock is at a depth of about 35 inches.

Under natural conditions, the seasonal high water table is at a depth of 6 to 18 inches for 1 to 6 months during most years. During the other months, the water table is below a depth of 18 inches, and it recedes to a depth of more than 40 inches during extended dry periods.

The natural vegetation consists mostly of cabbage palm, saw palmetto, chalky bluestem, broomsedge bluestem, scattered areas of water oaks, and pineland threeawn.

(33) Urban land-Holopaw-Basinger complex - these areas of Urban land and nearly level, poorly drained soils are in urban areas. Individual areas are blocky to irregular in shape, and they range from 20 to 500 acres in size.

Typically, the Holopaw soil has a surface layer of dark gray fine sand about 5 inches thick. The subsurface layer is fine sand to a depth of about 52 inches. The subsoil extends to a depth of about 62 inches. The substratum is gray loamy fine sand to a depth of about 80 inches. The Basinger soil has a surface layer of grayish brown fine sand about 3 inches thick. The subsurface layer is light gray fine sand to a depth of about 25 inches. The subsoil is brown fine sand to a depth of about 44 inches. The substratum is brown fine sand to a depth to about 80 inches.

Under natural conditions, the seasonal high water table is within a depth of 12 inches for 3 to 6 months during most years. During the other months, the water table is below a depth of 12 inches, and it recedes to a depth of more than 40 inches during extended dry periods. During periods of high rainfall, the soil is covered by shallow, slowly moving water for about 7 days.

Fakahatchee Strand Preserve State Park Soil Descriptions

Urban land consists of commercial buildings, houses, parking lots, streets, sidewalks, recreational areas, shopping centers, and other urban structures where the soil cannot be observed.

(35) Urban land-Aquents complex, organic substratum - This map unit consists of Urban land and soil materials that have been dug from different areas in the county and have been spread over the muck soils for coastal urban development. The depth of fill material used in the construction of urban areas ranges from 30 to more than 80 inches.

(38) Urban land-Matlacha-Boca complexes - These areas of Urban land and nearly level, somewhat poorly drained and poorly drained soils are in urban areas and rock quarries. The slope is 0 to 2 percent.

Typically, the Matlacha soil has a surface soil of dark brown and light brownish gray gravelly fine sand about 21 inches thick. The next layer is fine sand to a depth of about 51 inches. The subsoil is pale brown fine sandy loam to a depth of about 54 inches. Limestone bedrock is at a depth of about 54 inches. The Boca soil has a surface layer of very dark gray fine sand about 4 inches thick. The subsurface layer is fine sand to a depth of about 26 inches. The subsoil is dark grayish brown fine sandy loam to a depth of about 30 inches. Limestone bedrock is at a depth of about 30 inches.

The depth to the water table varies depending upon the amount of fill material and the extent of artificial drainage.

(40) Durbin and Wulfert mucks, frequently flooded - These level, very poorly drained soils are in tidal mangrove swamps. Individual areas are elongated and irregular in shape, and they range from 50 to 1,000 acres in size. The slopes are 0 to 1 percent.

Typically, the Durbin soil has a surface soil of dark reddish brown to black muck about 63 inches thick. The substratum is dark gray fine sand to a depth of about 80 inches. The Wulfert soil has a surface soil of dark reddish brown to black muck about 40 inches thick. The substratum is dark gray fine sand to a depth of about 80 inches.

The water table fluctuates with the tide. It is within a depth of 12 inches for most of the year. The soil is subject to tidal flooding. The natural vegetation consists of red, white, and black mangrove.

(48) Pennsuco silt loam - This level, poorly drained soil is on low prairies. Typically the surface layer is very dark gray silt loam about 5 inches thick. The subsoil is dark gray silt loam to a depth of about 40 inches. The substratum is grayish brown fine sand to a depth of about 48 inches. Limestone bedrock is at a depth of about 48 inches.

Fakahatchee Strand Preserve State Park Soil Descriptions

Under natural conditions, the seasonal high water table is within a depth of 12 inches for 4 to 6 months during most years. A few inches of water is above the surface during extremely wet periods.

The natural vegetation consists of sawgrass, reeds, scattered areas of cypress, maidencane, needlegrass, sedges, waxmyrtle, and other wetland plants.

(49) Hallandale and Boca fine sands – These nearly level, poorly drained soils are in sloughs and poorly defined drainageways. The slope is 0 to 2 percent.

Typically, the Hallandale soil has a surface layer of very dark gray fine sand about 3 inches thick. The subsurface layer is grayish brown fine sand to a depth of about 9 inches. The subsoil is yellowish brown fine sand to a depth of about 12 inches. Limestone bedrock is at a depth of about 12 inches. The Boca soil is described in (25).

Under natural conditions, the seasonal high water table is within a depth of 12 inches for 3 to 6 months during most years. During the other months, the water table is below a depth of 12 inches, and it recedes to a depth of more than 40 inches during extended dry periods. During periods of high rainfall, the soil is covered by shallow, slowly moving water for about 7 days.

The natural vegetation consists of scrub cypress, sand cordgrass, waxmyrtle, and maidencane.

(50) Ochopee fine sandy loam, low – This level, poorly drained soil is on low prairies. Individual areas are elongated and irregular in shape, and they range from 20 to 400 acres in size. The slope is 0 to 1 percent.

Typically, the surface layer is very dark gray fine sandy loam about 5 inches thick. The subsoil is dark gray fine sandy loam to a depth of about 17 inches. Limestone bedrock is at a depth of about 17 inches.

Under natural conditions, the seasonal high water table is within a depth of 12 inches for 3 to 6 months during most years. During the other months, the water table is below a depth of 12 inches. During periods of high rainfall, the soil is covered by shallow, slowly moving water for about 7 days.

The natural vegetation consists of scrub cypress, cordgrass rushes, sedges, and South Florida bluestem.

(51) Ochopee fine sandy loam – This nearly level, poorly drained soil is in low wetland hardwood areas. Individual areas are elongated and irregular in shape, and they range from 20 to 400 acres in size. The slope is 0 to 2 percent.

Typically, the surface layer is very dark gray fine sandy loam about 5 inches thick. The subsoil is dark gray fine sandy loam to a depth of about 17 inches. Limestone

Fakahatchee Strand Preserve State Park Soil Descriptions

bedrock is at a depth of about 17 inches.

Under natural conditions, the seasonal high water table is within a depth of 12 inches for 3 to 6 months. During the other months, the water table is below a depth of 12 inches, and it recedes to a depth of more than 40 inches during extended dry periods. During periods of high rainfall, the soil is covered by shallow, slowly moving water for about 7 days.

The natural vegetation consists of scrub cypress, waxmyrtle, Ryncoapusa, South Florida bluestem, and sedges.

(52) Kesson muck, frequently flooded – This level, very poorly drained soil is in frequently flooded tidal marshes. Individual areas are elongated and irregular in shape, and they range from 300 to 1,000 acres in size. The slope is 0 to 1 percent.

Typically, the surface layer is black muck about 5 inches thick. The subsurface layer is dark gray fine sand to a depth of about 10 inches. The substratum is fine sand to a depth of about 80 inches.

The water table fluctuates with tidal action and seasonal rainfall. It is at or near the surface for long periods. This soil is frequently flooded. It is used for natural wetlands.

The natural vegetation consists of cordgrass, saltgrass, rushes, needlegrass, saltwort, and scattered areas of mangroves.

(53) Estero and Peckish soils, frequently flooded – These level, very poorly drained soils are in frequently flooded tidal marshes. Individual areas are elongated and irregular in shape, and they range from 300 to 1,000 acres in size. The slope is 0 to 1 percent.

Typically, the Estero soil has a surface layer of black muck about 6 inches thick. The subsurface layer is fine sand to a depth of about 40 inches. The subsoil is dark brown and very dark brown fine sand to a depth of about 62 inches. The Peckish soil has a surface layer of very dark grayish brown mucky fine sand about 9 inches thick. The subsurface layer is grayish brown fine sand to a depth of about 37 inches. The subsoil is dark brown fine sand to a depth of about 42 inches. The substratum is light brownish gray fine sand to a depth of about 80 inches.

The water table fluctuates with tidal action and seasonal rainfall. It is at or near the surface for long periods. These soils are frequently flooded, and are used for natural wetlands.

The natural vegetation consists of cordgrass, saltgrass, rushes, needlegrass, saltwort, and scattered mangrove.

Fakahatchee Strand Preserve State Park Soil Descriptions

(54) Jupiter-Boca complex – These nearly level, very poorly drained and poorly drained soils are in sloughs and low wetland hardwood areas. Individual areas are elongated and irregular in shape, and they range from 30 to 400 acres in size. The slope is 0 to 2 percent. Jupiter soil is described in (31), and Boca soil is described in (25).

Under natural conditions, the seasonal high water table is within a depth of 12 inches for 4 to 8 months during most years. During the other months, the water table is below a depth of 12 inches, and it recedes to a depth of more than 30 inches during extended dry periods. During periods of high rainfall, the soil is covered by shallow, slowly moving water for about 7 days.

The natural vegetation consists of laurel oak, red maple, scrub cypress, cabbage palm, saw palmetto, waxmyrtle, pondapple, vines, panicum, ferns, plumegrass, *Rhynchosporia* (rush), South Florida bluestem, and gulf dune paspalum.

(56) Basinger fine sand, occasionally flooded – This nearly level, poorly drained soil is on occasionally flooded low ridges that are surrounded by tidal marshes. Individual areas are elongated and irregular in shape, and they range from 5 to 40 acres in size. The slope is 0 to 2 percent.

Typically, the surface layer is grayish brown fine sand about 3 inches thick. The subsurface layer is light gray fine sand to a depth of about 25 inches. The subsoil is brown fine sand to a depth of about 44 inches. The substratum is brown fine sand to a depth of about 80 inches.

Under natural conditions, the seasonal high water table is within a depth of 12 inches for 3 to 6 months. During the other months, the water table is below a depth of 12 inches, and it recedes to a depth of more than 40 inches during extended dry periods. During periods of storm tides, the soil is briefly flooded.

The natural vegetation consists of sabal palm, gumbo limbo, strangler fig, oaks, orchids, and other wetland plants.

