MIAMI-DADE COUNTY

R. Hardy Matheson Preserve

MANAGEMENT PLAN

Miami-Dade County Parks, Recreation and Open Spaces Department

November 9, 2012

Public Hearing Draft

PREPARED FOR:

FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION

PREPARED BY:

MIAMI-DADE COUNTY PARKS, RECREATION AND OPEN SPACES DEPARTMENT

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R. Hardy Matheson Preserve

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EXECUTIVE SUMMARY

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MIAMI-DADE COUNTY R. HARDY MATHESON PRESERVE

Lead Agency:	Miami-Dade County Parks, Recreation, and Open Spaces Department	
Common Name of Property:	R. Hardy Matheson Preserve	
Location:	Miami-Dade County	
Acreage:	Pine rockland	3.9 acres
	Rockland hammock	12.2 acres
	Mangrove forest	632.8 acres
	Marine submerged lands	150.0 acres
	Rockland hammock restoration area	6.6 acres
	Developed/disturbed	8.1 acres
	Total:	**813.6 acres**
Management Agreement:	013-0003 – Board of Trustees of the Internal Improvement Trust Fund of the State of Florida	
Use:	The Preserve is considered a multiple use site as it is managed for environmental protection, cultural/historical significance and passive recreational activities compatible with the conservation and protection of the Preserve's resources.	
Management Responsibilities:	Miami-Dade County Parks, Recreation, and Open Spaces Department; Miami-Dade County Environmentally Endangered Lands (EEL) Program	
Sublease(s):	None	
Type of Acquisition:	Fee simple	

Location / Context:

R. Hardy Matheson Preserve is located east of Old Cutler Road at 11191 Snapper Creek Road at the southern extent of the City of Coral Gables in central Miami-Dade County. The Preserve is bordered by Biscayne Bay Aquatic Preserve to the east, Matheson Hammock Park on the north, and by residential development on the north. On the west, the Preserve is bounded by the Snapper Creek Lakes residential subdivision, the privately owned Snapper Creek Marina, Four Fillies Farm - a University of Miami housing development for faculty, and the Gables-by-the-Sea residential subdivision. The Preserve is bordered by Chapman Field Park to the south.

R. Hardy Matheson Preserve is one of several public properties of regional and national ecological significance in the vicinity (**Map 1**), including:

- Biscayne Bay Aquatic Preserve – adjacent
- Matheson Hammock Park – adjacent
- Chapman Field Park – adjacent
- Biscayne National Park – 4 miles to the east/southeast
- Deering Estate at Cutler – 2.3 miles to the southwest
- Bill Baggs Cape State Park – 6.4 miles to the east

Natural Resources:
Located alongside of the Biscayne Bay Aquatic Preserve and bisected by Snapper Creek Canal, R. Hardy Matheson Preserve exhibits five distinct biotic communities, including rockland hammock, rockland hammock restoration area, pine rockland, mangroves and marine submerged lands (**Map 3**). R. Hardy Matheson Preserve contains 12.2 acres of rockland hammock. The Preserve contains 3.9 acres of pine rockland, the northernmost coastal pine rockland in public ownership in the United States. Mangroves and salt marsh occupy 632.8 acres of the R. Hardy Matheson Preserve and are integral to the Biscayne Bay Aquatic Preserve ecosystem.

These natural areas provide a rich diversity of habitats for more than 300 plant species and numerous animal species. Twenty of these plants and animals occur only in south Florida. In fact, the R. Hardy Matheson Preserve provides habitat for 17 plant species listed by the State of Florida as threatened or endangered.

In 1912-1913, the Snapper Creek Canal was built through the center of the Preserve. The soil or fill removed to create the canal was placed on the north side of the property adjacent to the canal. This fill mound, which contained approximately 300,000 cubic yards, was removed in recent years and the canal bank stabilized. The canal is one of the first drainage canals constructed in south Florida. The canal also cuts through the original roadbed of the historical Ingraham Highway. Once extending from the Miami River southwest to Cape Sable, the roadbed has since been designated as a historical road by the Miami-Dade County Historic Preservation Board.

Cultural Resources:
R. Hardy Matheson Preserve contains the remains of a prehistoric village dating to 500 BC. This midden, believed to have been occupied by Tequesta Indians, includes a village and quite possibly a cemetery. Unearthed artifacts associated with the village area include tools made from bones, pieces of broken pottery, and axe heads made out of conch shells.

With easy access to freshwater springs, the area became an important water stop for passing ships. During the 17th and 18th centuries, settlers built their camps near the original meandering Snapper Creek Canal and the numerous, large freshwater sinkholes. The first settlers planted extensive groves of mango, sapodilla and other tropical fruits. Remnants of these groves may still be found on the site. Through the early 1900's, Snapper Creek was a very popular picnic site for local residents.

Management Needs:
Continued control of exotic species; prescribed burn in pine rockland; hydrology improvements; cultural resource protection.

Management Goals:
Through the planning process described in this report, the following goals are being pursued for R. Hardy Matheson Preserve.

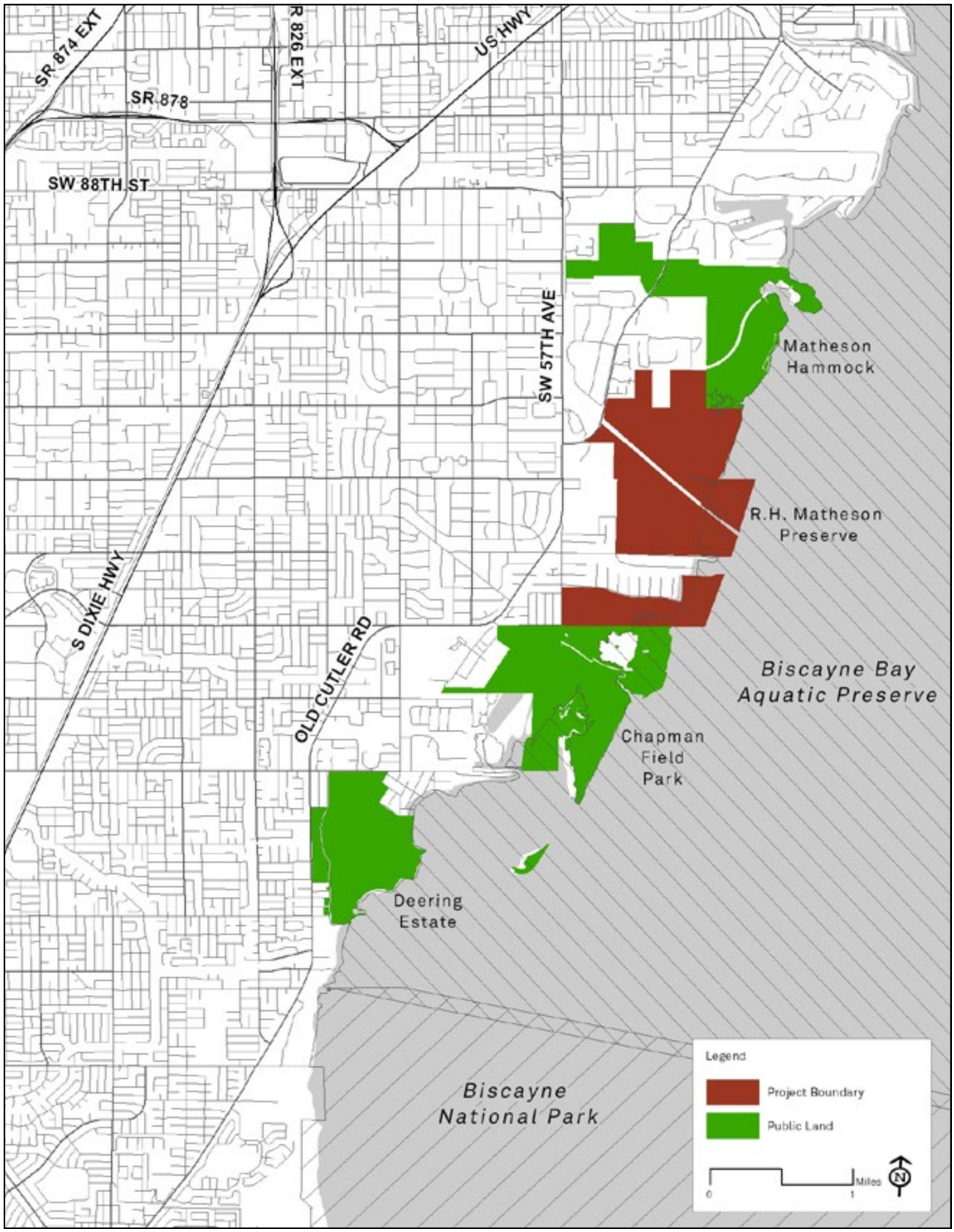
Goal 1. Restore and maintain habitat structure and function to maximize native biotic diversity and preserve natural resource values.
Goal 2. Manage the site's cultural resources in a manner consistent with historic preservation standards and regulations.
Goal 3. Provide authorized public access and increase public awareness while protecting natural areas and cultural resources from adverse human impacts.

Miami-Dade County EEL Acquisition List Parcel / Acreage: Four parcels - 21.46 acres

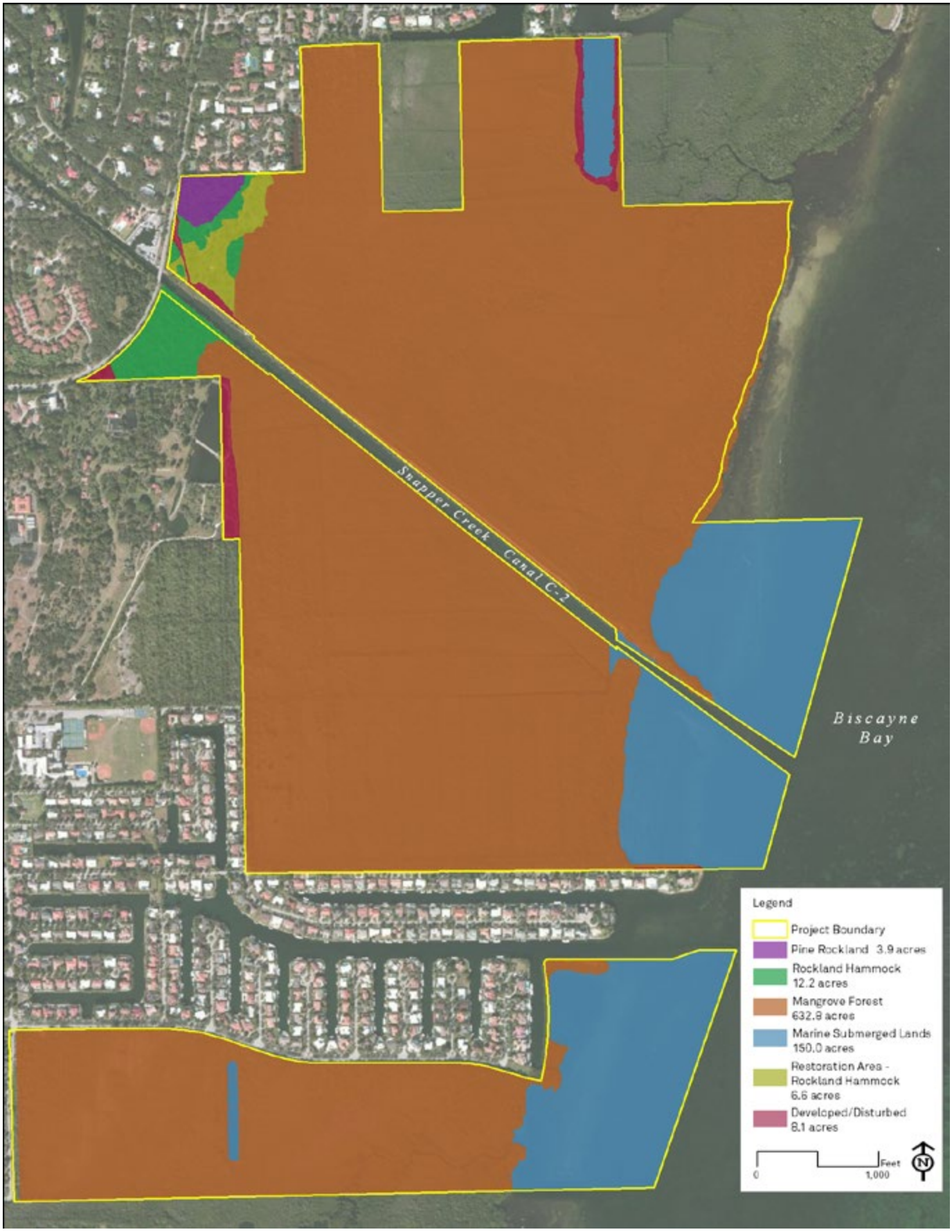
Surplus Lands / Acreage: None

Public Involvement: Stakeholder meeting, Advisory Committee meeting; Public hearing.