Addendum 5—Plant and Animal List

FAKAHATCHEE STRAND PRESERVE STATE PARK

ANIMALS

Common Name	Scientific Name	Primary Habitat Codes (for imperiled species)
Rosary pea*	<i>Abrus precatorius</i>	
Earleaf acacia*	<i>Acacia auriculiformis</i>	
Red maple	<i>Acer rubrum</i>	
Opposite-leaf spot flower	<i>Acmella oppisitifolia</i> var. <i>repens</i>	
Paurotis palm; Everglades palm	<i>Acoelorrhapha wrightii</i>	RH, STS
Golden leather fern	<i>Acrostichum aureum</i>	MTS
Giant leather fern	<i>Acrostichum danaeifolium</i>	
Shy leaf	<i>Aeschynomene americana</i>	
Beach false foxglove	<i>Agalinis fasciculata</i>	
Saltmarsh false foxglove	<i>Agalinia maratima</i>	
Tenlobe false foxglove	<i>Agalinis obtusifolia</i>	
Purple false foxglove	<i>Agalinis purpurea</i>	
Yellow colic-root	<i>Aletris lutea</i>	
Water hemp	<i>Amaranthus cannabinus</i>	
Slender amaranth*	<i>Amaranthus viridis</i>	
Common ragweed	<i>Ambrosia artemisiifolia</i>	
Scarlet ammannia	<i>Ammannia coccinea</i>	
Pepper vine	<i>Ampelopsis arborea</i>	
Bushy bluestem	<i>Andropogon glomeratus</i>	
Broomsedge	<i>Andropogon virginicus</i>	
Pineland fern	<i>Anemia adiantifolia</i>	
Pond apple	<i>Annona glabra</i>	
Groundnut	<i>Apios americana</i>	
Marlberry	<i>Ardisia escallonioides</i>	
Arrowfeather	<i>Aristida purpurascens</i>	
Swamp milkweed	<i>Asclepias incarnata</i>	
Fewflower milkweed	<i>Asclepias lanceolata</i>	
Longleaf milkweed	<i>Asclepias longifolia</i>	
Showy milkwort	<i>Asemeia violacea</i>	
Netted pawpaw	<i>Asimina reticulata</i>	
Auricled spleenwort	<i>Asplenium erosum</i>	SLO
Wild birdnest fern	<i>Asplenium serratum</i>	SLO, STS
Black mangrove	<i>Avicennia germinans</i>	
Big carpetgrass	<i>Axonopus furcatus</i>	
Mosquito fern	<i>Azolla caroliniana</i>	
Groundsel tree	<i>Baccharis glomeruliflora</i>	
Groundsel tree; Sea myrtle	<i>Baccharis halimifolia</i>	
Blue hyssop	<i>Bacopa caroliniana</i>	
Water hyssop	<i>Bacopa monnieri</i>	
Yellow buttons	<i>Balduina angustifolia</i>	
Saltwort	<i>Batis maritima</i>	
Orchid tree*	<i>Bauhinia variegata</i>	
Rattan vine	<i>Berchemia scandens</i>	
Spanish needles	<i>Bidens alba</i>	
Rayless goldenrod	<i>Bigelowia nudata</i> ssp. <i>australis</i>	
Bishopwood*	<i>Bischofia javanica</i>	
Sinkhole fern	<i>Blechnum occidentale</i> var. <i>minor</i>	STS
Swamp fern	<i>Blechnum serrulatum</i>	
Pine-pink	<i>Bletia purpurea</i>	SLO, STS
False nettle; Bog hemp	<i>Boehmeria cylindrica</i>	
Bush seaside oxeye	<i>Borrichia frutiscens</i>	
Yellow bluestem*	<i>Bothriochloa ischaemum</i> var. <i>songarica</i>	
Blueheart	<i>Buchnera americana</i>	

FAKAHATCHEE STRAND PRESERVE STATE PARK

ANIMALS

Common Name	Scientific Name	Primary Habitat Codes (for imperiled species)
Rat-tail orchid	<i>Bulbophyllum pachyrachis</i>	SLO
Fakahatchee burmannia	<i>Burmannia flava</i>	MP
Gumbo limbo	<i>Bursera simaruba</i>	
Gray nicker	<i>Caesalpinia bonduc</i>	
Beautyberry	<i>Callicarpa americana</i>	
Pale grass-pink	<i>Calopogon pallidus</i>	
Grass-pink	<i>Calopogon tuberosus var. simpsonii</i>	
Straggler daisy*	<i>Calyptocarpus vialis</i>	
Florida bellflower	<i>Campanula floridana</i>	
Ribbon orchid	<i>Campylocentrum pachyrrhizum</i>	SLO, STS
Narrow strap fern	<i>Campyloneurum angustifolium</i>	SLO
Tailed strap fern	<i>Campyloneurum costatum</i>	SLO
Strap fern	<i>Campyloneurum phyllitidis</i>	SLO, STS
Golden canna	<i>Canna flaccida</i>	
Jamaican caper tree	<i>Capparis cynophallophora</i>	
Limber caper	<i>Capparis jamaicensis</i>	
Bitter cress	<i>Cardamine hirsuta</i>	
Giant sedge	<i>Carex gigantea</i>	
Long's sedge	<i>Carex longii</i>	
Hop sedge	<i>Carex lupulina</i>	
Florida hammock sedge	<i>Carex vexans</i>	
Papaya*	<i>Carica papaya</i>	
Love vine	<i>Cassythia filiformis</i>	
Australian pine*	<i>Casuarina glauca</i>	
Powdery strap airplant	<i>Catopsis berteroniana</i>	SLO
Many-flowered catopsis	<i>Catopsis floribunda</i>	SLO, STS
Nodding catopsis	<i>Catopsis nutans</i>	SLO
Hackberry	<i>Celtis laevigata</i>	
Coast sandspur	<i>Cenchrus incertus</i>	
Coinwort	<i>Centella asiatica</i>	
Buttonbush	<i>Cephalanthus occidentalis</i>	
Coontail	<i>Ceratophyllum demersum</i>	
Sensitive pea	<i>Chamaecrista nictitans var. aspera</i>	
Limestone sandmat	<i>Chamaesyce blodgettii</i>	
Pillpod sandmat	<i>Chamaesyce hirta</i>	
Graceful sandmat	<i>Chamaesyce hypericifolia</i>	
Florida hammock sandmat	<i>Chamaesyce ophthalmica</i>	
Prostrate sandmat	<i>Chamaesyce prostrata</i>	
Coco-plum	<i>Chrysobalanus icaco</i>	
Satinleaf	<i>Chrysophyllum oliviforme</i>	STS
Florida false beardgrass	<i>Chrysopogon pauciflorus</i>	
Horrid thistle	<i>Cirsium horridulum</i>	
Poosum grape	<i>Cissus verticillata</i>	
Sour orange*	<i>Citrus x aurantium</i>	
Lemon*	<i>Citrus x limon</i>	
Grapefruit*	<i>Citrus paradisi</i>	
Tangerine*	<i>Citrus reticulata</i>	
Sawgrass	<i>Cladium jamaicense</i>	
Pine-hyacinth	<i>Clematis baldwinii</i>	
Pigeon plum	<i>Coccoloba diversifolia</i>	
Seagrape	<i>Coccoloba uvifera</i>	
Coconut palm*	<i>Cocos nucifera</i>	
Wrinkled jointtail	<i>Coelorachis rugosa</i>	

FAKAHATCHEE STRAND PRESERVE STATE PARK

ANIMALS

Common Name	Scientific Name	Primary Habitat Codes (for imperiled species)
Wild taro*	<i>Colocasia esculenta</i>	
Latherleaf*	<i>Colubrina asiatica</i>	
Day-flower	<i>Commelina diffusa</i>	
Buttonwood	<i>Conocarpus erectus</i>	
Mistflower	<i>Conoclinium coelestinum</i>	
Dwarf horseweed	<i>Conyza canadensis var. pusilla</i>	
Tickseed	<i>Coreopsis leavenworthii</i>	
Swamp dogwood	<i>Cornus foemina</i>	
Moss orchid	<i>Cranichis muscosa</i>	SLO
String-lily	<i>Crinum americanum</i>	
Pale rattlebox*	<i>Crotalaria pallida</i>	
Low rattlebox	<i>Crotalaria pumila</i>	
Pursh's rattlebox	<i>Crotalaria purshii</i>	
Showy rattlebox*	<i>Crotalaria spectabilis</i>	
Madagascar rubber vine*	<i>Cryptostegia madagascarensis</i>	
Florida tree fern	<i>Ctenitis sloanei</i>	STS
Brown-hair comb fern	<i>Ctenitis submarginalis</i>	STS
Love vine; Dodder	<i>Cuscuta pentagona</i>	
Hair-net vine	<i>Cynanchum scoparium</i>	
Bermudagrass*	<i>Cynodon dactylon</i>	
Poorland flatsedge	<i>Cyperus compressus</i>	
Swamp flatsedge	<i>Cyperus distinctus</i>	
Haspan flatsedge	<i>Cyperus haspan</i>	
Swamp flatsedge	<i>Cyperus ligularis</i>	STS
Fragrant flatsedge	<i>Cyperus odoratus</i>	
Flatleaf flatsedge	<i>Cyperus planifolius</i>	
Manyspike flatsedge	<i>Cyperus polystachyos</i>	
Tropical flatsedge	<i>Cyperus surinamensis</i>	
Yellow cowhorn orchid*	<i>Cyrtopodium flavum</i>	
Cowhorn orchid; Cigar orchid	<i>Cyrtopodium punctatum</i>	STS
Crowfootgrass*	<i>Dactyloctenium aegyptium</i>	
Coinvine	<i>Dalbergia ecastaphyllum</i>	
Whitetassels	<i>Dalea carnea</i>	
Squirrel's foot fern*	<i>Davallia sp.</i>	
Ghost orchid	<i>Dendrophylax lindenii</i>	SLO, STS
Panicled ticktrefoil	<i>Desmodium paniculatum</i>	
Three-flower tricktrefoil*	<i>Desmodium triflorum</i>	
Variable witchgrass	<i>Dichanthelium commutatum</i>	
Queensland bluestem*	<i>Dichanthium sericeum</i>	
Pony-foot	<i>Dichondra caroliniensis</i>	
Sixangle foldwing	<i>Dicliptera sexangularis</i>	
Southern crabgrass*	<i>Digitaria ciliaris</i>	
Buttonweed	<i>Diodia virginiana</i>	
Air potato*	<i>Dioscorea bulbifera</i>	
Persimmon	<i>Diospyros virginiana</i>	
Saltgrass	<i>Distichlis spicata</i>	
Guiana plum	<i>Drypetes lateriflora</i>	
Pineland twinflower	<i>Dyschoriste angusta</i>	
Rough barnyardgrass	<i>Echinochloa muricata</i>	
Florida cockspur	<i>Echinochloa paludigena</i>	
Coast cockspur	<i>Echinochloa walteri</i>	
Water hyacinth*	<i>Eichhornia crassipes</i>	
Roadgrass	<i>Eleocharis baldwinii</i>	