Map 1: Nearby Public Lands



Map 3: Plant Communities



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PURPOSE AND SIGNIFICANCE OF THE PARK

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MIAMI-DADE COUNTY R. HARDY MATHESON PRESERVE

The purpose of the R. Hardy Matheson Preserve (Preserve) is to protect considerable ecological and cultural resources found on the Preserve, while providing passive recreation opportunities to the residents of Miami-Dade County.

A. Preserve Significance

The Preserve is classified as an "Existing County Park" and "ECO Hub Park" by the Miami-Dade County Parks and Open Space Master Plan (hereafter OSMP). This classification means that the site is connected to an eco-zone that includes property suitable for recreational and educational development. Another characteristic is the need to restore and protect the natural environment. The site is also within a network of greenways, trails and blueways throughout the county. Old Cutler Road and SW 57th Avenue are designated in the OSMP as a "Greenway" in the vicinity of the Preserve. This designation indicates a vision for the roads to become boulevards with sidewalks, clearly defined crosswalks, signalization, trees, landscaping and bicycle lanes to connect urban areas of Miami-Dade County to the Preserve. In July 2005, the Miami-Dade County Historic Preservation Board designated R. Hardy Matheson Preserve as the Snapper Creek Archaeological Zone based on its archaeological significance.

Overview of Preserve Features

- The Preserve contains several rare and highly valuable ecosystems as well as unique natural land formations.
- The Preserve contains significant archaeological resources, including Native American habitations, middens, and potential burial sites.
- The Preserve also protects and provides habitat for many plants and animals, including several protected species and national champion trees.
- The Preserve provides recreational fishing and canoeing opportunities.

B. Site Location and Legal Description

The Preserve is located east of the historic Old Cutler Road at 11191 Snapper Creek Road in the southern extent of the City of Coral Gables in central Miami-Dade County. The Preserve location is depicted on **Map 1** – Nearby Public Lands Map, while an aerial photograph of the Preserve is included in **Map 2** – Aerial Photograph. As described by the Miami-Dade County Property Appraiser, the boundary of the Preserve is more specifically described as the 813.6 acres which comprise tax folio numbers:

- 03-5107-005-0010,
- 03-5107-001-0050,
- 03-5107-001-0020,
- 03-5107-001-0010, and
- 03-5118-001-0760.

The Preserve is located near other federal, state, or local parks, including:

- Biscayne National Park – 10 miles
- Bill Baggs Cape Florida State Park – 6.4 miles
- Matheson Hammock Park – adjacent
- Fairchild Tropical Botanic Garden – 0.25 mile
- Chapman Field Park – adjacent
- Deering Estate at Cutler – 2.3 miles
- Biscayne Bay Aquatic Preserve (BBAP) – adjacent

Submerged lands on the eastern portion of the Preserve are located within the BBAP. As such, these submerged lands are subject to the management requirements of the BBAP management plan.

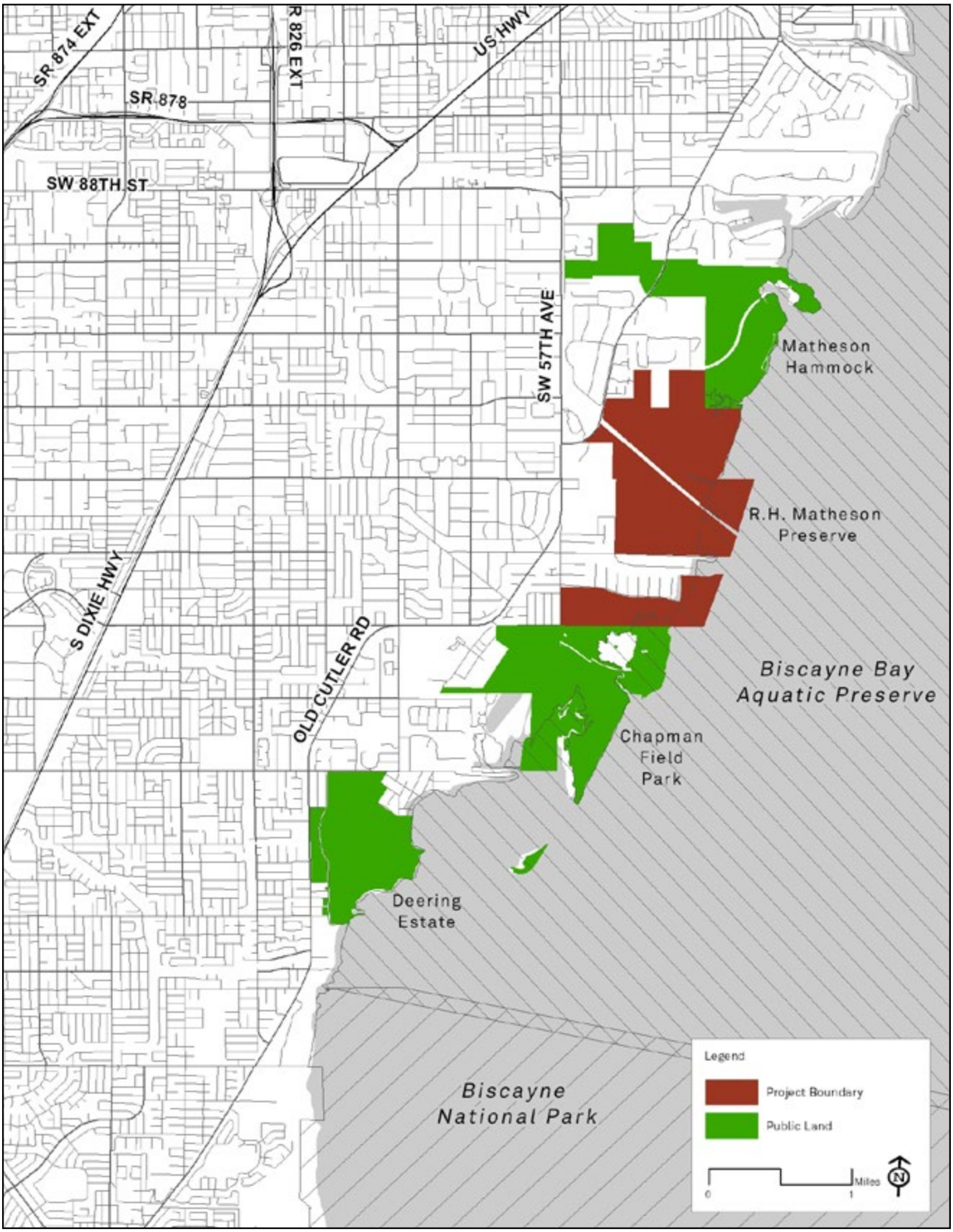
C. Site Use

Multiple-use site use is defined as a land management objective seeking to coordinate several environmental, recreational, economic, historic, cultural and/or social values in the same geographic area in a compatible and sustainable manner. The Preserve is considered a multiple-use site as it is managed for environmental protection, cultural/historical significance and passive recreational activities.

D. Degree of Title Interest and Land Acquisition

The majority of the Preserve was originally owned by Charles Deering and was part of the Deering Estate when purchased by the South Florida Development Corporation, a subsidiary of the International Telephone and Telegraph Corporation (ITT) in 1969 for 7.2 million dollars. The property was to be developed as a golf course

Map 1: Nearby Public Lands and Location Map



Map 2: Aerial Photograph

resort, but due to the biological and archaeological value of the parcel, many local environmental groups petitioned the state to include the Preserve on the Conservation and Recreational Lands (CARL) program acquisition list.

In 1982, the state of Florida purchased the 640-acre site from ITT for 6.1 million dollars and entered into a management agreement (#013-0003) with Miami-Dade County to be the managing agency for the Preserve (**Attachment A**). The Preserve became the first property in Miami-Dade County to be acquired under the CARL program. Properties purchased under the CARL land acquisition program must be managed under the following terms. All lands shall: 1) provide the greatest combination of benefits to the public and to the resources; and 2) provide for public outdoor recreation which is compatible with the conservation and protection of public lands.

In 1986, a 180-acre non-contiguous tract was added to the ITT-Snapper Creek Preserve. This parcel was purchased from the Gables-by-the-Sea development using money from the state's Environmentally Endangered Lands Fund. The Addition is located east of SW 57th Avenue, south of Bella Vista Avenue, and adjacent to Chapman Field Park. This property includes remnant salt marsh, mangrove forest and submerged land in the BBAP.

In 1993, the 793-acre ITT-Snapper Creek Preserve was renamed R. Hardy Matheson Preserve by the Miami-Dade County Board of County Commissioners.

In 2001, a 20.45-acre parcel was acquired adjacent to the northern boundary of the Preserve, by the Miami-Dade County Environmentally Endangered Lands (EEL) Program as an addition to the R. Hardy Matheson Preserve. This parcel, known as the North Addition, was comprised of mangrove forest and dredged canal. This acquisition brought the total acreage of the Preserve to its current size of 813.6 acres. This acquisition is managed as an EEL preserve consistent with a Miami-Dade County Board of County Commissioners (BCC) resolution (**Attachment B**).

In 2004, the Miami-Dade BCC approved the status of the Preserve as an EEL Preserve (**Attachment C**). As such, the EEL program provides funding for management of the natural systems of the Preserve.

E. Purpose and Scope of the Plan

The purpose of this management plan is to provide the Preserve's guiding policy document for a ten year period. The scope of the plan is to create a document that provides guidelines for future use and development, as well as management direction for the R. Hardy Matheson Preserve by identifying needs, actions, and costs necessary to balance resource protection and visitor management. The plan is the result of collaboration involving a project team, stakeholder technical team and advisory committee with review by the public.

The goals, objectives, and management actions contained in the plan are designed to: remove exotic plant and wildlife species; restore and maintain native plant species and communities; maintain the entire area at a very low level of exotic plant cover; restore habitat diversity; preserve cultural and historic resources; and provide adequate and appropriate public access and compatible outdoor recreation.

The plan consists of three interconnected components: Resource Management, Land Use and Implementation. The Resource Management Component provides a thorough account and assessment of the natural and cultural resources of the Preserve. Resource management needs and issues are identified, and measurable management objectives are established for each of the Preserve'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, and restoration of natural environments.

The Land Use Component provides the recreational resource allocation plan for the Preserve. This portion of the plan provides considerations for access, adjacent land uses, current public uses and proposed improvements to the physical space of the Preserve. These objectives locate user areas, the proposed types of facilities, and the volume of public use to be provided.

The Implementation Component consolidates the objectives and actions for the Preserve's management goals. Included in this portion of the plan are: 1) measures that will be used to evaluate implementation progress, 2) timeframes for completing activities and objectives, and 3) estimated costs to complete pertinent activities and objectives.

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MANAGEMENT PROGRAM OVERVIEW

MIAMI-DADE COUNTY R. HARDY MATHESON PRESERVE

A. Management Authority and Responsibility

The Board of Trustees of the State of Florida Internal Improvement Trust Fund (TIITF) and the State of Florida Department of Environmental Protection (FDEP), as agent for the Board of Trustees, entered into a management agreement for the Preserve with Miami-Dade County in 1984. The Miami-Dade County Park, Recreation, and Open Spaces Department (MDPROS) was designated as the lead agency and given authority to manage the property for public health and safety, for property protection, and for management as a park and recreation area.

As the lead managing agency through the lease with the State of Florida, MDPROS is obligated to: "coordinate and oversee all activities on the leased premises; initiate appropriate management programs; coordinate preparation and periodic revision of the Management Plan; coordinate and monitor all management activities undertaken by others; compile and submit reports as may be required; and provide permanent staff for management on a day-to-day basis" (**Attachment A**).

B. Preserve Management Goals

Goal 1. Restore and maintain habitat structure and function to maximize native biotic diversity and preserve natural resource values.

Goal 2. Manage the site's cultural resources in a manner consistent with historic preservation standards and regulations.

Goal 3. Provide authorized public access and increase public awareness while protecting natural areas and cultural resources from adverse human impacts.

C. Management Coordination

C.1 Interagency Coordination

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

The Preserve is wholly managed by MDPROS through a management agreement with the State of Florida. The initial purchase was facilitated through the efforts of the CARL program and Miami-Dade County. Additional wetlands in the North Addition have been purchased by the County's EEL program. The Florida Forest Service (FFS) and Miami-Dade Fire Rescue Department assist MDPROS in the development and implementation of prescribed fire and wildfire emergency plans. The FFS also provides authorization for prescribed burning when conducted. The Florida Fish and Wildlife Conservation Commission (FFWCC) assists MDPROS in the enforcement of state laws pertaining to wildlife within the Preserve. The Florida Department of State Division of Historical Resources (DHR) assists staff to document and protect cultural resources. Fairchild Tropical Botanic Garden, under contract with Miami-Dade County, conducts monitoring activities for rare plant species in the Preserve.

C.2 Planning

MDPROS through the Planning and Research Division and Natural Areas Management Division (NAM) will collaborate with the County's Department of Regulatory and Economic Resources (MDRER) and other citizen groups during the planning and development phases of the site. The NAM Division of MDPROS will work closely with other agencies to ensure that the natural areas of the Preserve are managed as one resource.

Planning of the archaeological and historic interpretation exhibits will be a joint effort between MDPROS, the County's Historic Preservation Division of MDRER and community volunteers.

C.3 Construction

The project managers will coordinate with agencies responsible for the protection of listed species, including the Florida Natural Areas Inventory (FNAI), the FDEP, FFWCC, MDRER, the U.S. Fish and Wildlife Service (USFWS), South Florida Water Management District (District) and the Army Corps of Engineers (Corps) when appropriate. The Preserve manager will coordinate with the County's archaeologist prior to the initiation of work to prevent the disturbance of any known potential archaeological sites.

Renovation and enhancement of site facilities will be conducted with appropriate community input.

Additional funding and partnerships to assist in site improvements will be solicited and welcomed from the community.

C.4 Annual Reporting

MDPROS will prepare an annual progress report, due every June 30, that evaluates implementation of the management plan. Any revisions to the management plan will first require review and approval by the Acquisition and Restoration Council, the entity that oversees management planning on state-owned conservation lands. Any proposed modification of the Management Plan and/ or undertaking any site alterations or physical improvements that are not addressed in the recipient's approved Management Plan requires prior ARC review and approval.

D. Public Participation

Miami-Dade County provided multiple opportunities for public input throughout the development of this management plan. These included a stakeholder committee comprised of County staff, an Advisory Group consisting of the stakeholder committee and public agencies representatives, and lastly, a Public Hearing, which was conducted on **December 12, 2012**. Each meeting or hearing was conducted with the purpose of providing an opportunity for public input.

A meeting was held on September 20, 2012 for stakeholders. The meeting's purpose was to finalize goals, objectives and actions for the plan at the MDPROS Headquarters located on 275 N.W. Second Street, Miami, Florida 33128. The stakeholder committee reviewed the goals for the plan, schedule for the plan development, and management plan format. In addition, the stakeholders prepared the draft management goals, objectives, and actions for the Preserve during this meeting.

Stakeholders in attendance included:

- Dallas Hazelton, MDPROS – NAM
- Joe Maguire, MDPROS – NAM
- Josh Mahoney, MDRER
- Jeff Ransom, MDRER
- Jay Exum, AECOM
- Randy Mejeur, AECOM
- Cynthia Guerra, Miami-Dade County – EEL
- Jay Bogaards, MDPROS
- Gary Milano, MDRER
- Danny Barcia – MDPROS
- Alissa Turtletaub – MDPROS
- Dan Boyar – South Florida Water Management District, Right of Way Division

An advisory group comprised of the following members and affiliations was identified for review of this plan.

- County Commissioner Xavier L. Suarez, District 7
- Dallas Hazelton, MDPROS – NAM *
- Joe Maguire, MDPROS – NAM
- Josh Mahoney, MDRER *
- Jeff Ransom, MDRER
- Randy Mejeur, AECOM *
- Cynthia Guerra, Miami-Dade County – EEL *
- Jay Bogaards, MDPROS
- Danny Barcia, MDPROS
- Andy McCall, MDPROS *
- Tom Morgan, MDPROS
- Pamela Sweeney, Biscayne Bay Aquatic Preserve
- Christopher Crichton, South Florida Water Management District
- Adjacent private land owner
- A representative from the South Dade Soil and Water Conservation District
- A representative from a local conservation group.

Technical representatives from the advisory committee involved in implementing management activities within the Preserve met on October 19, 2012 at the MDPROS Headquarters located on 275 N.W. Second Street, Miami, Florida 33128. Attendees at the October 19, 2012 meeting are demarcated with a "*" in the list above. During this meeting, the draft management plan was reviewed. A summary of the discussions and comments provided by the meeting attendees is provided in **Attachment D**.

A public hearing with the advisory committee was scheduled to be held on December 12, 2012. The management prospectus was available on November 12, 2012, which was 30 days prior to the public hearing as required by Florida Statutes Section 259.032 (9)(d). Notice to the public was achieved through an announcement of the public meeting date, time, and location at a BCC meeting, a newspaper announcement, and mailing of postcards to neighbors within ¼ mile of the Preserve. A copy of the BCC minutes, newspaper announcement, and a postcard are included in **Attachment D**. In addition, signs were posted at the site in advance of the meeting. A draft

copy of the R. Hardy Matheson Preserve Management Plan was completed on TBD, and was made available to of the public prior to the Public Hearing. The following comments and concerns were identified during the public meeting concerning the plan:

TBD

A summary of the Public Hearing is provided in **Attachment D**.

E. Description of Legislative or Executive Directives that Constrain the Use of Property

The management plan for the Preserve is in compliance with Recreation and Open Space Element, Objective 6 Policy 6C, which states that "at natural resource sites, park design programs shall incorporate resource management plans for resource maintenance, restoration, and enhancement, into the design plan for park development or redevelopment."

The management plan will further the CDMP directives found in **Pol**icy 7C of the Conservation, Aquifer Recharge and Drainage Element by promoting the restoration and maintenance of the natural, surface water flow regimes into and through wetland systems such as the Shark River Slough, Everglades National Park and the saline wetlands of southeastern Dade County – including the Preserve.

Tidally connecting the mangroves and enhancing the coastal wetlands in this property is consistent with Policy 1A of the Coastal Management Element, which designates the Preserve as a "Mangrove Protection Area."

The Plan will also assist in implementing the following adopted goals of the City of Coral Gables Comprehensive Plan, briefly described below.

- The management plan for the Preserve is in compliance with the Natural Resources Element, Policy 1.4.3. which states "Utilize wetlands, and submerged lands for purposes which are compatible with their natural values and functions."

- Policy 1.6.1 which states "…areas designated on the Future Land Use Map for Conservation will not be subject to development, with the only allowable exception for open space and recreational uses after the review and approval of the City Commission."

The City of Coral Gables annexed the Preserve in the 1970's. The current land use and zoning designations for the vast majority of the Preserve are Conservation and Preservation District, respectively. Both of these designations emphasize conservation and low impact recreational use. The exception is the North Addition, which was acquired by Miami-Dade County as part of the EEL Program to further protect undeveloped lands contiguous to the Preserve. Currently, the land use and zoning designations for this small addition have not been updated to Conservation and Preservation District. Nevertheless, the North Addition is protected as preservation land by Chapter 24-50 of the Code of Miami-Dade County. If possible, the County will work with the City to amend the land use and zoning through the City's periodic Comprehensive Plan Evaluation and Appraisal Report process.

Operations and improvements to the property are accomplished in accordance with Federal, State and local legislation including:

E.1. Federal Government

- 36Code of Federal Regulations (CFR), Department of Justice, Part 800, Protection of Historic Properties.
- 14CFR, Federal Aviation Administration (FAA), Department Of Transportation (DOT). § Aeronautics and Space, and FAA Order 9700.M.
- 16CFR 1531-1544 Endangered Species Act of 1973 and Migratory Bird Treaty Act. USFWS.
- 28CFR, Part 36, Americans with Disabilities Act (ADA).
- Section 404, Clean Water Act, Environmental Protection Agency (EPA).
- Marine Mammal Protection Act of 1972, National Oceanic & Atmospheric Administration, Office of Protected Species, National Marine Fisheries Service.

E.2. State of Florida

- Florida Statutes (FS) 253.03. Public Lands and Property, State Lands and Rule 9K-4.013 Preservation 2000 Florida Administrative Code (FAC) Department of Community Affairs.; Rules 9K-5.008; and 9K-5.015, Areas of Critical Concern, Florida Communities Trust;

Rules 9K-7.011 and 9K- 7.013 Florida Forever Program, Florida Communities Trust.

- FS 258.397. Public Lands and Property, State Parks and Preserves; and 18-21 FAC, Sovereignty Submerged Lands Management. Internal Improvements Trust Fund, South Florida Water Management District, FDEP.
- FS 267.061(2) and 872.05. Public Lands and Property, Historical Resources; Crimes. Offenses Concerning Dead Bodies and Graves, Unmarked Burials; and Rules 1A-32, and 1A-40, and 1A-44 Florida Administrative Code. Department of State, Division of Historical Resources.
- FS 311, 373.414, and 403.802, -.811, -.9321-.9333 and 62-312 FAC, Natural Resources, Water Resources; Public Health, Environmental Control. FDEP. (Florida Environmental Reorganization Act of 1975, and the Warren S. Henderson Wetlands Protection Act of 1984).
- FS 386. Public Health, Conditions Affecting. Indoor Air: Tobacco Smoke. Florida Department of Health; and Chapter 64D-1, 64E-25 FAC Department of Health.
- FS 590. Agriculture, Horticulture and Animal Industry, Forest Protection. Division of Forestry.
- Rule 18-4 FAC, Land Management Advisory Committee. Chapter 68-27.002, -.003 FAC and Article IV, Section 9, Florida Constitution. Wildlife Rules and Chapter 68A, 62-11 FAC and FS 379, Fish and Wildlife Conservation Commission.
- Chapter 62-321; -330; -340; -343; -344 FAC Environmental Protection. FDEP.

E.3. Miami-Dade County, Code of Ordinances (Board of County Commissioners)

- Resolution 5911-53, Chapter 2, Administration; Article X Park & Recreation Department; Section 2-86 Functions, Powers and Duties; and Chapter 23A Planning Generally Section 23A-1 Comprehensive Development Master Plan (CD MP), III. ENVIRONMENTAL PROTECTION.
- Chapter 7 Boats, Docks and Waterways; Article I In General; Section 7-5 Biscayne Bay Aquatic Park and Conservation Area and Article II Motorboats; Sections 7-24 Declaration of legislative intent and 7-27 Power and Authority of County Manager.
- Chapters 8C Building Security Measures and 19 Responsible Property Owner.
- Chapter 14 Fire Prevention; Article I In General; Sections 14-1, 14-2, 14-3, 14-21, 14-27, Setting fires without permit prohibited; Duties and responsibilities of occupants of land; Setting fires in forest protection district; Procedure to lawfully burn land and Sections 14-44 and 14-58 Uniform Fire Safety Standards (pursuant to Chapter 633, Section 633.15 FS).
- Chapter 16A Historic Preservation Ordinance; Sections 16A-13, 16A-13.1, 16A-14 Maintenance of designated properties and Demolition by Neglect Prohibited.
- Chapter 21 Offenses and Miscellaneous Provisions; ARTICLE IX WELLS (OPEN IRRIGATION HOLES); Sections 21-27.2. Selling, serving, vending in public rights-of-way near public parks; Section 21-28.1 Open-air concerts, musical broadcasts, etc.; Section 21-30 Offenses against public and private property; Section 21-118 Thefts of plants and fruits and trespass; Section 21-276 Burglar alarms
- Chapter 24 Environmental Protection; Article IV, Division 1. Work in Canal Rights-of-Way, Tidal Waters, Submerged Bay-Bottom Lands, and Wetlands; Dewatering; Construction of Drainage Systems; Section 24-48 Permits; Work standards; Compliance (Coastal Wetlands) and Chapter 33D BISCAYNE BAY MANAGEMENT.
- Chapter 24 Environmental Protection; ARTICLE IV, Division 2. TREE PRESERVATION AND PROTECTION; Section 24-49 Permits for tree removal and relocation (NFC) pursuant to Resolution No. R-1764-84 and Chapters 11D Diseased Palm Trees and 18A Miami-Dade County Landscape Ordinance.
- Chapter 24 Environmental Protection; Article IV, Division 3. ENVIRONMENTALLY ENDANGERED LANDS PROGRAM (EEL)
- Chapter 25B PARKS AND RECREATION GENERALLY; Article III Safe Neighborhood Parks Ordinance; and
- Chapter 26 PARK AND RECREATION DEPARTMENT RULES AND REGULATIONS ; Article I Rules and II Programming Partners Ordinance.
- Chapter 26A SANITARY NUISANCE ; Section 26A-2.1 Mosquito Control Division and Chapter 32 Water and Sewer and Chapter 33 Zoning;

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RESOURCE MANAGEMENT INTRODUCTION

MIAMI-DADE COUNTY R. HARDY MATHESON PRESERVE

A. Introduction

In accordance with Chapter 258, FS, MDPROS has implemented resource management programs for managing representative examples of natural resources of statewide significance under its administration. This component describes the natural resources of the Preserve and identifies the procedures that will be used to manage them. The management measures expressed in the plan are consistent with the overall mission for ecosystem management by the County.