FAKAHATCHEE STRAND PRESERVE STATE PARK

ANIMALS

Common Name	Scientific Name	Primary Habitat Codes (for imperiled species)
Gulf coast spikerush	<i>Eleocharis cellulosa</i>	
Canada spikerush	<i>Eleocharis geniculata</i>	
Knotted spikerush	<i>Eleocharis interstincta</i>	
Goosegrass*	<i>Eleusine indica</i>	
Carolina scalystem	<i>Elytraria caroliniensis var. angustifolia</i>	WF
Butterfly orchid	<i>Encyclia tampensis</i>	
Dingy-flowered epidendrum	<i>Epidendrum anceps</i>	SLO, STS
Acuna's epidendrum	<i>Epidendrum blancheanum</i>	SLO
Umbelled epidendrum	<i>Epidendrum floridense</i>	SLO
Night-scented epidendrum	<i>Epidendrum nocturnum</i>	SLO, STS
Rigid epidendrum	<i>Epidendrum rigidum</i>	SLO, STS
Pendant epidendrum	<i>Epidendrum strobiliferum</i>	SLO, STS
Thalia lovegrass*	<i>Eragrostis atrovirens</i>	
Centipede-grass*	<i>Eremochloa ophiuroides</i>	
Southern fleabane	<i>Erigeron quercifolius</i>	
Daisy fleabane	<i>Erigeron strigosus</i>	
Baldwin's eryngo	<i>Eryngium baldwinii</i>	
Button snakeroot	<i>Eryngium yuccifolium</i>	
Coral bean	<i>Erythrina herbacea</i>	
White stopper	<i>Eugenia axillaris</i>	
Surinam cherry*	<i>Eugenia uniflora</i>	
Wild coco	<i>Eulophia alta</i>	
Dog fennel	<i>Eupatorium capillifolium</i>	
Falsefennel	<i>Eupatorium leptophyllum</i>	
Semaphore eupatorium	<i>Eupatorium mikanioides</i>	
Lesser Florida spurge	<i>Euphorbia polyphylla</i>	
Saltmarsh fingergrass	<i>Eustachys glauca</i>	
Pinewoods fingergrass	<i>Eustachys petraea</i>	
Creeping morning-glories	<i>Evolvulus sericeus</i>	
Strangler fig	<i>Ficus aurea</i>	
Wild banyan	<i>Ficus citrifolia</i>	
Indian laurel*	<i>Ficus microcarpa</i>	
Hurricanegrass	<i>Fimbristylis cymosa</i>	
Forked fimbry	<i>Fimbristylis dichotoma</i>	
Marsh fimbry	<i>Fimbristylis spadicea</i>	
Yellowtop	<i>Flaveria linearis</i>	
Pop ash	<i>Fraxinus caroliniana</i>	
Saltmarsh Umbrella-sedge	<i>Fuirena breviseta</i>	
Bedstraw	<i>Galium tinctorium</i>	
Southern gaura	<i>Gaura angustifolia</i>	
Fakahatchee guzmania;	<i>Guzmania monostachia</i>	SLO, STS
Fuchs' bromeliad		
Hammock false reinorchid	<i>Habenaria distans</i>	STS
Toothpetal false reinorchid	<i>Habenaria floribunda</i>	
Snowy orchid	<i>Habenaria nivea</i>	MP, WF
Michaux's orchid	<i>Habenaria quinqueseta</i>	
Water spider orchid	<i>Habenaria repens</i>	
Firebush	<i>Hamelia patens</i>	
Threadroot orchid	<i>Harrisella porrecta</i>	STS
Southeastern sneezeweed	<i>Helenium pinnatifidum</i>	
Expanded lobsterclaw*	<i>Heliconia latispatha</i>	
Scorpions-tail	<i>Heliotropium angiospermum</i>	
Pineland heliotrope	<i>Heliotropium polyphyllum</i>	

FAKAHATCHEE STRAND PRESERVE STATE PARK

ANIMALS

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

Arthritis vine	<i>Hippocratea volubilis</i>	
Hanging clubmoss	<i>Huperzia dichotoma</i>	SLO
Hydrilla*	<i>Hydrilla verticillata</i>	
Whorled pennywort	<i>Hydrocotyle verticillata</i>	
Skyflower	<i>Hydrolea corymbosa</i>	
West Indian marsh grass*	<i>Hymenachne amplexicaulis</i>	
Alligator lily	<i>Hymenocallis palmeri</i>	
Jaragua*	<i>Hyparrhenia rufa</i>	
St. John's wort	<i>Hypericum cistifolium</i>	
St. Andrew's-cross	<i>Hypericum hypericoides</i>	
Common yellow star-grass	<i>Hypoxis curtissii</i>	
Musky mint	<i>Hyptis alata</i>	
Dahoon holly	<i>Ilex cassine</i>	
Cogongrass*	<i>Imperata cylindrica</i>	
Trailing indigo*	<i>Indigofera spicata</i>	
Delicate orchid	<i>Ionopsis utricularioides</i>	SLO, STS
Moonflower	<i>Ipomoea alba</i>	
Ocean-blue morning-glory	<i>Ipomoea indica</i>	
Tie-vine	<i>Ipomoea cordatotriloba</i>	
Saltmarsh morning-glory	<i>Ipomoea sagittata</i>	
Blood leaf	<i>Iresine diffusa</i>	
Prairie iris	<i>Iris hexagona var. savannarum</i>	
Virginia willow	<i>Itea virginica</i>	
Piedmont marshelder	<i>Iva microcephala</i>	
Soft rush	<i>Juncus effusus subsp. solutus</i>	
Shore rush; Grassleaf rush	<i>Juncus marginatus</i>	
Bighead rush	<i>Juncus megacephalus</i>	
Needle rush	<i>Juncus roemerianus</i>	
Water willow	<i>Justicia angusta</i>	
Saltmarsh mallow	<i>Kosteletzkya pentacarpos</i>	
Shortleaf spikesedge	<i>Kyllinga brevifolia</i>	
Asian spikesedge*	<i>Kyllinga squamulata</i>	
Black mangrove	<i>Laguncularia racemosa</i>	
Dotted duckweed*	<i>Landoltia punctata</i>	
Shrub verbena*	<i>Lantana camara</i>	
Southern cutgrass	<i>Leersia hexandra</i>	
Lesser duckweed	<i>Lemna aequinoctialis</i>	
Valdivia duckweed	<i>Lemna valdiviana</i>	
Lion's-ear*	<i>Leonotis nepetaefolia</i>	
Harris' tiny orchid	<i>Lepanthopsis melanantha</i>	SLO, STS
Peppergrass	<i>Lepidium virginicum</i>	
Tropic spangletop*	<i>Leptochloa virgata</i>	
White lead tree*	<i>Leucaena leucocephala</i>	
Garber's gayfeather	<i>Liatris garberi</i>	
Slender gayfeather	<i>Liatris gracilis</i>	
Dense blazing-star	<i>Liatris spicata</i>	
Frog's bit	<i>Limnobium spongia</i>	
False pimpernel	<i>Lindernia grandiflora</i>	
Small's flax	<i>Linum carteri var. smallii</i>	WF
Stiff yellow flax	<i>Linum medium var. texanum</i>	
Tall twayblade	<i>Liparis nervosa</i>	SLO
Bay lobelia	<i>Lobelia feayana</i>	
Marsh lobelia	<i>Lobelia glandulosa</i>	

FAKAHATCHEE STRAND PRESERVE STATE PARK

ANIMALS

Common Name	Scientific Name	Primary Habitat Codes (for imperiled species)
Winged primrosewillow	<i>Ludwigia alata</i>	
Seaside primrosewillow	<i>Ludwigia maritima</i>	
Small-fruit primrosewillow	<i>Ludwigia microcarpa</i>	
Mexican primrosewillow	<i>Ludwigia octovalvis</i>	
Peruvian primrosewillow*	<i>Ludwigia peruviana</i>	
Creeping primrosewillow	<i>Ludwigia repens</i>	
Christmas berry	<i>Lycium carolinianum</i>	
Water hoarhound	<i>Lycopus rubellus</i>	
Old World climbing fern*	<i>Lygodium microphyllum</i>	
Coastalplain staggerbush	<i>Lyonia fruticosa</i>	
Winged loosestrife	<i>Lythrum alatum var. lanceolatum</i>	
Sweet bay	<i>Magnolia virginiana</i>	
Florida malaxis	<i>Malaxis spicata</i>	
Mango*	<i>Mangifera indica</i>	
Sapodilla*	<i>Manilkara zapota</i>	
Hidden orchid	<i>Maxillaria crassifolia</i>	SLO
Minnie-max orchid	<i>Maxillaria parviflora</i>	SLO
Black medic	<i>Mecardonia procumbens</i>	
Melaleuca*	<i>Melaleuca quinquenervia</i>	
Bottlebrush*	<i>Melaleuca viminalis</i>	
Snow squarestem	<i>Melanthera nivea</i>	MP, WF
Natalgrass*	<i>Melinis repens</i>	
Bretonica peluda	<i>Melochia spicata</i>	
Creeping cucumber	<i>Melothria pendula</i>	
Climbing hempvine	<i>Mikania cordifolia</i>	
Hemp vine	<i>Mikania scandens</i>	
Miterwort; Lax hornpod	<i>Mitreola petiolata</i>	
Swamp hornpod	<i>Mitreola sessilifolia</i>	
Balsam apple*	<i>Momordica charantia</i>	
Mulberry	<i>Morus rubra</i>	
Gulf hairy muhly	<i>Muhlenbergia capillaris var. filipes</i>	
Simpson's stopper	<i>Myrcianthes fragrans</i>	STS
Wax myrtle	<i>Myrica cerifera</i>	
Parrot's-feather*	<i>Myriophyllum aquaticum</i>	
Myrsine	<i>Myrsine cubana</i>	
Naiad, Bushy pondweed	<i>Najas guadalupensis</i>	
Giant sword fern	<i>Nephrolepis biserrata</i>	STS
Asian sword fern*	<i>Nephrolepis brownii</i>	
Wild Boston fern	<i>Nephrolepis exaltata</i>	
Avery's sword fern	<i>Nephrolepis X averyi</i>	
Burma reed*	<i>Neyraudia reynaudiana</i>	
Spatterdock	<i>Nuphar advena</i>	
Blue water lily	<i>Nymphaea elegans</i>	
White water lily	<i>Nymphaea odorata</i>	
Lancewood	<i>Ocotea coriacea</i>	
African ground orchid*	<i>Oeceoclades maculata</i>	
Florida oncidium	<i>Oncidium ensatum</i>	STS, WF
Hand Fern	<i>Ophioglossum palmatum</i>	STS
Adder's tongue fern	<i>Ophioglossum petiolatum</i>	
Woodsgrass; Basketgrass	<i>Oplismenus hirtellus</i>	
Goldenclub	<i>Orontium aquaticum</i>	
Cinnamon fern	<i>Osmunda cinnamomea</i>	
Royal fern	<i>Osmunda regalis var. spectabilis</i>	