Resource management addresses the management of both natural and cultural resources. Natural resource management focuses on restoring and maintaining natural resources such as vegetation communities and wildlife species along with the natural processes that shaped the structure, function and species composition of the systems and targeted species. Single species management for imperiled species is suitable when the maintenance, recovery or restoration of a species or population is problematical due to limits 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. Management of cultural resources generally includes identification and management of sites and objects representative of cultural periods and significant historic events/people within Florida's history.

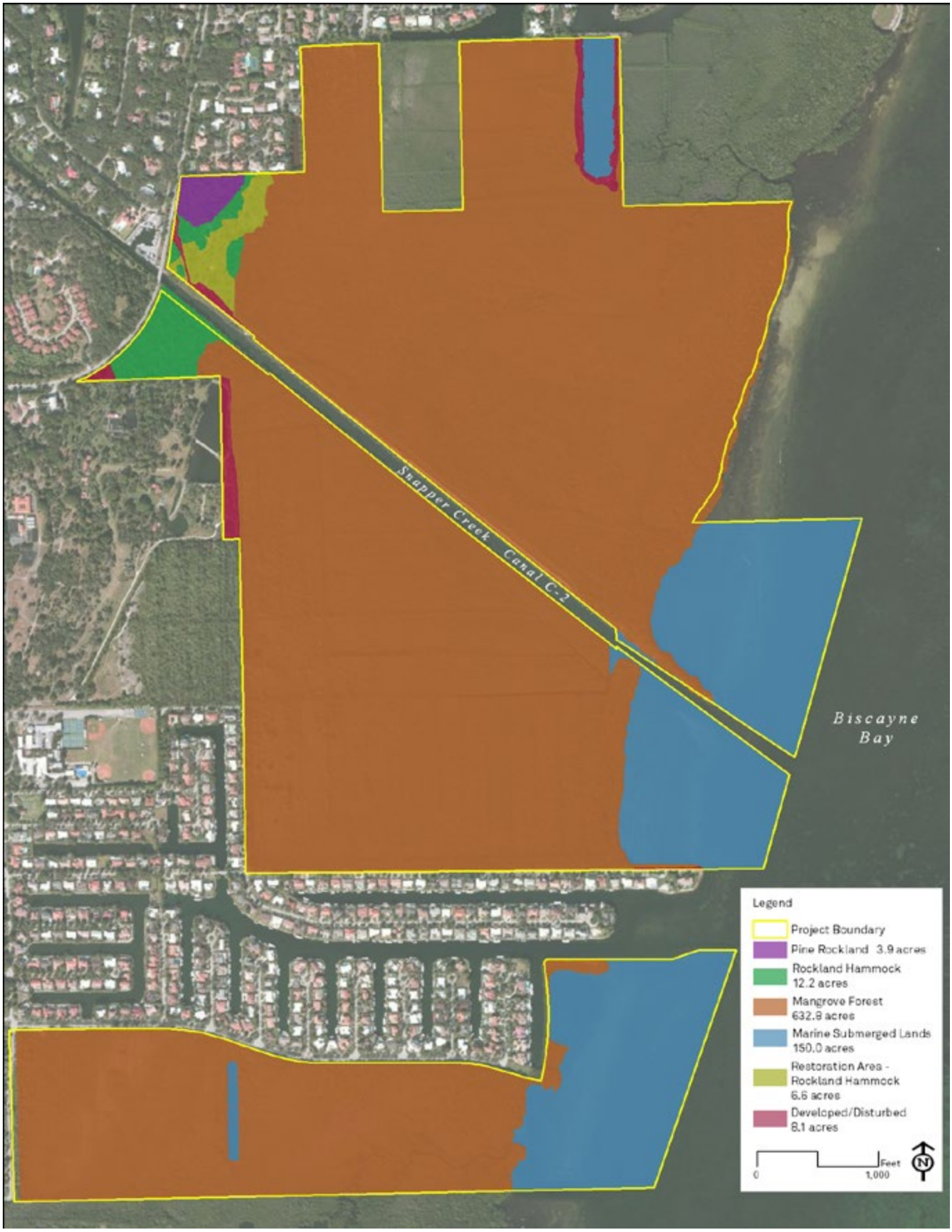
Because the Preserve is a component of a larger ecosystems, proper management can be affected by conditions and events that occur beyond the Preserve's boundaries. Ecosystem management is implemented through a resource management evaluation program that assesses resource conditions, evaluates management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

The entire Preserve is divided into management zones corresponding to vegetation types, and land uses in the Preserve are used for reference in applying management activities (see **Map 3** – Plant Communities Map). The shape and size of each zone may be based on natural community type, burn zone, and the location of existing roads and natural fire breaks.

Table 1: R. Hardy Matheson Preserve Management Zones

Management Zone	Acreage	Managed with Prescribed Fire
1: Developed/Disturbed Area	8.1	No
2: Pine Rockland	3.9	Yes
3: Rockland Hammock	12.2	No
4: Mangrove Forest	632.8	No
5: Marine Submerged Lands	150.0	No
6: Restoration Area	6.6	No

Map 3: Plant Communities



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RESOURCE DESCRIPTION AND ASSESSMENT

MIAMI-DADE COUNTY R. HARDY MATHESON PRESERVE

A. Natural Resources

A.1 Introduction

R. Hardy Matheson Preserve is located in Miami-Dade County adjacent to several large, preserved wetland communities. The Preserve offers unique opportunities for open space preservation, environmental and cultural education, and outdoor recreation. Located in a densely urbanized area, it provides unique outdoor recreation in close proximity to where people live. It serves an integral link in the continuum of greenspace along the BBAP and provides access to waters of the BBAP for fishing and wildlife viewing.

The Preserve contains 12 acres of rockland hammock as well as approximately seven acres of disturbed lands being restored to rockland hammock. Approximately four acres of the Preserve contain the northernmost coastal pine rockland in public ownership in the United States and one of the few northern pine rocklands remaining in Miami-Dade County. Mangroves, which occupy 633 acres of the Preserve, are integral to the BBAP ecosystem. A dredged lake in the North Addition provides a unique, less saline habitat that is occupied by American crocodiles.

The property includes the historical channel for Snapper Creek, which was drained in the early 1900's and replaced by the Snapper Creek Canal. The canal, under the jurisdiction of the District, bisects the property. The canal is frequented by West Indian manatees, American crocodiles, and bottlenose dolphins. Residents also use the canal to access Biscayne Bay.

A.2 Topography

The Preserve lies along the eastern edge of the Miami Rock Ridge, a limestone ridge that formed as a submerged sand barrier 130,000 years ago during the Pleistocene Epoch. The general slope of the Preserve increases gently from sea level at the Biscayne Bay edge to the rock ridge at the west end of the Preserve, although unique limestone bluffs occur on a portion of the Preserve that drop approximately 10 feet from rockland hammock into mangroves. The high point of the site stands at approximately 15 feet above sea level.

Ferns in Sinkhole

A.3 Unique Resources

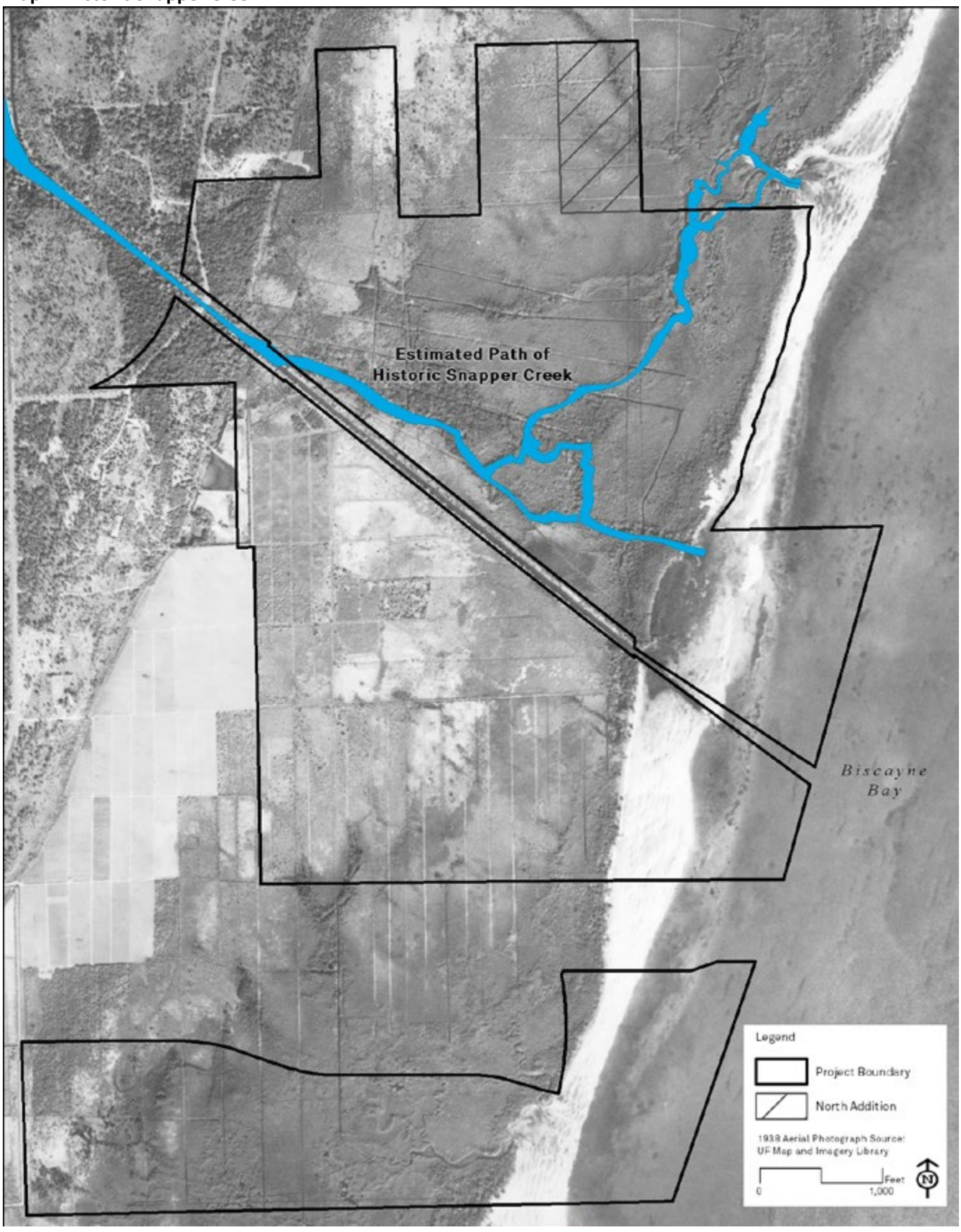
The limestone bluffs overlooking the mangroves are unique geological features on the site. These bluffs appear to be originally noted on the 1874 surveyor's notes as a precipice (**Attachment F**). Near the limestone ridge that traverses the rockland hammock, portions of the historical conveyance of Snapper Creek can still be found. Sinkholes and caves, remnants of the old creek, hold pools of crystal clear water fed by seepage that likely occurred within the historical conveyance (estimated in **Map 4** – Historical Snapper Creek Channel) and may have represented spring boils or other features of the Creek prior to the channelization activities associated with the canal. These rock formations are highly unique natural features of the Preserve and are considered an outstanding example of limestone bluffs and caves in Miami-Dade County. Each formation contains unique micro-ecosystems with a variety of plant and wildlife.

1847 Surveyor Log

A.4 Geology

The Miami Rock Ridge is a continuous limestone outcropping extending through the eastern portion

Map 4: Historic Snapper Creek



of south Florida, including portions of the Everglades ecosystem. The ridge was formed by historical variations in sea level, compressing layers of calcium carbonate, sand and shells. This geological feature served as a feature that directed waters flowing through the center of the State of Florida into the Everglades. Occasional creeks and transverse glades punctured the Ridge to discharge water into Biscayne Bay. The historical extent of this ridge ranges from northern Miami-Dade County southward to the upper Florida Keys, and it extends southwest into Everglades National Park and Long Pine Key.

Rainwater has subjected the exposed Miami rock ridge to thousands of years of dissolution, resulting in solution holes and underground caverns and streams. Historically, these holes contained free standing water and sediment that maintained a humid environment and promoted the growth of ferns and epiphytes as well as tropical hardwood hammock trees. Because the water table level has dropped due to regional channelization activities, the composition and diversity of the solution hole plant community has been altered.

A.5 Soils

The site consists of Terra Ceia muck, Pennsuco marl, Opalocka-rock outcrop complex soil and soil that was removed to create the canal (**Map 5** - Soils). The Terra Ceia muck is nearly level, poorly drained soil consisting of deep or very deep muck. Pennsuco marl is nearly level, poorly drained soil consisting of marl that is deep or very deep limestone. Both Terra Ceia muck and Pennsuco marl soils are typically found in tidal mangrove or saltwater swamps and marshes that are subject to tidal flooding. Slopes are smooth and concave and are less than 1 percent. The Opalocka-rock outcrop complex typically has a brown sand or gravelly surface layer and hard, porous limestone bedrock about 6 inches thick. Individual areas range from 5 to 10 acres and slopes are smooth and range from 0 to 2 percent. Opalocka rock outcrop complex soil is typically underlying pine rocklands and rockland hammocks.

A.6 Minerals

There are no mineral resources of commercial value known at this property.

A.7 Water Resources

All waters of the State of Florida fall into one of five surface water classifications with specific criteria applicable to each class of water (62-302.400 F.A.C.). Approximately 150 acres of the Preserve consist of submerged lands under the waters of Biscayne Bay, which has a Class 3 State of Florida surface water classification (general recreation and fishing). In addition to its surface water classification, the section of Biscayne Bay adjacent to the BBAP has been designated by FDEP as an Outstanding Florida Water (62-302.700 F.A.C.). The submerged lands of the Preserve are in an Aquatic Preserve.

Views of Biscayne Bay

Snapper Creek Canal, which bisects the Preserve, is the dredged remnant of the original Snapper Creek (see **Map 9** for the original route through the Preserve). The canal was dredged in 1912, and was one of the first such canals constructed in south Florida. Zigzagging over 16 miles inland, the canal is fed by dozens of smaller drainage canals and is a vital component to the region's stormwater system. Portions of the original course of Snapper Creek still remain within the Preserve.

Around the same time as the Snapper Creek Canal dredging, numerous mosquito control ditches were dug throughout the property, the remnants of which are still visible in aerial photography today as small creeks and dense mangrove overgrowth.

Snapper Creek Canal

Map 5: Soils


10
31
99
22
31
22
32
99
Snapper Creek Canal C-2
31
99
32
99
Biscayne Bay
15
99
31
99
32
Legend
Project Boundary
Soils
Symbol/ Description/Hydric Rank
10 / Udorthents, Limestone Substratum-Urban Land Complex / No
15 / Urban Land / Unranked
22 / Opalocka Sand-Rock Outcrop Complex / No
31 / Pennsuco Marl, Tidal / Yes
32 / Terra Ceia Muck, Tidal / Yes
99 / Water / Unranked
Source: USDA/NRCS/FGDL 2010
0
1,000
Feet
N

A.8 Natural Communities

This section of the management plan describes and assesses each of the natural communities found in the park. It also describes the desired future condition (DFC) of each natural community. 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.

Natural community designations employed in this plan generally follow the designations developed by the FNAI, while the developed/disturbed land use designates areas on the site that have undergone historical disturbances. The Preserve contains five biotic communities that include pine rockland, rockland hammock, rockland hammock restoration area, mangrove forest, and marine submerged lands, and one developed land use (see **Map 3** – Plant Communities).

The Preserve supports a diversity of plant and wildlife species. The common and scientific names of plant and wildlife species referenced in the text of this management plan are identified in **Attachment G**. The Institute for Regional Conservation (IRC) maintains lists of plant taxa documented for conservation areas in south Florida, including the Preserve, that are available at: *http://regionalconservation.org/ircs/database/plants/ByConsArea.asp?SiteID=855&SN=R. Hardy Matheson Preserve.* As of October 9, 2012, the IRC had documented 336 plant taxa occurring within the Preserve (**Attachment H**). The following provides descriptions of the biotic communities, species using the Preserve, and DFC of each natural community and the associated actions required to bring the community to its DFC.

When the Preserve's natural communities have reached their DFC, they are considered to be in a state of maintenance and share certain management requirements and basic characteristics. These include the maintenance control of non-native plants and animals, maintenance of natural hydrological functions (including historic water quality and water flows), maintenance of proper vegetative structure that represents the natural diversity of the community, maintenance of healthy populations of plant and wildlife species (including those that are imperiled or endemic), and the upkeep of intact ecotones between natural communities among the landscape.

Pine Rockland

Description and assessment:
The northwest section of the Preserve contains approximately four acres of pine rockland. The site contains a diversity of age-classes of South Florida slash pine, with many young pines and several remaining older trees. The understory is a mosaic of saw palmetto and cabbage palm mixed with open areas of native grasses and other herbaceous plant species. Areas of exposed limestone substrate in the pine rockland support a wide diversity of grasses and other herbaceous species, including 11 plant taxa endemic to Florida. Of these Florida endemic species, eight are found only in pine rocklands of south Florida. The pine rockland in the Preserve is a high-quality representative of this community type.

Pine Rockland

The pine rocklands on the Preserve occur on relatively flat, moderately-to well-drained terrain. Because limestone bedrock is at or very near the surface, soils are generally small accumulations of sand, marl, and organic material in depressions and crevices in the rock surface. Drainage varies according to the porosity of the limestone substrate, but it is generally rapid. Where soil is present, it is a fine reddish-brown sandy loam, slightly acidic with less than 10 percent organic matter. The soils and rooting medium found in solution holes may contain 30 to 50 percent organic matter.

Desired Future Condition:
Pine rocklands on the Preserve will consist of a single canopy species open forest on limestone outcrops with and a diverse understory of shrubs and herbs. The pine rockland will be burned every 3 to 7 years, which will keep the understory relatively open. Areas that exhibit understory species such as live oak will be minimized through mechanical means or prescribed fire. The pine rocklands will exhibit exotic species coverage at or below the maintenance standard of 5% areal cover.

General Management Measures:
Management measures for pine rockland include exotic species control, prescribed fire, and rare species monitoring and maintenance. Staff will continue to monitor for exotic species populations and apply herbicide or remove the species mechanically as needed. Prescribed fire is a desired management technique, although surrounding land uses create constraints for the application of fire. The county will coordinate with the FFS to define burn prescriptions and engage the FFS to burn the pine rockland when conditions are warranted and staff and funding are available. Coordination with adjacent landowners about the benefits of fire and timing of prescribed fire implementation will be conducted prior to prescribed fires. Pine rockland is home to a number of rare plant species, including some species that have been enhanced through supplemental plantings to increase populations. Monitoring of these plant populations will continue and additional supplemental plantings will be evaluated over time.

Rockland Hammock

Description and assessment: The majority of the rockland hammock community in the Preserve lies south of the Snapper Creek Canal and covers approximately 10 acres, although rockland hammock also occurs on the boundary of the pine rockland and mangroves north of the canal. Native canopy consists primarily of tropical tree species such as poisonwood, gumbo limbo, red bay, strangler fig, West Indian cherry, mastic, and black ironwood. The understory includes spicewood, marlberry, Simpson's stopper, white stopper, Spanish stopper, and redberry stopper. Several rare plant species, including slender spleenwort, bird's nest fern, Florida tree fern, holly fern, and filmy fern occur within the hammock areas on the Preserve. The rockland hammock vegetation continues down the slope of the rock ridge to the edge of the white mangrove forest. The United States Champion Jamaica Dogwood and many other West Indian species are located in the hammock.

Rockland Hammock

Rockland hammock occurs on a thin layer of highly organic soil covering limestone on high ground that 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. Throughout the Miami Rock Ridge, rockland hammock formed along the edges of transverse glades or around upwellings of freshwater at solution holes where high moisture levels limited the penetration or occurrence of fires into the interior of dense hammocks. Rockland hammock can be distinguished from pine rockland in having a closed, hardwood canopy rather than an open pine canopy.

Historically rockland hammocks in South Florida evolved with fire in the landscape, though fire most often extinguished near the edges when it encountered the moist microclimate and litter layer of the hammock. However, rockland hammocks are susceptible to damage from fire during extreme drought or when the water table is lowered. In these cases fire can cause tree mortality and consume the organic soil layer.

Due to road, bridge, and canal construction, the north side of the Snapper Creek Canal contains approximately six acres of disturbed upland, primarily located in the southwest corner of the parcel. The disturbed area consists of native and exotic grass and herbaceous species surrounded by taller exotic plants, such as Brazilian pepper. The disturbed parcel also contains isolated remnants of rockland hammock, with plant species that are very similar to those which occur on the south side of the canal, although more epiphytic bromeliads and orchids occur here due to increased light availability. More than 1,000 rockland hammock trees have been planted within this disturbed area over the last several years as part of the restoration process for this area.

Desired Future Condition: Rockland hammock within the Preserve will display a rich tropical hardwood forest on upland sites in areas where limestone is very near the surface and often exposed. Fire will be excluded to maintain the hardwood canopy and shrub diversity and cover. Rockland hammock will exhibit exotic species coverage at or below the maintenance standard of 5% areal cover.

General management measures: Management measures for rockland hammock consist of exotic species control, fire prevention, and restoration. Non-native vines, especially sewer vine and air potato, will continue to be targeted for removal as part of exotic species control efforts. Other exotic species listed as

Category 1 or 2 species by FLEPPC will be treated when encountered on the site. Prescribed fire will be excluded from rockland hammock south of Snapper Creek Canal. North of the canal, temporary firebreaks will be used to limit fire encroachment into rockland hammock areas, although fire may be allowed to occasionally burn into the margins of the rockland hammock ecotone. Canopy and understory plantings will continue to be installed as funding is available within the six acres of rockland hammock targeted for restoration. These plantings will be coupled with exotic species removal to restore the structure of the rockland hammock.

Mangrove Swamp

Description and assessment: On the eastern side of the rockland hammock on both sides of the Snapper Creek Canal and on the 1986 addition, the limestone ridge abruptly drops and the mangrove community begins. Prior to Hurricane Andrew, buttonwood and white mangroves mixed with golden leather fern, mangrove mallow and mangrove rubber vine dominated the drier ground; while white and red mangroves dominated the more frequently inundated areas. The white mangroves, which occupied an extensive area of the Preserve, created a basin mangrove forest that was considered one of the largest in South Florida. In the years since Hurricane Andrew, the mangroves have returned to their historic size. At the edge of Biscayne Bay, red and black mangroves thrived. Mangrove mallow, known to exist in only one other locality in Florida, grows in the Preserve's white mangrove forest. Areas adjacent to Snapper Creek Canal were graded to ground elevations consistent with the adjacent mangrove forests following the removal of fill material and subsequently planted with mangroves. The County has coordinated with landowners living adjacent to the southern portion of the Preserve to facilitate trimming of mangroves in a small area (**Map 7** – Mangrove Trimming Zone) to maintain views of the Bay.

Mangrove swamps typically occur in flat coastal areas along saline or brackish portions of rivers, the edges of low-energy estuaries, and the seaward fringes of salt marshes and rockland hammocks. Soils are generally anaerobic and are saturated with brackish water at all times, becoming inundated during high tides. Mangrove swamp occurs on a wide variety of soils, ranging from sands and mud to solid limestone rock. The dense root mats of the white mangrove help to trap sediments and organic litter and recycle nutrients both from upland areas and from tidal import. This is an effective means of stabilizing land in coastal environments. The root structures also provide substrate for the attachment of, and shelter for, numerous marine and estuarine organisms. In fact, mangrove swamps are generally among the most productive forests in the world.

In addition to providing habitat for many rare species, mangrove swamps function as nursery grounds for many of Florida's commercially and recreationally important fish and shellfish, shrimp, several species of grouper, and snapper. Mangrove swamps and isolated mangrove islands also provide important roosting and nesting areas for wading birds and shorebirds.

Mangroves

Desired Future Condition: Dense stands of red and black mangroves will dominate wetter portions of the mangrove areas of the Preserve, while buttonwood and white mangrove will continue to characterize the drier margins of the mangrove forests. Water levels will continue to be driven by tidal flow from Biscayne Bay with adequate exchange being maintained through culverts along Snapper Creek Canal. Mangrove forests will exhibit exotic species coverage at or below the maintenance standard of 5% areal cover. The mangroves in the southern portion of the Preserve between adjacent landowners and Biscayne Bay will be trimmed to maintain views of the Bay.