FAKAHATCHEE STRAND PRESERVE STATE PARK

ANIMALS

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

Common Name	Scientific Name	
Butterweed	<i>Packera glabella</i>	
Beaked panicum	<i>Panicum anceps</i>	
Fall panicum	<i>Panicum dichotomiflorum</i>	
Fall panicum	<i>Panicum dichotomiflorum var. bartowense</i>	
Guineagrass*	<i>Panicum maximum</i>	
Torpedograss*	<i>Panicum repens</i>	
Redtop panicum	<i>Panicum rigidulum</i>	
Pellitory	<i>Parietaria floridana</i>	
Virginia creeper	<i>Parthenocissus quinquefolia</i>	
Blue crowngrass	<i>Paspalum caespitosum</i>	
Sour paspalum	<i>Paspalum conjugatum</i>	
Gulfdune paspalum	<i>Paspalum monostachyum</i>	
Water paspalum	<i>Paspalum repens</i>	
Thin paspalum	<i>Paspalum setaceum</i>	
Vaseygrass*	<i>Paspalum urvillei</i>	
Seashore paspalum	<i>Paspalum vaginatum</i>	
Pineland passionvine	<i>Passiflora pallens</i>	STS
Corkystem passionflower	<i>Passiflora suberosa</i>	
Swamp plume polypody	<i>Pecluma ptilodon var. bourgeauana</i>	SLO
Sanddune cinchweed	<i>Pectis glaucescens</i>	
Spreading cinchweed	<i>Pectis prostrata</i>	
Pelexia	<i>Pelexia adnata</i>	SLO
Spoonflower	<i>Peltandra virginica</i>	
Missiongrass*	<i>Pennisetum polystachion</i>	
Elephantgrass; Napiergrass*	<i>Pennisetum purpureum</i>	
Beard-tongue	<i>Penstemon multiflorus</i>	
Winged peperomia	<i>Peperomia alata</i>	
Cypress peperomia	<i>Peperomia glabella</i>	STS
Low peperomia	<i>Peperomia humilis</i>	STS
Florida peperomia	<i>Peperomia obtusifolia</i>	SLO, STS
Yerba Linda	<i>Peperomia rotundifolia</i>	
Swamp bay	<i>Persea palustris</i>	
Savannah panicum	<i>Phanopyrum gymnocarpon</i>	
Golden polypody; Serpent fern	<i>Phlebodium aureum</i>	
Common reed	<i>Phragmites australis</i>	
Frogfruit	<i>Phyla nodiflora</i>	
Carolina leafflower	<i>Phyllanthus caroliniensis</i>	
Cypresshead groundcherry	<i>Physalis arenicola</i>	
Walter's groundcherry	<i>Physalis walteri</i>	
Eastern false dragonhead	<i>Physostegia purpurea</i>	
Wild pennyroyal	<i>Piloblephis rigida</i>	
Slash pine	<i>Pinus elliotii</i>	
Piriqueta	<i>Piriqueta cistoides subsp. caroliniana</i>	
Jamaican dogwood	<i>Piscidia piscipula</i>	
Devilsclaw	<i>Pisonia aculeata</i>	
Water lettuce*	<i>Pistia stratiotes</i>	
Cat's-claw; blackbead	<i>Pithecellobium unguis-cati</i>	
Grass-leaved golden aster	<i>Pityopsis graminifolia</i>	
Goldenrod fern	<i>Pityrogramma trifoliata</i>	
Common plantain*	<i>Plantago major</i>	
Southern plantain	<i>Plantago virginica</i>	
Jug orchid	<i>Platytheles latifolia</i>	
Resurrection fern	<i>Pleopeltis polypodioides var. michauxiana</i>	

FAKAHATCHEE STRAND PRESERVE STATE PARK

ANIMALS

Common Name	Scientific Name	Primary Habitat Codes (for imperiled species)
Frosted orchid	<i>Pleurothallis gelida</i>	SLO
Rosy camphorweed	<i>Pluchea baccharis</i>	
Sweetscent	<i>Pluchea odorata</i>	
Paintedleaf	<i>Poinsettia cyathophora</i>	
Boykin's milkwort	<i>Polygala boykinii</i>	
Procession flower	<i>Polygala incarnata</i>	
Denseflower Knotweed	<i>Polygonum glabrum</i>	
Mild water-pepper	<i>Polygonum hydropiperoides</i>	
Bog smartweed	<i>Polygonum setaceum</i>	
Rust weed	<i>Polypremum procumbens</i>	
Greater yellow-spike orchid	<i>Polystachia concreta</i>	STS
Pickernelweed	<i>Pontederia cordata</i>	
Shadow witch	<i>Ponthieva racemosa</i>	
Purslane	<i>Portulca oleracea</i>	
Mermaid weed	<i>Proserpinaca palustris</i>	
Mermaid weed	<i>Proserpinaca pectinata</i>	
Dollar orchid	<i>Prosthechea boothiana</i> var. <i>erythronioides</i>	SLO
Clam shell orchid; Shell orchid	<i>Prosthechea cochleata</i>	SLO
Dwarf encyclia	<i>Prosthechea pygmaea</i>	SLO
Dogstongue*	<i>Pseudoelephantopus spicatus</i>	
Sweet everlasting;	<i>Pseudognaphalium obtusifolium</i>	
Rabbit tobacco		
Guava*	<i>Psidium guajava</i>	
Whisk fern	<i>Psilotum nudum</i>	
Wild coffee	<i>Psychotria nervosa</i>	
Shortleaf wild coffee	<i>Psychotria sulzneri</i>	
Bracken fern	<i>Pteridium aquilinum</i> var. <i>caudatum</i>	
Giant brake fern*	<i>Pteris tripartita</i>	
Chinese ladder brake fern*	<i>Pteris vittata</i>	
Mock bishopweed	<i>Ptilimnium capillaceum</i>	
Laurel oak	<i>Quercus laurifolia</i>	
Water oak	<i>Quercus nigra</i>	
Live oak	<i>Quercus virginiana</i>	
White indigo-berry	<i>Randia aculeata</i>	
Rubber vine	<i>Rhabdadenia biflora</i>	
Red mangrove	<i>Rhizophora mangle</i>	
Winged sumac	<i>Rhus copallina</i>	
White-top; Star rush	<i>Rhynchospora colorata</i>	
Shortbristle horned beaksedge	<i>Rhynchospora corniculata</i>	
Spreading beaksedge	<i>Rhynchospora divergens</i>	
Narrow-fruit horned beaksedge	<i>Rhynchospora inundata</i>	
Giant white-top	<i>Rhynchospora latifolia</i>	
Southern beaksedge	<i>Rhynchospora microcarpa</i>	
Millet beaksedge	<i>Rhynchospora miliacea</i>	
Tracy's beaksedge	<i>Rhynchospora tracyi</i>	
Richardia*	<i>Richardia scabra</i>	
Castor bean*	<i>Ricinus communis</i>	
Rouge plant	<i>Rivina humilis</i>	
Florida royal palm	<i>Roystonea regia</i>	STS
Southern dewberry	<i>Rubus trivialis</i>	
Black-eyed Susan	<i>Rudbeckia hirta</i>	
Brown's blechum*	<i>Ruellia blechum</i>	
Wild petunia	<i>Ruellia caroliniensis</i>	

FAKAHATCHEE STRAND PRESERVE STATE PARK

ANIMALS

Common Name	Scientific Name	Primary Habitat Codes (for imperiled species)
Mexican petunia*	<i>Ruellia simplex</i>	
Swamp dock	<i>Rumex verticillatus</i>	
Cabbage palm	<i>Sabal palmetto</i>	
Shortleaf rosegentian	<i>Sabatia brevifolia</i>	
Coastal rosegentian	<i>Sabatia calycina</i>	
Bartram's rosegentian	<i>Sabatia decandra</i>	
Rose-of-Plymouth	<i>Sabatia stellaris</i>	
Sugarcane plumegrass	<i>Saccharum giganteum</i>	
Sugarcane*	<i>Saccharum officinarum</i>	
Indian cupscale*	<i>Sacciolepis indica</i>	
American cupscale	<i>Sacciolepis striata</i>	
Red-flowered ladies' tresses	<i>Sacoila lanceolata var. lanceolata</i>	
Fakahatchee ladies' tresses	<i>Sacoila lanceolata var. paludicola</i>	SLO, STS
Grassy arrowhead	<i>Sagittaria graminea</i>	
Bull-tongue arrowhead	<i>Sagittaria lancifolia</i>	
Coastal plain willow	<i>Salix caroliniana</i>	
Water spangles*	<i>Salvinia minima</i>	
Elderberry	<i>Sambucus nigra subsp. canadensis</i>	
Bowstring hemp*	<i>Sansevieria hyacinthoides</i>	
Soapberry	<i>Sapindus saponaria</i>	
Perennial glasswort	<i>Sarcocornia ambigua</i>	
White vine	<i>Sarcostemma clausum</i>	
Lizard's tail	<i>Saururus cernuus</i>	
Queensland umbrella tree*	<i>Schefflera actinophylla</i>	
Brazilian pepper*	<i>Schinus terebinthifolius</i>	
Wire bluestem	<i>Schizachyrium gracile</i>	
Crimson bluestem	<i>Schizachyrium sanguineum</i>	
Little bluestem	<i>Schizachyrium scoparium</i>	
Sunnybell	<i>Schoenolirion albiflorum</i>	
Black bogrush	<i>Schoenus nigricans</i>	
Gulf graytwig	<i>Schoepfia chrysophylloides</i>	
Baldwin's nutrush	<i>Scleria baldwinii</i>	
Sicklepod*	<i>Senna obtusifolia</i>	
Christmas senna*	<i>Senna pendula var. glabrata</i>	
Saw palmetto	<i>Serenoa repens</i>	
Danglepod	<i>Sesbania herbacea</i>	
Shoreline seapurslane	<i>Sesuvium portulacastrum</i>	
Knotroot foxtail	<i>Setaria parviflora</i>	
Giant bristlegrass	<i>Setaria magna</i>	
Indian hemp	<i>Sida rhombifolia</i>	
Common wireweed	<i>Sida ulmifolia</i>	
Saffron plum	<i>Sideroxylon celastrinum</i>	
False mastic	<i>Sideroxylon foetidissimum</i>	
Florida bully	<i>Sideroxylon reclinatum</i>	
Willow bustic; white bully	<i>Sideroxylon salicifolium</i>	
Ear-leaf greenbrier; Catbrier	<i>Smilax auriculata</i>	
Saw greenbrier	<i>Smilax bona-nox</i>	
Laurel greenbrier	<i>Smilax laurifolia</i>	
Bristly greenbrier	<i>Smilax tamnoides</i>	
Mullein nightshade	<i>Solanum donianum</i>	
Potato tree	<i>Solanum erianthum</i>	
Tropical soda apple*	<i>Solanum viarum</i>	
Leavenworth's goldenrod	<i>Solidago leavenworthii</i>	