General management measures: Management measures for mangroves consist of restoration activities, exotic species control, mangrove trimming, and water circulation maintenance. Restoration activities consisting of plantings, exotic species removal, and grading, as needed, will continue along the margins of Snapper Creek Canal and in the ecotone between the rockland hammock and existing mangrove forests north of the canal. Exotic species control will be conducted on the margins of the mangroves subject to management funding. Maintenance of the culverts under the trail along Snapper Creek Canal will occur to promote tidal water exchange from Snapper Creek Canal into the mangroves.

Marine Submerged Lands

Description and assessment: The Preserve includes submerged lands under the waters of Biscayne Bay that

are part of the BBAP. These submerged lands consist of soft bottom, hard bottom, and seagrass zones that are tidally influenced with depths sufficient to allow seagrasses to thrive while limiting mangrove expansion. Soft bottom areas exhibit fine layers of silty mud overlaid on limestone rock that provide habitats for various crustaceans and mollusks and other marine organisms. Hard bottom areas consist of limestone with or without a covering of sand on that would provide a substrate for various species of algae to grow. Seagrasses, such as turtle grass, manatee grass, and shoal grass, grow in shallow waters of the bay and provide habitat for fish and other marine wildlife. Historically, the shallow submerged lands of the Bay have been subject to prop scars from boats and other water uses. However, the submerged lands within the Preserve are typically in very good condition outside of the primary channel for the Snapper Creek Canal.

Desired Future Condition: The submerged lands within the Preserve will exhibit a diversity of soft bottom, hard bottom, and seagrass conditions representative of the Bay. Seagrasses will form large colonies sufficient for fish and wildlife use. Water quality will be high and the area outside of the Snapper Creek Canal channel will be free of prop scars.

Seagrasses in Biscayne Bay

General management measures: Management measures for mangroves consist of maintaining consistency with the BBAP management plan. The BBAP management plan guides the uses and management of the waters and submerged lands of Biscayne Bay within the boundaries of BBAP. Management activities within the submerged lands of the Preserve will be consistent with the requirements of the BBAP management plan.

Developed/Disturbed Areas

Description and assessment: Developed/disturbed areas include the entry drive and trail along Snapper Creek Canal. These areas were filled with spoil from the excavation of the canal. The spoil material was recently removed and much of this area has been replanted with native vegetation. Disturbed areas west and south of Snapper Creek Canal are associated with the Montgomery Botanical Center. These areas include an access point and trails that occurred on the margins of the Preserve prior to acquisition. The remaining disturbed lands occur around the lake in the North Addition and were filled prior to acquisition by the County. Brazilian pepper and Australian pine occur on much of the filled areas by the lake.

Desired Future Condition: Native vegetation will highlight the trail along Snapper Creek Canal and the main entry into the Preserve. The trail surface will consist of materials sufficient for driving and hiking and for native vegetation growth on the margins. The lands adjacent to Montgomery Botanical Center will be maintained free of exotic, invasive species and will gradually exhibit native rockland hammock species. The North Addition uplands will exhibit exotic species coverage at or below the maintenance standard of 5% areal cover and will highlight mangroves and rockland hammock species that can grow on filled soils.

General management measures: Management measures for disturbed areas will consist of soil stabilization, exotic species control, coordination with Montgomery Botanical Center to reduce exotic plant encroachment, and native plantings. Soil stabilization may include native vegetation installation, riprap or other shoreline stabilization techniques, and/or pervious trail surfacing along Snapper Creek Canal. Exotic species control will be implemented to reduce invasive, exotic plant species throughout the disturbed areas as funding is available. The County will continue to coordinate management efforts with Montgomery Botanical Center to control exotic species that have the potential to invade into the Preserve. Native plantings will be maintained along the trail on Snapper Creek Canal and additional plantings will be evaluated for other disturbed areas following exotic species removal.

Snapper Creek Canal Berm

Table 2. Rare Plant Species Documented in the Preserve by FNAI and Fairchild Tropical Botanic Garden

Common Name	Rare Species Status			
	Global Rank	State Rank	Federal Status	State Listing
PLANTS				
Cardinal airplant	G5T4	SNR	N	LE
Cartagena prairie-clover	G5T1	S1	C	LE
Carter's small-flowered flax	G2T1	S1	C	LE
Christmas berry	G3	S3	N	L
five-petaled leaf-flower	G4T2	S2	N	N
Florida flatsedge	G3	S1	N	LE
Florida keys nutrush	G5	SNR	N	LE
Giant airplant	G5	S3	N	LE
golden leather fern	G5	S3	N	LT
pineland jacquemontia	G2	S2	N	LT
redberry stopper (tropical ironwood)	G4G5	S2S3	N	LE
rockland painted-leaf	G2	S2	N	LE
royal palm	G2G3	S2	N	LE
silver palm	G4	S3	N	LT
villose fennel	G4G5	S2	N	LE
West Indian cherry	G4	S2	N	LT
yellowspike orchid	G3G5	S3	N	LE

*Global and State ranks represent the conservation status ranks determined by NatureServe, which is the parent organization for state Natural Heritage Programs. These ranks range from critically imperiled (1) to demonstrably secure (5) and are referenced for the purposes of this plan at two geographic scales consisting of global (G) and state (S).

**N – Not listed; C – Candidate species; LE – listed as endangered; LT – listed as threatened

A.9 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 USFWS, FFWCC or the FDACS as endangered, threatened or of special concern. FNAI provided a standard data report for the Preserve documenting the records of imperiled species and other unique natural resources, which is included as **Attachment I**.

This report documented element occurrence records on the Preserve for at least 10 plant species and two plant communities (pine rockland and rockland hammock). Two additional element occurrence records were listed as data sensitive and may include additional species. Monitoring activities conducted within the Preserve by biologists from Fairchild Tropical Botanic Garden has documented 13 imperiled plant species, including seven species not identified on the FNAI report (**Attachment J**). This monitoring has included specific focus on Cartagena prairie-clover for more than 9 years (**Attachment K**).

Mangrove habitats are home to one two of the listed species (the golden leather fern and Christmas berry), while pine rocklands of the Preserve provide habitat for Christmas berry, Cartagena prairie-clover, pineland jacquemontia, villose fennel, rockland painted-leaf, five-petaled leaf-flower, and Carter's small-flowered flax. Redberry stopper, West Indian cherry, and silver palm were noted to occur within the rockland hammocks of the Preserve, while Florida keys nutrush and Florida flatsedge occur in openings in the rockland hammock and/or disturbed areas. The yellowspike orchid, cardinal airplant, and giant airplant are epiphytes that can grow on canopy trees in both the rockland hammock and margins of the mangrove swamp. Current management practices, including exotic species removal and targeted prescribed burns within pine rockland should continue to maintain suitable conditions for these species.

Table 2 contains a list of the rare species documented within the Preserve by FNAI FNAI and/or the Fairchild

Map 6: Cultural Resources

Tropical Botanic Garden and associated status as defined by various entities.

Additional imperiled species are known to occur on or near the Preserve. American crocodiles (State Status: LE; Federal Status: LE) have been observed on the site, but are not documented as occurring on the site within the FNAI report. Similarly, manatees (State Status: LE; Federal Status: LE), little blue herons (State Status: Species of Special Concern; Federal Status: N), and brown pelicans (State Status: Species of Special Concern; Federal Status: N) are known to occur in the vicinity, often in or near the waters of Biscayne Bay. The FNAI report notes these species as likely to occur in the vicinity of the Preserve. The mangrove mallow (State Status: LE; Federal Status: N) occurs in the extensive mangrove forests of the Preserve, while the slender spleenwort fern (State Status: LE; Federal Status: N) occurs within the limestone sinks of the rockland hammock.

Cartagena Prairie-Clover

A.10 Exotic Species

Since Hurricane Andrew in 1992, the biotic communities have been significantly impacted by exotic plant species. NAM staff of MDPROS has maintained a program of exotic removal in the heavily disturbed portion of the hammock on the south side of the Snapper Creek Canal. This hammock had been severely impacted by exotic vines such as sewer vine, Brazilian pepper, and air potato, which were preventing regeneration of native species.

Starting in 2007, NAM staff removed exotics on 5.5 acres of a historically (1950's) cleared area that was heavily infested with plants such as sewer vine, and started reforesting the area with native hammock species. In 2010-11, additional funding was secured for the removal of the remaining 1.5 acres of Brazilian pepper to the north that was heavily infested with sewer vine.

A.11 Resource Rights

The TIITF holds title to all mineral and timber rights.

B. Cultural and Historical Resources

The Preserve is a place of significant archaeological and historic value. The first archaeological assessment of the Preserve and surrounding areas was conducted in 1947 by Yale University archaeologist John Goggin. Returning in 1950, Goggin recorded the Snapper Creek Site (8DA9) with the Florida Master Site File and conducted a series of test excavations. He described the site and as having two feet of black dirt midden deposits associated with prehistoric habitation.

Goggin defined three Formative Era periods for south Florida, referred to as the Glades I, II, and III. Glades I is divided into Early and Late and Glades II and III are each divided into sub-periods A, B, and C. Each of the sub-periods is based on relative frequencies in decorative pottery. It is the variations in pottery that allow archaeologists to initially determine periods of occupation and establish trade networks between sites.

Based on the ceramic complex of the Snapper Creek site, Goggin was able to define an occupation period of 2000 years before present. The earliest dates were determined by the absence of decorated pottery in the earliest levels of the site, a common occurrence in Glades I Early (500 BC-AD 500) sites. Fort Drum Punctated and Fort Drum Incised, both Glades I Late (AD 500-AD 750) ceramics, mark the earliest decorated pottery found at the Snapper Creek site. Opa Locka Incised, a Glades IIA (AD 750-AD 900) type was also identified. The latest or oldest decorated ceramics collected from the uppermost strata of DA9 were Saint John's Check Stamped. This type appears during the Late Glades IIA and is found throughout southeastern Florida by the Glades IIB (AD900-AD 1100) and the Glades IIC (AD 1100-AD 1200).

According to Goggin, 90% of the material assemblage of the Snapper Creek site consisted of aboriginal pottery and faunal bone. Shell tools complete the final 10%. Faunal material collected at the site included turtle, deer, fish, alligator, and various small mammal species. Shells

represented the major form of tool assemblage. Columella hammers and adzes made from the *Strombus gigas* species were the most common. The material culture of the Snapper Creek site is consistent and typical with coastal hammock sites.

The Miami-Dade Historic Preservation Division completed a systematic archaeological survey in 2003 to locate and provide description of the potential archaeological resources within the project area. This survey resulted in the establishment of site boundaries that extend approximately 350 feet to the north and 250 feet to the south of the canal. Dates obtained from samples obtained in excavations done as part of this survey resulted in a conventional radiocarbon date of AD 900 + 400 years.

The Preserve also contains a historic structure associated with the Cold War era in South Florida. Commonly referred to the "bunker", the structure has all the features associated with a radio listening or interception station used to gather military intelligence. The bunker measures 25 x 21 feet, has a total of four manholes, three of which with ladders or stairs leading to a fully underground room. There are a series of unmarked electrical conduits and fuse boxes which may have powered radar and other intelligence gathering electronic equipment. The origin and use of the structure is currently being investigated by County Archaeologist and Cold War era historians and experts. The structure is a point of interest for many who visit the park. If the structure is associated with the Cold War, it may be eligible for listing in the National Register of Historic Places and will undoubtedly become a visitor attraction.

Bunker

The Preserve also includes an old rock road bed that was part of the original Old Cutler Road, otherwise known as Ingraham Highway (**Map 6** - Cultural Resources). A segment of the Ingraham Highway that connected the town of Cutler with Coconut Grove in the 1880s and early 1900s still exists on the Preserve. Initially, the road was a trail blazed by William Fuzzard, a Cutler pioneer, who settled the area in 1882.

Portion of Ingraham Highway

The Snapper Creek Archaeological Zone contains intact, well preserved archaeological resources with the potential to provide significant information about the region's prehistoric chronological sequences, cultural patterns, and environmental conditions. Site deposits have the potential to yield important information on the cultural prehistory of southeast Florida. Several areas, which have not been investigated, may contain data that will add to our knowledge of past human behavior. The preservation quality and significance of the site make it eligible for listing in the National Register of Historic Places.

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RESOURCE MANAGEMENT PROGRAM

MIAMI-DADE COUNTY R. HARDY MATHESON PRESERVE

A. Management Goals, Objectives and Actions

The management goals and objectives for the Preserve are in alignment with those of its managing agency, MDPROS. The agency's mission is:

"We create outstanding recreational, natural, and cultural experiences to enrich you and to enhance the quality of life for our community for this and future generations."

The MDPROS Vision Statement is:

"We will build a model park, recreation and open space system to create a healthy, livable, sustainable community and enhance the quality of life for residents and visitors."

The County prepared a County-wide Parks and Open Space System Master Plan (OSMP) in 2007. Guiding principles within the OSMP include:

Seamlessness – Every element of the county including neighborhoods, parks, natural area, streets, civic centers and commercial areas, should be connected without regard to jurisdiction.

Beauty – Every public space, including streets, parks, plazas and civic buildings, should be designed to be as aesthetically pleasing as possible, and to compliment the natural and cultural landscape.

Access – Every resident should be able to safely and comfortably walk, bicycle, drive and/or ride transit from their home to work, school, parks, shopping and community facilities.

Equity – Every resident should be able to enjoy the same quality of public facilities and services regardless of income, age, race, ability or geographic location.

Sustainability – Every action and improvement of the park System, including facilities, programs, operations and management, should contribute to the economic, social and environmental prosperity of the Country.

Multiple Benefits – Every single public action should generate multiple public benefits to maximize taxpayer dollars.

OSMP Goals

1. Every resident in the County can walk (within 5 minutes) to a neighborhood park or civic space for picnics, special events, informal play and socialization.
2. Every resident can safely and comfortably walk, bicycle, or take transit to community parks, recreation centers and special use/sports facilities.
3. A balance of active and passive recreation opportunities are available to all residents.
4. The MDPROS works with State and Federal Agencies, municipalities in the County and the School District to provide public access to schools, parks, and recreation.
5. Public access is provided to lakes, beaches, forests and other natural areas.
6. The County's significant cultural and historical sites are protected, and maintained.
7. Conservation areas and critical habitats are protected from over-use and negative impacts.
8. An interconnected network of shaded and safe bikeways and trails connect to parks, neighborhoods, schools, employment centers, civic buildings, and other community destinations.
9. Existing streets are transformed into tree-lined boulevards and parkways that define the County's urban form.
10. Transit is provided to parks and civic sites.
11. Public art, signage and cultural/historical exhibits are integrated into park and public realm infrastructure projects to "tell the County's story" and to create a sense of pride and place.
12. Park improvements are used to create a sense of place for neighborhood stabilization and/or redevelopment.
13. Parks are designed to reduce energy and water consumption, and to serve as models for sustainable development County-wide.
14. Parks are designed to be flexible in order to accommodate ever-changing recreation trends and demographics.
15. Residents of surrounding neighborhoods are engaged in the planning, design and stewardship of each park.

This 10-year management plan provides a basic statement of policy and future direction for the Preserve and is intended to provide a framework for annual management activities. Work plans that provide additional detail on specific activities identified to address goals and objectives of this plan will be prepared

annually or as needed to meet Preserve operation needs and provide flexibility for adaptive techniques to be incorporated into the management activities on the site. The following goals, objectives and activities identified in this management plan will provide a basis for the work plans developed to implement management of the Preserve. As work plans are implemented, it may become necessary to adjust priority schedules and cost estimates identified within this plan.

Goal 1

Restore and maintain habitat structure and function to maximize native biotic diversity and preserve natural resource values.

Objective 1.1: To control and /or extirpate populations of invasive plants and exotic nuisance animals.

Management Actions

1.1.1. Continue to survey pest plant infestations.
1.1.2. Continue to control invasive pest plants and exotic animals in natural areas.
1.1.3. Ensure that control measures are not deleterious to native species.
1.1.4. Coordinate with the Montgomery Botanical Gardens to limit exotic species invasion.

Objective 1.2: To restore natural area structure and function, native biotic diversity, and natural resource values.

Management Actions

1.2.1. Implement the Miami-Dade County Natural Areas Management Plan for habitats on the Preserve.
1.2.2. Create a restoration plan for the mangrove, salt marsh, tropical hardwood hammock, and pine rockland habitats. This plan should address at a minimum the following components::
   a. Re-establishing south Florida slash pine
   b. Identify opportunities to improve tidal exchanges into on-site wetlands
   c. Appropriate vegetative structure and composition

Objective 1.3: To maintain or restore the viability of rare and endemic species consistent with the preservation and restoration of the habitat.

Management Actions

1.3.1. Continue the long-term monitoring program for plants and animals of special concern.
1.3.2. Evaluate information gained through monitoring to modify and improve successful management actions.
1.3.3. Continue to track and monitor rare plant locations and implement land management activities in a manner that protects rare plants.
1.3.4. Reintroduce populations of extirpated species and augment existing populations of rare species where appropriate.
1.3.5. For federally listed species, use USFWS Recovery Plans as guides, if available.

Objective 1.4: Institute a fire management program under the direction of the Florida Forest Service including prescribed burns to restore and maintain fire dependent communities and their historic ecotones.

Management Actions

1.4.1. Develop and initiate a prescribed burn plan per the Miami-Dade County Natural Areas Management Plan.
1.4.2. Coordinate with the FFS and Miami-Dade Fire Rescue to ensure that wildfire response is sensitive to the perpetuation of pine rockland, rockland hammock, mangrove, and salt marsh habitats.
1.4.3. Continue dialogue with the local community to provide informational and educational materials on and notices of upcoming prescribed burns.

Goal 2

Manage the site's cultural resources in a manner consistent with historic preservation standards and regulations.

Objective 2.1: To protect and preserve cultural resources.

Management Actions

2.1.1. Conduct a systematic archaeological survey of the Preserve to identify and describe prehistoric and historic sites and features and prepare a historic and archaeological report that describes periods of significant human activity, historic resources and structures, and recommendations for interpretation and preservation.

2.1.2. Continue to monitor identified sites and locate areas of probable archaeological sensitivity.
2.1.3. Continue monitoring ground disturbing activities by notifying the County's Archaeologist and obtaining a Certificate to Dig from the Regulatory and Economic Resources Department, Office of Historic Preservation.
2.1.4. Close the listening station bunker to public access prior to the completion of the bike trail.

Goal 3

Provide authorized public access and increase public awareness while protecting natural areas and cultural resources from adverse human impacts.

Objective 3.1: Provide compatible public access to Biscayne Bay.

Management Actions
3.1.1. Provide pedestrian and vehicular access at appropriate locations.
3.1.2. Provide canoe and kayak opportunities.
3.1.3. Provide a blueway linkage to other coastal public sites such as the Deering Estate at Cutler, Chapman Field Park and Matheson Hammock Park.
3.1.4. Continue to allow permitted mangrove pruning that will provide adequate visual access to the residents of Mar Street and San Pedro Road.
3.1.5. Provide fishing platform(s) along the north berm of Snapper Creek Canal subject to regulatory approval and funding availability.

Objective 3.2: To provide an interpretative trail system designed for compatible non-destructive pedestrian and bicycle use.

Management Actions
3.2.1. Evaluate opportunities to create a nature trail through appropriate uplands.
3.2.2. Create an accessible trail along the Snapper Creek Canal.
3.2.3. Provide educational signage to introduce visitors to the natural and cultural/archaeological features of the north side of the Preserve.
3.2.4. Identify opportunities to establish native canopy to provide shade on the Snapper Creek Canal berm compatible with canal operations and maintenance requirements of the District.

Objective 3.3: To control public access and restrict uses incompatible with protection of resources.

Management Actions
3.2.1. Institute appropriate access control measures such as fences and gates, and monitor and repair as needed.
3.2.2. Control access to highly sensitive habitats on site.
3.2.3. Supervise public access to all sensitive areas.
3.2.4. Maintain signs to identify environmentally protected areas, designate areas for public access, and discourage inappropriate public use.
3.2.5. Enforce existing rules and regulations concerning the protection of natural resources.
3.2.6. Continue coordinating with Miami-Dade Police Department and MDPROS security to enforce regulations within natural areas.
3.2.7. Facilitate vehicular limited access connection to Snapper Creek Canal for County and District maintenance activities and emergency access.

B. Natural Resource Management

B.1 Exotic Species Management

Objective 1.1: To control and /or extirpate populations of invasive plants and exotic nuisance animals.

Exotic species management has been ongoing within the Preserve for many years, resulting in the site exhibiting exotic species populations below the maintenance level of 5% areal coverage. Continued management to address exotic species infestations that arise or treatment of persistent exotic species populations will continue to enhance the natural areas of the site. The rockland hammock restoration area will continue to be targeted for exotic species removal to allow the planted hammock canopy species to establish. Exotic species removal will occur in all natural areas of the site as necessary to meet the maintenance level target.

Exotic species treatments will be completed by NAM crews consistent with the guidelines of the Miami-Dade County Natural Areas Management Plan (**Attachment H**). Exotic removal and natural areas management crews will refer to current lists maintained by the Florida Exotic Pest Plant Council (FLEPPC) to determine the Category 1 and Category 2 species during restoration and site

management implementation. NAM crews will continue to be trained in the most current and best management practices associated with the eradication and control of invasive species.

Treatment techniques will vary depending upon the exotic species encountered. In areas with dense vegetation, individual invasive trees will be cut down and stumps will be treated with herbicide. Seedlings will be pulled and herbicide applied to standing trees in less dense areas. Treated standing trees will be left to rot in place to provide snags for roosting birds, as well as cover for smaller animals. Multiple follow-up treatments, especially for vines like sewer vine and air potato, will be conducted as necessary for several years to attempt to limit re-infestation.

Green Iguana

Exotic wildlife species have also been observed within the Preserve. Currently, green iguanas present the most significant feral animal issues for the Preserve. The MDPROS has worked with local Animal Control, the Humane Society, and independent agencies to develop and implement removal programs where appropriate.

B.2 Hydrological Management

Objective 1.2: To restore natural area structure and function, native biotic diversity, and natural resource values

The goal of hydrological management is to protect water dynamics within the Preserve, including water quality, quantity, and inundation periods. The historical Snapper Creek channel passed through mangrove and salt marsh habitats to provide freshwater flow into Biscayne Bay. Freshwater spring boils and sinkholes occurred in and near the channel, providing additional freshwater sources to the Creek. The construction of the Snapper Creek Canal in 1912 – 1913 irreparably altered the freshwater flow dynamics of the site. This canal lowered overall groundwater levels thereby decreasing or preventing flow from freshwater spring boils and the remaining portions of the historical Snapper Creek channel. The spoil from the construction was placed on the north side of the canal, which affected circulation of both freshwater and tidal flow into the adjacent mangroves.

The hydrology of the majority of the site primarily relies on flows from Snapper Creek Canal and tidal flows from Biscayne Bay. The spoil from the canal construction has mostly been removed except for an all-season trail along the maintenance berm. Five sets of culverts have been installed along the length of this berm to enhance tidal flow into the mangroves from the canal. Additional hydrological connections may be evaluated over time as funding is available and need is identified for additional connections.

The lake in the North Addition provides a unique, relatively static open water body within the Preserve. The North Addition lake was excavated a number of years ago to prepare for residential development, which never occurred. A berm on the north end separates the lake from canals that discharge into the Bay. However, water periodically discharges from the lake into a small creek at the south end of the lake. The berm along the north side of the lake occurs on private property and is eroding in places through subsurface flow. Shoreline stabilization will likely be required to maintain the separation between the lake and the adjacent canals

Lake in North Addition

Freshwater is still present within sinkholes and caves on the site, thereby providing unique humid microclimates that encourage fern growth. Rainwater and subsurface ground flow are the primary suppliers of water to these systems. Maintenance of the rockland hammock will continue to filter surface water draining into the sinkholes.

B.3 Imperiled Species Management

Objective 1.3: To maintain or restore the viability of rare and endemic species consistent with the preservation and restoration of the habitat.

MDPROS strives to maintain healthy populations of imperiled plant and animal species by implementing effective management of natural communities. Imperiled species management is done as part of a multi-species management approach that includes exotic species control, mechanical management simulating fire, and prescribed fire. Exotic species control in the pine rockland and rockland hammocks removes competing non-native vegetation from populations of imperiled species. Prescribed fire and/or mechanical management simulating fire maintains habitat structure for imperiled species in pine rocklands. Prescribed fire can also stimulate recruitment or growth of imperiled species in the pine rockland. Protection of the hydrology and water quality of the site maintains habitat for American crocodiles. Protection of the cave and sinkhole systems from pedestrian use will continue to protect fern species growing in these unique geological features, while protection of the mangrove forests from pedestrian use will protect the mangrove mallow population. Some species specific management activities, including the planting of Cartagena prairie-clover and mowing for Florida flatsedge, has been conducted to maintain populations. The county continues to implement ongoing monitoring of rare plant species within the pine rockland and rockland hammock.

Mapping and monitoring of listed species populations will be conducted where possible and appropriate. Interpretive trails will avoid areas known to encompass listed species to limit potential impacts.

B.4 Habitat Restoration

Objective 1.2: To restore natural area structure and function, native biotic diversity, and natural resource values.