FAKAHATCHEE STRAND PRESERVE STATE PARK

ANIMALS

Common Name	Scientific Name	Primary Habitat Codes (for imperiled species)
Seaside goldenrod	<i>Solidago sempervirens</i>	
Goldenrod	<i>Solidago stricta</i>	
Johnsongrass*	<i>Sorghum halepense</i>	
Sand cordgrass	<i>Spartina bakeri</i>	
Saltmeadow cordgrass	<i>Spartina patens</i>	
Woodbine false buttonweed	<i>Spermacoce remota</i>	
Everglades Key falsebuttonweed	<i>Spermococe terminalis</i>	
Shrubby false buttonweed*	<i>Spermacoce verticillata</i>	
Wedelia*	<i>Sphagneticola trilobata</i>	
Helmet ladies-tresses	<i>Spiranthes cranichoides</i>	
Tall neottia	<i>Spiranthes elata</i>	SLO
Lace-lip ladies' tresses	<i>Spiranthes laciniata</i>	MP
Long-lip ladies' tresses	<i>Spiranthes longilabris</i>	MP
Fragrant ladies' tresses	<i>Spiranthes odorata</i>	
Greenvein ladies tresses	<i>Spiranthes praecox</i>	
Spring ladies' tresses	<i>Spiranthes vernalis</i>	
Common duckweed	<i>Spirodela polyrhiza</i>	
Smutgrass*	<i>Sporobolus indicus</i>	
Seashore dropseed	<i>Sporobolus virginicus</i>	
Blue porterweed	<i>Stachytarpheta jamaicensis</i>	
Sweet shaggytuft	<i>Stenandrium dulce</i>	
St. Augustine grass	<i>Stenotaphrum secundatum</i>	
Queen's delight	<i>Stillingia sylvatica</i>	
Climbing aster	<i>Symphyotrichum carolinianum</i>	
Rice button aster	<i>Symphyotrichum dumosum</i>	
Elliott's aster	<i>Symphyotrichum elliotii</i>	
Annual saltmarsh aster	<i>Symphyotrichum subulatum</i>	
Perennial saltmarsh aster	<i>Symphyotrichum tenuifolium</i>	
Arrowhead vine*	<i>Syngonium podophyllum</i>	
Java-plum*	<i>Syzygium cumini</i>	
Malabar plum; Rose apple*	<i>Syzygium jambos</i>	
Pond cypress	<i>Taxodium ascendens</i>	
Bald cypress	<i>Taxodium distichum</i>	
Broad halberd fern	<i>Tectaria heracleifolia</i>	STS
Black olive; Oxhorn bucida*	<i>Terminalia buceras</i>	
Wood sage	<i>Teucrium canadense</i>	
Fireflag	<i>Thalia geniculata</i>	
Downy shield fern	<i>Thelypteris dentata</i>	
Stately maiden fern	<i>Thelypteris grandis</i>	STS
Hispid shield fern	<i>Thelypteris hispidula var. versicolor</i>	
Hottentot fern	<i>Thelypteris interrupta</i>	
Widespread maiden fern	<i>Thelypteris kunthii</i>	
Ovate marsh fern	<i>Thelypteris ovata</i>	
Marsh fern	<i>Thelypteris palustris</i>	
Lattice-vein fern	<i>Thelypteris reticulata</i>	STS
Toothed lattice-vein fern	<i>Thelypteris serrata</i>	STS
Portia tree; Seaside mahoe*	<i>Thespesia populnea</i>	
Water dropwort	<i>Tiedmannia filiformis</i>	
Northern needleleaf	<i>Tillandsia balbisiana</i>	MEH, DS, SLO, STS, MTS
Cardinal air plant	<i>Tillandsia fasciculata</i>	MEH, DS, SLO, STS, MTS
Twisted wild pine	<i>Tillandsia flexuosa</i>	MEH, MTS
Potbelly air plant	<i>Tillandsia paucifolia</i>	
Fuzzy-wuzzy air plant	<i>Tillandsia pruinosa</i>	SLO, STS

FAKAHATCHEE STRAND PRESERVE STATE PARK

ANIMALS

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

Common Name	Scientific Name	Primary Habitat Codes (for imperiled species)
Ball moss	<i>Tillandsia recurvata</i>	
Southern needleleaf	<i>Tillandsia setacea</i>	
Spanish moss	<i>Tillandsia usneoides</i>	
Giant wild pine; Giant air plant	<i>Tillandsia utriculata</i>	SLO, STS
Soft-leaved wild pine	<i>Tillandsia variabilis</i>	SLO, STS, MTS
Chiggery grapes	<i>Tournefortia hirsutissima</i>	RH, STS
Poison ivy	<i>Toxicodendron radicans</i>	
Eastern gamagrass	<i>Tripsacum dactyloides</i>	
Southern cattail	<i>Typha domingensis</i>	
Common cattail	<i>Typha latifolia</i>	
Wild allamanda	<i>Urechites lutea</i>	
Caesar-weed*	<i>Urena lobata</i>	
Paragrass*	<i>Urochloa mutica</i>	
Horned bladderwort	<i>Utricularia cornuta</i>	
Leafy bladderwort	<i>Utricularia foliosa</i>	
Floating bladderwort	<i>Utricularia inflata</i>	
Eastern purple bladderwort	<i>Utricularia purpurea</i>	
Little floating bladderwort	<i>Utricularia radiata</i>	
Zigzag bladderwort	<i>Utricularia subulata</i>	
Highbush blueberry	<i>Vaccinium corymbosum</i>	
Darrow's blueberry	<i>Vaccinium darrowii</i>	
Pineland acacia	<i>Vachellia farnesiana</i> var. <i>pinetorum</i>	
Leafy vanilla	<i>Vanilla phaeantha</i>	STS
Frostweed	<i>Verbesina virginica</i>	
Ironweed	<i>Vernonia blodgettii</i>	
Four-leaf vetch	<i>Vicia acutifolia</i>	
Cow pea	<i>Vigna luteola</i>	
Common blue violet	<i>Viola sororia</i>	
Summer grape	<i>Vitis aestivalis</i>	
Florida grape	<i>Vitis cinerea</i> var. <i>floridana</i>	
Muscadine grape	<i>Vitis rotundifolia</i>	
Calusa grape	<i>Vitis shuttleworthii</i>	
Shoestring fern	<i>Vittaria lineata</i>	
Bog-mat; Mud-midget	<i>Wolffiella gladiata</i>	
Virginia chain fern	<i>Woodwardia virginica</i>	
Arrowleaf elephant's ear*	<i>Xanthosoma sagittifolium</i>	
Tallowwood; Hog plum	<i>Ximenia americana</i>	
Yellow-eyed grass	<i>Xyris jupicai</i>	
Oriental false hawk's-beard*	<i>Youngia japonica</i>	
Spanish bayonet	<i>Yucca aloifolia</i>	
Wild lime; Lime prickly ash	<i>Zanthoxylum fagara</i>	
Lawn orchid*	<i>Zeuxine strateumatica</i>	
Southern wild rice	<i>Zizaniopsis miliacea</i>	
Manila templegrass*	<i>Zoysia matrella</i>	

FISH

Yellow bullhead	<i>Ameiurus natalis</i>
Bowfin	<i>Amia calva</i>
Oscar*	<i>Astronotus ocellatus</i>
Pike killifish*	<i>Belonesox belizanus</i>
Common snook	<i>Centropomus undecimalis</i>
Peacock cichlid*	<i>Cichla ocellaris</i>
Black acara*	<i>Cichlasoma bimaculatum</i>

FAKAHATCHEE STRAND PRESERVE STATE PARK

ANIMALS

Common Name	Scientific Name	Primary Habitat Codes (for imperiled species)
Mayan cichlid*	<i>Cichlasoma urophthalmum</i>	
Walking catfish*	<i>Clarias batrachus</i>	
Everglades pygmy sunfish	<i>Elassoma evergladei</i>	
Lake chubsucker	<i>Erimyzon sucetta</i>	
Golden topminnow	<i>Fundulus chrysotus</i>	
Eastern mosquitofish	<i>Gambusia holbrooki</i>	
African jewel cichlid*	<i>Hemichromis bimaculatus</i>	
Least killifish	<i>Heterandria formosa</i>	
Flagfish	<i>Jordanella floridae</i>	
Florida gar	<i>Lepisosteus platyrhincus</i>	
Warmouth	<i>Lepomis gulosus</i>	
Spotted sunfish	<i>Lepomis punctatus</i>	
Dollar sunfish	<i>Lepomis marginatus</i>	
Bluegill	<i>Lepomis macrochirus</i>	
Bluefin killifish	<i>Lucania goodei</i>	
Atlantic Tarpon	<i>Megalops atlanticus</i>	
Largemouth bass	<i>Micropterus salmoides</i>	
Golden shiner	<i>Notemigonus crysoleucas</i>	
Blue tilapia*	<i>Oreochromis aureus</i>	
Sailfin molly	<i>Poecilia latipinna</i>	
Smalltooth sawfish	<i>Pristis pectinata</i>	EUS
South American suckermouth armored catfish*	<i>Pterygoplichthys</i> spp. or, <i>Hypstomus</i> spp.	
Spotted tilapia*	<i>Tilapia mariae</i>	

AMPHIBIANS

Florida cricket frog	<i>Acris gryllus dorsalis</i>	
Two-toed amphiuma	<i>Amphiuma means</i>	
Oak toad	<i>Anaxyrus quercicus</i>	
Southern toad	<i>Anaxyrus terrestris</i>	
Greenhouse frog*	<i>Eleutherodactylus planirostris</i>	
Eastern narrowmouth toad	<i>Gastrophryne carolinensis</i>	
Squirrel treefrog	<i>Hyla squirella</i>	
Green treefrog	<i>Hyla cinerea</i>	
Pig frog	<i>Lithobates grylio</i>	
Southern leopard frog	<i>Lithobates sphenoccephala</i>	
Peninsula newt	<i>Notophthalmus viridescens piaropicola</i>	
Cuban treefrog*	<i>Osteopilus septentrionalis</i>	
Southern chorus frog	<i>Pseudacris nigrita</i>	
Greater siren	<i>Siren lacertina</i>	

REPTILES

American alligator	<i>Alligator mississippiensis</i>	MTC
American crocodile	<i>Crocodylus acutus</i>	SAM, EUS, EMS
Florida snapping turtle	<i>Chelydra serpentina osceola</i>	
Striped mud turtle	<i>Kinosternon bauri</i>	
Florida box turtle	<i>Terrapene carolina bauri</i>	
Ornate diamondback terrapin	<i>Malaclemys terrapin macrospilota</i>	
Florida red-bellied turtle	<i>Pseudemys nelsoni</i>	
Florida chicken turtle	<i>Deirochelys reticularia chrysea</i>	
Florida softshell	<i>Apalone ferox</i>	

FAKAHATCHEE STRAND PRESERVE STATE PARK

ANIMALS

Common Name	Scientific Name	Primary Habitat Codes (for imperiled species)
Green anole	<i>Anolis carolinensis</i>	
Cuban brown anole*	<i>Anolis sagrei</i>	
Indo-Pacific gecko*	<i>Hemidactylus garnotii</i>	
Eastern glass lizard	<i>Ophisaurus ventralis</i>	
Southeastern five-lined skink	<i>Eumeces inexpectatus</i>	
Burmese python*	<i>Python bivittatus</i>	
Striped crayfish snake	<i>Regina alleni</i>	
Florida green water snake	<i>Nerodia floridana</i>	
Florida water snake	<i>Nerodia fasciata pictiventris</i>	
Mangrove water snake	<i>Nerodia clarkia compressicauda</i>	
Southern Florida swamp snake	<i>Seminatrix pygaea cyclas</i>	
Florida brown snake	<i>Storeria victa</i>	
Eastern garter snake	<i>Thamnophis sirtalis</i>	
Peninsula ribbon snake	<i>Thamnophis sauritus sackenii</i>	
Southern ringneck snake	<i>Diadophis punctatus</i>	
Eastern mud snake	<i>Farancia abacura</i>	
Southern black racer	<i>Coluber constrictor priapus</i>	
Rough green snake	<i>Opheodrys aestivus</i>	
Eastern indigo snake	<i>Drymarchon couperi</i>	MTC
Corn snake	<i>Pantherophis guttatus</i>	
Eastern rat snake	<i>Pantherophis alleghaniensis</i>	
Florida kingsnake	<i>Lampropeltis getulus floridana</i>	
Scarlet kingsnake	<i>Lampropeltis elapsoides</i>	
Florida scarlet snake	<i>Cemophora coccinea</i>	
Eastern hognose snake	<i>Heterodon platirhinos</i>	
Eastern coral snake	<i>Micrurus fulvius</i>	
Florida cottonmouth	<i>Agkistrodon piscivorus</i>	
Dusky pigmy rattlesnake	<i>Sistrurus miliarius barbouri</i>	
Eastern diamondback rattlesnake	<i>Crotalus adamanteus</i>	

BIRDS

Common loon	<i>Gavia immer</i>	
Pied-billed grebe	<i>Podilymbus podiceps</i>	
American white pelican	<i>Pelecanus erythrorhynchos</i>	
Eastern brown pelican	<i>Pelecanus occidentalis</i>	EMS
Magnificent frigatebird	<i>Fregata magnificens</i>	OF
Double-crested cormorant	<i>Phalacrocorax auritus</i>	
Anhinga	<i>Anhinga anhinga</i>	
Great egret	<i>Ardea alba</i>	
Great white heron	<i>Ardea herodias occidentalis</i>	EMS
Great blue heron	<i>Ardea herodias</i>	
Green heron	<i>Butorides virescens</i>	
Cattle egret	<i>Bubulcus ibis</i>	
Little blue heron	<i>Egretta caerulea</i>	EMS, SWLK
Reddish egret	<i>Egretta rufescens</i>	ESM, EMS
Snowy egret	<i>Egretta thula</i>	EMS, SWLK
Tricolored heron	<i>Egretta tricolor</i>	EMS, SWLK
Black-crowned night heron	<i>Nycticorax nycticorax</i>	SWLK
Yellow-crowned night heron	<i>Nyctanassa violaceus</i>	SWLK
Least bittern	<i>Ixobrychus exilis</i>	MP, DM
American bittern	<i>Botaurus lentiginosus</i>	MP, DM

FAKAHATCHEE STRAND PRESERVE STATE PARK

ANIMALS

Common Name	Scientific Name	Primary Habitat Codes (for imperiled species)
Wood stork	<i>Mycteria americana</i>	SWLK, DM
Glossy ibis	<i>Plegadis falcinellus</i>	ESM
White ibis	<i>Eudocimus albus</i>	ESM
Roseate spoonbill	<i>Platalea ajaja</i>	ESS, EMS
Snow goose	<i>Chen caerulescens</i>	
Mallard	<i>Anas platyrhynchos</i>	
Mottled duck	<i>Anas fulvigula</i>	
Green-winged teal	<i>Anas crecca</i>	
Blue-winged teal	<i>Anas discors</i>	
Northern shoveler	<i>Anas clypeata</i>	
Wood duck	<i>Aix sponsa</i>	
Lesser scaup	<i>Aythya affinis</i>	
Hooded merganser	<i>Lophodytes cucullatus</i>	
Red-breasted merganser	<i>Mergus serrator</i>	
Turkey vulture	<i>Cathartes aura</i>	
Black vulture	<i>Coragyps atratus</i>	
Swallow-tailed kite	<i>Elanoides forficatus</i>	MTC
Snail kite	<i>Rostrhamus sociabilis plumbeus</i>	ESM
Sharp-shinned hawk	<i>Accipiter striatus</i>	
Cooper's hawk	<i>Accipiter cooperii</i>	MTC
Red-tailed hawk	<i>Buteo jamaicensis</i>	
Red-shouldered hawk	<i>Buteo lineatus</i>	
Broad-winged hawk	<i>Buteo platypterus</i>	
Short-tailed hawk	<i>Buteo brachyurus</i>	SLO, STS, EMS
Southern bald eagle	<i>Haliaeetus leucocephalus</i>	
Northern harrier	<i>Circus cyaneus</i>	
Osprey	<i>Pandion haliaetus</i>	EMS
Crested caracara	<i>Caracara cheriway</i>	OF
Peregrine falcon	<i>Falco peregrinus</i>	MP
Merlin	<i>Falco columbarius</i>	STS
American kestrel	<i>Falco sparverius</i>	
Northern bobwhite	<i>Colinus virginianus</i>	
Wild turkey	<i>Meleagris gallopavo</i>	
Florida sandhill crane	<i>Grus canadensis pratensis</i>	ESM
Limpkin	<i>Aramus guarauna</i>	STS
King rail	<i>Rallus elegans</i>	
Florida clapper rail	<i>Rallus longirostris scottii</i>	
Sora	<i>Porzana carolina</i>	
Black rail	<i>Laterallus jamaicensis</i>	ETM
Purple gallinule	<i>Porphyryla martinica</i>	
Common gallinule	<i>Gallinula galeata</i>	
American coot	<i>Fulica americana</i>	
Semipalmated plover	<i>Charadrius semipalmatus</i>	
Killdeer	<i>Charadrius vociferus</i>	
Black-bellied plover	<i>Pluvialis squatarola</i>	
Ruddy turnstone	<i>Arenaria interpres</i>	
American woodcock	<i>Scolopax minor</i>	
Wilson's snipe	<i>Gallinago delicata</i>	
Spotted sandpiper	<i>Actitis macularius</i>	
Solitary sandpiper	<i>Tringa solitaria</i>	
Greater yellowlegs	<i>Tringa melanoleuca</i>	
Lesser yellowlegs	<i>Tringa flavipes</i>	
Pectoral sandpiper	<i>Calidris melanotos</i>	

FAKAHATCHEE STRAND PRESERVE STATE PARK

ANIMALS

Common Name	Scientific Name	Primary Habitat Codes (for imperiled species)
Dunlin	<i>Calidris alpina</i>	
Semipalmated sandpiper	<i>Calidris pusilla</i>	
American avocet	<i>Recurvirostra americana</i>	ETM
Black-necked stilt	<i>Himantopus mexicanus</i>	
Ring-billed gull	<i>Larus delawarensis</i>	
Laughing gull	<i>Leucophaeus atricilla</i>	
Forster's tern	<i>Sterna forsteri</i>	
Common tern	<i>Sterna hirundo</i>	
Least tern	<i>Sterna antillarum</i>	ETM
Royal tern	<i>Thalasseus maximus</i>	ETM
Sandwich tern	<i>Thalasseus sandvicensis</i>	ETM
Black tern	<i>Chlidonias niger</i>	
Black skimmer	<i>Rynchops niger</i>	ETS
White-crowned pigeon	<i>Columba leucocephala</i>	OF
Common ground-dove	<i>Columbina passerina</i>	
Eurasian collared-dove*	<i>Streptopelia decocto</i>	
Mourning dove	<i>Zenaida macroura</i>	
Yellow-billed cuckoo	<i>Coccyzus americanus</i>	
Mangrove cuckoo	<i>Coccyzus minor</i>	
Barn owl	<i>Tyto alba</i>	
Eastern screech-owl	<i>Megascops asio</i>	
Barred owl	<i>Strix varia</i>	
Chuck-will's-widow	<i>Caprimulgus carolinensis</i>	
Whip-poor-will	<i>Caprimulgus vociferus</i>	
Common nighthawk	<i>Chordeiles minor</i>	
Ruby-throated hummingbird	<i>Archilochus colubris</i>	
Belted kingfisher	<i>Megaceryle alcyon</i>	
Northern flicker	<i>Colaptes auratus</i>	
Pileated woodpecker	<i>Dryocopus pileatus</i>	
Red-bellied woodpecker	<i>Melanerpes carolinus</i>	
Yellow-bellied sapsucker	<i>Sphyrapicus varius</i>	
Red-cockaded woodpecker	<i>Picooides borealis</i>	MF, WF
Southern hairy woodpecker	<i>Picooides villosus audubonii</i>	
Downy woodpecker	<i>Picooides pubescens</i>	
Eastern kingbird	<i>Tyrannus tyrannus</i>	
Gray kingbird	<i>Tyrannus dominicensis</i>	
Western kingbird	<i>Tyrannus verticalis</i>	
Great crested flycatcher	<i>Myiarchus crinitus</i>	
Eastern phoebe	<i>Sayornis phoebe</i>	
Tree swallow	<i>Tachycineta bicolor</i>	
Bank swallow	<i>Riparia riparia</i>	
Northern rough-winged swallow	<i>Stelgidopteryx serripennis</i>	
Barn swallow	<i>Hirundo rustica</i>	
Purple martin	<i>Progne subis</i>	
Blue jay	<i>Cyanocitta cristata</i>	
American crow	<i>Corvus brachyrhynchos</i>	
Tufted titmouse	<i>Baeolophus bicolor</i>	
Brown-headed nuthatch	<i>Sitta pusilla</i>	
House wren	<i>Troglodytes aedon</i>	
Winter wren	<i>Troglodytes hiemalis</i>	
Carolina wren	<i>Thryothorus ludovicianus</i>	
Sedge wren	<i>Cistothorus platensis</i>	
Northern mockingbird	<i>Mimus polyglottos</i>	

FAKAHATCHEE STRAND PRESERVE STATE PARK

ANIMALS

Common Name	Scientific Name	Primary Habitat Codes (for imperiled species)
Gray catbird	<i>Dumetella carolinensis</i>	
Brown thrasher	<i>Toxostoma rufum</i>	
American robin	<i>Turdus migratorius</i>	
Hermit thrush	<i>Catharus guttatus</i>	
Swainson's thrush	<i>Catharus ustulatus</i>	
Gray-cheeked thrush	<i>Catharus minimus</i>	
Veery	<i>Catharus fuscescens</i>	
Eastern bluebird	<i>Sialia sialis</i>	
Blue-gray gnatcatcher	<i>Poliophtila caerulea</i>	
Ruby-crowned kinglet	<i>Regulus calendula</i>	
American pipit	<i>Anthus rubescens</i>	
Cedar waxwing	<i>Bombycilla cedrorum</i>	
Loggerhead shrike	<i>Lanius ludovicianus</i>	
European starling*	<i>Sturnus vulgaris</i>	
White-eyed vireo	<i>Vireo griseus</i>	
Blue-headed vireo	<i>Vireo solitarius</i>	
Black-whiskered vireo	<i>Vireo altiloquus</i>	EMS
Red-eyed vireo	<i>Vireo olivaceus</i>	
Black and white warbler	<i>Mniotilta varia</i>	
Prothonotary warbler	<i>Protonotaria citrea</i>	
Worm-eating warbler	<i>Helmitheros vermivorum</i>	STS
Blue-winged warbler	<i>Vermivora cyonoptera</i>	
Orange-crowned warbler	<i>Vermivora celata</i>	
Northern parula	<i>Parula americana</i>	
Yellow warbler	<i>Dendroica petechia</i>	
Black-throated blue warbler	<i>Dendroica caerulescens</i>	
Yellow-rumped warbler	<i>Dendroica coronata</i>	
Yellow-throated warbler	<i>Dendroica dominica</i>	
Blackpoll warbler	<i>Dendroica striata</i>	
Pine warbler	<i>Dendroica pinus</i>	
Prairie warbler	<i>Dendroica discolor</i>	
Palm warbler	<i>Dendroica palmarum</i>	
Ovenbird	<i>Seiurus aurocapillus</i>	
Northern waterthrush	<i>Parkesia noveboracensis</i>	
Louisiana waterthrush	<i>Parkesia motacilla</i>	STS
Common yellowthroat	<i>Geothlypis trichas</i>	
American redstart	<i>Setophaga ruticilla</i>	STS
Bobolink	<i>Dolichonyx oryzivorus</i>	
Eastern meadowlark	<i>Sturnella magna</i>	
Red-winged blackbird	<i>Agelaius phoeniceus</i>	
Orchard oriole	<i>Icterus spurius</i>	
Boat-tailed grackle	<i>Quiscalus major</i>	
Common grackle	<i>Quiscalus quiscula</i>	
Scarlet tanager	<i>Piranga olivacea</i>	
Northern cardinal	<i>Cardinalis cardinalis</i>	
Indigo bunting	<i>Passerina cyanea</i>	
Painted bunting	<i>Passerina ciris</i>	
Eastern towhee	<i>Pipilo erythrophthalmus</i>	
Savannah sparrow	<i>Passerculus sandwichensis</i>	
Bachman's sparrow	<i>Peucaea aestivalis</i>	MP
Swamp sparrow	<i>Melospiza georgiana</i>	
Song sparrow	<i>Melospiza melodia</i>	
American goldfinch	<i>Spinus tristis</i>	

FAKAHATCHEE STRAND PRESERVE STATE PARK

ANIMALS

Common Name	Scientific Name	Primary Habitat Codes (for imperiled species)
Brown-headed Cowbird	<i>Molothrus ater</i>	
Shiny Cowbird	<i>Molothrus bonariensis</i>	

MAMMALS

Virginia opossum	<i>Didelphis virginiana</i>	
Sherman's short-tailed shrew	<i>Blarina shermani</i>	RH
Least shrew	<i>Cryptotis parva</i>	
Florida bonneted bat	<i>Eumops floridanus</i>	MTC
Eastern pipistrelle	<i>Pipistrellus subflavus</i>	
Nine-banded armadillo*	<i>Dasypus novemcinctus</i>	
Marsh rabbit	<i>Sylvilagus palustris</i>	
Eastern cottontail	<i>Sylvilagus floridanus</i>	
Eastern gray squirrel	<i>Sciurus carolinensis</i>	
Big Cypress fox squirrel	<i>Sciurus niger avicennia</i>	MTC
Southern flying squirrel	<i>Glaucomys volans</i>	
Marsh rice rat	<i>Oryzomys palustris</i>	
Cotton mouse	<i>Peromyscus gossypinus</i>	
Hispid cotton rat	<i>Sigmodon hispidus</i>	
Coyote*	<i>Canis latrans</i>	
Red fox*	<i>Vulpes vulpes</i>	
Gray fox	<i>Urocyon cinereoargenteus</i>	
Florida black bear	<i>Ursus americanus floridanus</i>	MTC
Raccoon	<i>Procyon lotor</i>	
River otter	<i>Lontra canadensis</i>	
Southeastern weasel	<i>Mustela frenata olivacea</i>	
Everglades mink	<i>Neovison vison evergladensis</i>	MTC
Eastern spotted skunk	<i>Spilogale putorius</i>	
Striped skunk	<i>Mephitis mephitis</i>	
Florida panther	<i>Puma concolor coryi</i>	MTC
Bobcat	<i>Lynx rufus</i>	MTC
West Indian manatee	<i>Trichechus manatus</i>	BST, EMS, EUS
Atlantic bottle-nosed dolphin	<i>Tursiops truncatus</i>	
Wild pig*	<i>Sus scrofa</i>	
White-tailed deer	<i>Odocoileus virginianus</i>	

Primary Habitat Codes

TERRESTRIAL

Beach Dune.....	BD
Coastal Berm.....	CB
Coastal Grassland	CG
Coastal Strand	CS
Dry Prairie.....	DP
Keys Cactus Barren	KCB
Limestone Outcrop	LO
Maritime Hammock	MAH
Mesic Flatwoods.....	MF
Mesic Hammock.....	MEH
Pine Rockland	PR
Rockland Hammock.....	RH
Sandhill	SH
Scrub	SC
Scrubby Flatwoods	SCF
Shell Mound	SHM
Sinkhole	SK
Slope Forest	SPF
Upland Glade.....	UG
Upland Hardwood Forest.....	UHF
Upland Mixed Woodland	UMW
Upland Pine.....	UP
Wet Flatwoods	WF
Xeric Hammock	XH

PALUSTRINE

Alluvial Forest.....	AF
Basin Marsh	BM
Basin Swamp.....	BS
Baygall	BG
Bottomland Forest.....	BF
Coastal Interdunal Swale	CIS
Depression Marsh	DM
Dome Swamp.....	DS
Floodplain Marsh	FM
Floodplain Swamp	FS
Glades Marsh.....	GM
Hydric Hammock.....	HH
Keys Tidal Rock Barren	KTRB
Mangrove Swamp	MS
Marl Prairie.....	MP
Salt Marsh.....	SAM
Seepage Slope.....	SSL
Shrub Bog	SHB
Slough.....	SLO
Slough Marsh	SLM

Primary Habitat Codes

Strand Swamp STS
Wet Prairie WP

LACUSTRINE

Clastic Upland Lake CULK
Coastal Dune Lake CDLK
Coastal Rockland Lake CRLK
Flatwoods/Prairie FPLK
Marsh Lake MLK
River Floodplain Lake RFLK
Sandhill Upland Lake SULK
Sinkhole Lake SKLK
Swamp Lake SWLK

RIVERINE

Alluvial Stream AST
Blackwater Stream BST
Seepage Stream SST
Spring-run Stream SRST

SUBTERRANEAN

Aquatic Cave ACV
Terrestrial Cave TCV

ESTUARINE

Algal Bed EAB
Composite Substrate ECPS
Consolidated Substrate ECNS
Coral Reef ECR
Mollusk Reef EMR
Octocoral Bed EOB
Seagrass Bed ESGB
Sponge Bed ESPB
Unconsolidated Substrate EUS
Worm Reef EWR

Primary Habitat Codes

MARINE

Algal Bed	MAB
Composite Substrate	MCPS
Consolidated Substrate	MCNS
Coral Reef	MCR
Mollusk Reef	MMR
Octocoral Bed	MOB
Seagrass Bed	MSGB
Sponge Bed.....	MSPB
Unconsolidated Substrate.....	MUS
Worm Reef.....	MWR

ALTERED LANDCOVER TYPES

Abandoned field	ABF
Abandoned pasture	ABP
Agriculture	AG
Canal/ditch.....	CD
Clearcut pine plantation	CPP
Clearing	CL
Developed.....	DV
Impoundment/artificial pond	IAP
Invasive exotic monoculture	IEM
Pasture - improved.....	PI
Pasture - semi-improved.....	PSI
Pine plantation.....	PP
Road	RD
Spoil area	SA
Successional hardwood forest.....	SHF
Utility corridor	UC

MISCELLANEOUS

Many Types of Communities	MTC
Overflying	OF

Addendum 6—Imperiled Species Ranking Definitions

Imperiled Species Ranking Definitions

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

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

Federal and State status information is from the U.S. Fish and Wildlife Service; and the Florida 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 1,000 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)

Imperiled Species Ranking Definitions

- 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 1,000 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.

Imperiled Species Ranking Definitions

- 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.

Imperiled Species Ranking Definitions

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

Management Procedures for Archaeological and Historical Sites and Properties on State-Owned or Controlled Properties (revised March 2013)

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

A. General Discussion

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

B. Agency Responsibilities

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

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

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

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

C. Statutory Authority

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

D. Management Implementation

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

Management Procedures for Archaeological and Historical Sites and Properties on State-Owned or Controlled Properties (revised March 2013)

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

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

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

E. Minimum Review Documentation Requirements

In order to have a proposed project reviewed by the Division, certain information must be submitted for comments and recommendations. The minimum review documentation requirements can be found at:

http://www.flheritage.com/preservation/compliance/docs/minimum_review_documentation_requirements.pdf .

* * *

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

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

Phone: (850) 245-6425

Toll Free: (800) 847-7278

Fax: (850) 245-6435

Eligibility Criteria for National Register of Historic Places

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

- 1)** Districts, sites, buildings, structures, and objects may be considered to have significance in American history, architecture, archaeology, engineering, and/or culture if they possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:
 - a)** are associated with events that have made a significant contribution to the broad patterns of our history; and/or
 - b)** are associated with the lives of persons significant in our past; and/or
 - c)** embody the distinctive characteristics of type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; and/or
 - d)** have yielded, or may be likely to yield, information important in prehistory or history.

- 2)** Ordinarily cemeteries, birthplaces, or graves of historical figures; properties owned by religious institutions or used for religious purposes; structures that have been moved from their original locations; reconstructed historic buildings; properties primarily commemorative in nature; and properties that have achieved significance within the past 50 years shall not be considered eligible for the *National Register*. However, such properties will qualify if they are integral parts of districts that do meet the criteria or if they fall within the following categories:
 - a)** a religious property deriving its primary significance from architectural or artistic distinction or historical importance; or
 - b)** a building or structure removed from its original location but which is significant primarily for architectural value, or which is the surviving structure most importantly associated with a historic person or event; or
 - c)** a birthplace or grave of an historical figure of outstanding importance if there is no appropriate site or building directly associated with his productive life; or
 - d)** a cemetery which derives its primary significance from graves of persons of transcendent importance, from age, distinctive design features, or association with historic events; or

Eligibility Criteria for National Register of Historic Places

- e)** a reconstructed building, when it is accurately executed in a suitable environment and presented in a dignified manner as part of a restoration master plan, and no other building or structure with the same association has survived; or a property primarily commemorative in intent, if design, age, tradition, or symbolic value has invested it with its own exceptional significance; or
- f)** a property achieving significance within the past 50 years, if it is of exceptional importance.

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

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

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

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

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

Addendum 8 —Land Management Review



**FLORIDA DEPARTMENT OF
ENVIRONMENTAL PROTECTION**

MARJORY STONEMAN DOUGLAS BUILDING
3900 COMMONWEALTH BOULEVARD
TALLAHASSEE, FLORIDA 32399-3000


RICK SCOTT
GOVERNOR


CARLOS LOPEZ-CANTERA
LT. GOVERNOR

HERSCHEL T. VINYARD JR.
SECRETARY

MEMORANDUM

TO: Keith Singleton, Land Acquisition and Management Planner
Division of State Lands

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

Lew Scruggs, Chief, Office of Park Planning 
Division of Recreation and Parks

SUBJECT: Response to Draft Land Management Review (LMR) Fakahatchee Strand
Preserve State Park

DATE: February 10, 2014

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

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

The team recommends that DRP work with DSL and FFS to resolve the issue related to the location of the lease boundary in the "stair step" area of Fakahatchee Strand Preserve State Park and Picayune Strand State Forest. (6+, 0-)

Managing Agency Response: Agree. DRP, FFS, and DSL had a meeting in November 2013, and are actively working towards resolving this issue.

The team recommends that DRP pursue a strategy with DSL and the regional conservancies to improve boundary identification and acquisition of inholdings to reduce challenges associated with providing legal access to private property owners, and most importantly, to better protect the natural resources. (6+, 0-)

Managing Agency Response: Agree. The acquisition of inholdings is the most effective way to protect the park's natural resources from undesirable activities (off road vehicle trails) and enhance resource management activities (invasive exotic plant removal and prescribed fire).

The team recommends that DRP pursue the opportunity for wildlife habitat enhancement at the onsite borrow pits, such as littoral zone creation. (6+, 0-)

Managing Agency Response: Agree. During the next management plan update restoration and enhancement of the borrow pits will be included with proposed actions, including: describing and documenting existing conditions; investigation of restoration strategies; and development of a restoration plan.

FIELD REVIEW

The maintenance condition of the Natural Communities, specifically shell mound, received a below average score. The review team is asked to evaluate, based on their perspective, what percent of the natural community is in maintenance condition. The scores range from 1 to 5, with 1 being 0-20% in maintenance condition, 2 being 21-40%, 3 being 41-60%, 4 being 61-80% and 5 being 81-100%.

Managing Agency Response: Agree. In the approved UMP (2000) the area of concern (Daniels' Point) was considered "ruderal", because of the former settlement and disturbance at this site. Shell mound will be included in the UMP update with a description of the desired future condition for this natural community and management actions required to meet this goal. Precautions will need to be taken to minimize additional disturbance to this site as it is an archaeological and historic site. Park staff are investigating partnerships with volunteers and other agencies to enhance the management of this site with an emphasis on invasive exotic plant removal.

Adjacent Property Concerns, specifically OHV use/unauthorized access and inholding access, received below average scores. The review team is asked to evaluate, based on information provided by the managing agency, whether adjacent property concerns are sufficiently addressed.

Managing Agency Response: Agree. Unauthorized OHV use is a continuing issue that negatively affects the natural resources at the park. Park management works closely with FWC law enforcement partners to curb unauthorized access. Park management also informs inholding property owners of their "authorized" travel route to access their property. As described earlier the acquisition of inholdings and outparcels is essential to reducing and eliminating unauthorized use.

Management Resources, specifically equipment, staff, and funding, received below average scores. The review team is asked to evaluate, based on information provided by the managing agency, whether management resources are sufficient.

Managing Agency Response: Agree. The updated unit management plan will address land management, equipment and staff funding needs. However, Division funding is determined annually by the Florida Legislature and funds are allocated to the 171 state parks and trails according to priority needs.

PLAN REVIEW

Natural Communities, specifically shell mound, received a below average score. This is an indication that the management plan does not sufficiently address current or desired condition and/or future management actions to protect or restore.

Managing Agency Response: Agree. As previously described the UMP update will address and include the shell mound natural community with a description of current conditions, desired future conditions, and required management actions.

Natural Resources Survey and Monitoring Resources, specifically fire effects monitoring, other habitat management effects monitoring, and invasive species survey/monitoring, received below average scores. This is an indication that the management plan does not sufficiently address survey or monitoring.

Managing Agency Response: Agree. The UMP update will address fire effects, habitat management, and invasive species surveys and other resource management monitoring priorities.

Cultural Resources, specifically cultural resource survey, and protection and preservation, received below average scores. This is an indication that the management plan does not sufficiently address survey or protection.

Managing Agency Response: Agree. The UMP update will address cultural resource surveys and protection measures.

Restoration, specifically Dan House Prairie agricultural fields, cigar orchid restoration, and borrow pits, received below average scores. This is an indication that the management plan does not sufficiently address restoration.

Managing Agency Response: Agree. The UMP update will address restoration needs for the former agricultural lands, borrow/rock mining pits, and listed species restoration efforts.

Forest Management, specifically timber inventory, received a below average score. This is an indication that the management plan does not sufficiently address a timber inventory.

Managing Agency Response: Agree. Timber inventory will be addressed in the UMP update.

Non-native, Invasive & Problem Species, specifically prevention of plants, animals, pests/pathogens, received below average scores. This is an indication that the management plan does not sufficiently address prevention of invasive species.

Managing Agency Response: Agree. Non-native, invasive and problem species prevention and monitoring will be addressed in the UMP update.

Surface Water Monitoring, specifically quality, received a below average score. This is an indication that the management plan does not sufficiently address surface water quality monitoring.

Managing Agency Response: Agree. The UMP update will address surface water quality monitoring.

Resource Protection, specifically boundary survey, gates & fencing, and law enforcement presence, received below average scores. This is an indication that the management plan does not sufficiently address resource protection.

***Managing Agency Response:** Agree. Boundary surveys, gates & fencing will be addressed in the UMP update, and recommendations for additional law enforcement presence will also be included.*

Thank you for your attention.

/gk

CC: Valinda Subic, Chief, Bureau of Parks District 4
Ezell (BJ) Givens, Assistant Chief, Bureau of Parks District 4
Rene Rau, Park Manager, Fakahatchee Preserve State Park
Chris Becker, Environmental Specialist, Bureau of Parks District 4