Mangrove Restoration

Miami-Dade County has been active in implementing restoration projects within the Preserve. In 2005, the County removed approximately 300,000 cubic yards of excess soil from the site consisting of historical spoil from the dredging of Snapper Creek Canal. Approximately 2.5 acres of the area from which soil was removed was restored to mangrove habitat. The County has also planted more than 1,000 rockland hammock trees within the disturbed portions of the site as part of restoration processes for that area.

As noted in the goals for the site, a restoration plan for the entire Preserve will be created to guide restoration activities within all habitats within the site. At a minimum, this plan will identify the opportunities for re-establishing south Florida slash pine on the site, enhancing tidal exchanges within on-site wetlands, and enhancing the vegetative structure and composition for all habitats on the site. This plan will likely incorporate plans for additional maritime hammock restoration for several areas from which the excess fill was removed and/or where exotic vegetation has been removed. This maritime hammock restoration will include planting native salt-tolerant vegetation within an approximately 1.1 acre area located north of the canal on the eastern portion of the Preserve.

B.5 Soil and Erosion Management

Soil erosion issues within the Preserve primarily occur adjacent to the Snapper Creek Canal. A shoreline stabilization project was completed in 2012 to install riprap and other protective measures on the canal bank to limit erosion. Restoration activities for habitat enhancement and/or construction activities associated with trail development or fishing pier installation will be

done using Best Management Practices (BMPs) to limit erosion or soil disturbance. Soil disturbances on the site will also be monitored for potential impacts to cultural resources.

B.6 Forest Management

For all land management plans for parcels larger than 1,000 acres, the lead agency shall prepare the analysis, which shall contain a component or section prepared by a qualified professional forester which that assesses the feasibility of managing timber resources on the parcel for resource conservation and revenue generation purposes. Revenue can only generated if the lead management agency determines that the timber resource management is not in conflict with the primary management objectives of the parcel.

This assessment is not applicable to the Preserve since the park is smaller than 1,000 acres.

B.7 Water Quality

Biscayne Bay is an Outstanding Florida Water and, as such, is subject to some of the most stringent water quality and submerged lands regulations in the State. Miami-Dade County through MDRER conducts monthly surface water quality sampling for a variety of physiochemical parameters upstream and downstream of the water control structure in the Snapper Creek Canal. The health of Biscayne Bay continues to be good at least in part due to the rate of exchange and flushing of bay waters with oceanic waters.

The Preserve experiences little stormwater flow onto the property from adjacent properties other than that which flows onto the site from the Snapper Creek Canal as part of regular hydrological exchange. This limited stormwater flow is naturally treated by natural vegetation communities on the site and does not require additional facilities for detention or treatment. No stormwater facilities are proposed for the site.

Access Control at Entrance

C. Special Management Considerations

C.1 Access Control

Objective 3.1: Provide compatible public access to Biscayne Bay.

Objective 3.3: To control public access and restrict uses incompatible with protection of resources.

Access control for the Preserve focuses on providing appropriate access to Biscayne Bay and limiting access to sensitive resources through trail locations and closure to the general public. Pedestrian access to Biscayne Bay through the trail and/or water access is an important element of the plan. Vehicular access to Snapper Creek Canal and the Bay will be limited to County and/or District maintenance vehicles and/or emergency vehicles. The trail along the canal will be maintained to meet ADA standards. Trail locations within the natural systems north of the canal will be placed to highlight unique resources, but away from the most sensitive elements. Fencing around the exterior of the site will be used to direct pedestrians to specified access points. Portions of the Preserve, including the hammock south of the canal, will be closed to general public use and only available when accompanied by County staff.

C.2 Fire Management

Objective 1.2: To restore natural area structure and function, native biotic diversity, and natural resource values

Objective 1.4: Institute a fire management program under the direction of the Florida Forest Service including prescribed burns to restore and maintain fire dependent communities and their historic ecotones.

Fire benefits the pine rockland plant community by recycling nutrients in the form of ash, reducing competition from hard woods, and aiding seed germination by exposing the soil to sunlight. Animals

that live in the pine rocklands also benefit from fire because it maintains the overall health of their habitat. The primary management tool for implementing fires within the Preserve will be prescribed burns consistent with the Miami-Dade County Natural Areas Management Plan (**Attachment L**).

Prescribed fire operations in urban areas are very time and resource intensive due to surrounding land use constraints. A prescribed burning schedule will be developed in cooperation with the Florida Forest Service. Particular attention is given to smoke management and contingency planning, mop-up, and public education and notification. The Office of Safety, Miami-Dade County Risk Management, is involved in assessment and planning of prescribed fire needs, and all personnel are required to be adequately trained and equipped to participate in prescribed fire activities. Appropriate management of risk associated with fire management is vital to the future of prescribed fire.

The long-term viability of Miami-Dade County's and the Preserve's fire-dependent wildlands (including pine rocklands) depends upon internal and public support of fire management programs. Due to the proximity of the project site to residential neighborhoods, careful consideration will be given to the size of burn units and weather conditions at burn time. As part of the Preserve's educational efforts, information on the value of prescribed burning is incorporated into targeted programs for children and adults to increase the awareness of its benefits and the acceptance of cost, risk and inconvenience of prescribed fires compared to the devastation of wildfires.

Prescribed Fire

C.3 Mangrove Trimming

Objective 3.1: Provide compatible public access to Biscayne Bay.

Mangrove trimming has historically occurred in the southern portion of the Preserve shown on **Map 7** - Mangrove Trimming Zone to facilitate views of the Bay from adjacent residences. Mangrove trimmings are conducted consistent with FDEP and county regulations for the protection of mangroves. The county will continue to coordinate with landowners living adjacent to the preserve to facilitate these mangrove trimming activities.

C.4 Arthropod Control

The R. Hardy Matheson Preserve is considered an environmentally sensitive and biologically highly productive public land for the purposes of arthropod control. The adjacency of residential and commercial uses also affect arthropod control as mosquito control spraying affects insect and bird populations in the Preserve. An approved Arthropod Control plan has been developed for the Preserve (**Attachment M**).

C.5 Research Opportunities

Numerous environmental investigations are possible within the park's tropical rockland hammock and pine rockland, as well as the adjacent marine and benthic communities. More opportunities lie in the known and unknown archaeological sites located in the Preserve. Any such projects must comply with established site research, County, State and Federal codes. Development and implementation of such research, and with study findings in turn, enhance the adaptive management process by incorporating better management practices into regular maintenance and management activities.

Map 7: Mangrove Trimming

Artifacts Found in the Preserve

D. Cultural and Historical Resource Management

Objective 2.1: To protect and preserve cultural resources on R. Hardy Matheson Preserve.

The Snapper Creek Archaeological Zone is subject to preservation and/or mitigation requirements as determined by the Miami-Dade County Office of Historic Preservation, if the archaeological zone is ever subjected to any ground disturbing activities. These would be concurrent with, or in addition to, cultural resource protection requirements currently imposed by the Florida Department of State, Division of Historical Resources. Archaeological monitoring by an approved professional archaeologist will be required during site development and restoration activities to protect existing and possible prehistoric and historic sites and features within the Preserve. Artifacts identified during past or future cultural resources surveys will be protected against vandals, collectors and site erosion. This includes maintenance of a soil cover over the middens within the former spoil deposition area on the north side of the Canal. Planned development and natural resource management activities will be designed and conducted to protect any known sites. Public interpretation of the most significant historic resources will be done in a manner that does not conflict with preservation of natural or historic resources. Archaeological monitoring will be conducted as needed by trained members of the Parks Department or the Miami-Dade County Historic Preservation Division.

All archaeological resources identified as a result of the survey or during future management activities will be documented and protected in compliance with Sections 267.061 (Section 2a and b) of the Florida Statues. The location of archaeological sites and features will be carefully documented, but will not be openly advertised so as not to encourage looting of artifacts. The County Archaeologist will be consulted prior to the implementation of the proposed management activities that may adversely affect the site's cultural resources so that BMPs can be employed to avoid and/or minimize impacts. Access to particularly sensitive areas, by both management personnel and the general public, will be restricted as necessary.

The Department of State, Division of Historical Resources (DHR) will review all archaeological surveys and oversee any activities affecting historic resources. The collection of artifacts or the disturbance of archaeological and historic sites located on the property will be prohibited unless prior authorization is obtained from the DHR. Due to the high probability of locating unmarked prehistoric graves within R. Hardy Matheson Preserve, Florida Statute Section 872.05 (Florida's Unmarked Human Burial Act) and Florida's Administrative Code Chapter 1A-44 (Procedures for Reporting and Determining Jurisdiction over Unmarked Human Burials) shall be applicable if such case as human remains are found.

Restoration of any structures that are determined to be architecturally or historically significant will be carried out under the guidance of the Miami-Dade County Historic Preservation Division and Florida's Department of State, Division of Historic Resources. Historically significant structures will be restored according to the standards established by the Secretary of the Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings.

E. 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. A land management review was conducted for the Preserve in 1998. The review team made the following determinations:

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

The land management review team report, including the MDPROS response to that report, is contained in A**ttachment N**.

At less than 1,000 total acres, R. Hardy Matheson Preserve does not meet the size threshold for the land management review (LMR) requirement.

F. Statement of Purpose

As defined in s. 253.034, the lands were acquired for the purpose of natural and historical preservation, education, and passive recreation.

G. Private Land Management Evaluation

Prior to state acquisition of the property, Fairchild Tropical Garden and the Montgomery Foundation had requested that the hammock and mangrove areas be deeded to them to be preserved and used for scientific and educational purposes. After the state bought the site, Fairchild Garden and the Montgomery Foundation applied to MDPROS requesting this use in exchange for management of the hammock. However, the management of the Preserve was determined to be best facilitated through the continued activities of the county. Thus, private land managers were not determined to be feasible for the Preserve.

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LAND USE COMPONENT

MIAMI-DADE COUNTY R. HARDY MATHESON PRESERVE

The general planning and design process begins with an analysis of the Preserve's natural and cultural resources and then proceeds through the creation of a conceptual land use plan that culminates in the design and construction of park facilities. Input to the plan is provided by professionals, including experts in environmental sciences, park operation and management and members of the public and environmental groups through their participation in public workshops. With this approach, MDPROS is able to ensure quality resource-based recreation throughout the County with a high level of sensitivity to the natural and cultural resources at each park.

This component includes a brief record of the external conditions and the recreational potential of the Preserve. Existing uses, facilities, special conditions and specific areas within the Preserve that will be given special protection are identified. Further, the land use component summarizes the current conceptual land use plan for the Preserve, including the existing or proposed activities that match the resource base of the Preserve. Any new facilities needed to support the proposed activities are described and located conceptually in general terms.

A. External Conditions

An assessment of the conditions that exist beyond the boundaries of the Preserve can identify any special development problems or opportunities that exist because of the Preserve'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.

Miami-Dade County's population is working class, predominantly young, and diverse culturally. More than sixty percent of residents reporting were identified as Hispanic or Latino, while one-fifth were black and one-fifth were non-Hispanic white. Furthermore, more than half of the population reporting were under the age of 40, and only one-fifth were over the age of 60. Nearly two-thirds of the population reporting were of working age (16 to 65) (U.S. Census Bureau 2009). The per capita personal income for Miami-Dade County was $22,957 in 2010, slightly lower than the statewide average of $26,551.

Out of Florida's 67 counties, Miami-Dade ranks first in total population and fourth in population density, respectively (BEBR 2010). More than 2.5 million people lived in the county in 2009, accounting for nearly 14 percent of the statewide population (U.S. Census Bureau 2010). Census information indicates that between 2000 and 2009, the population of Miami-Dade grew by approximately 11 percent (U.S. Census Bureau 2010). This rate is slower than the statewide average of 16 percent during the same period, but congruent with medium to high population projection estimates (BEBR 2010). If the county continues to grow at the current rate, the population will exceed three million by the year 2030 (BEBR 2010).

A.1 Existing Use of Adjacent Lands

The Preserve is surrounded to the north, west, and south by low to medium density single family residential development of approximately 1 du/gross acre. Immediately adjacent to the western boundary of the Preserve are the Montgomery Botanical Gardens and the Gulliver Academy pre-K through 8th grade center. The Matheson Hammock Park and Marina and the Fairchild Tropical Botanic Garden lie north of the Preserve.

A.2 Planned Use of Adjacent Lands

Nearly all of the land surrounding R. Hardy Matheson Preserve has been built-out at the maximum development potential according to the adopted zoning of the Village of Pinecrest and City of Coral Gables. No major changes to the use of adjacent lands are planned or anticipated. Scattered wetland inholdings still have some development potential, though constrained by their wetland jurisdictional status. These sites could still potentially be developed if the appropriate state and local permits were able to be secured.

B. Property Analysis

A thorough understanding of the Preserve's natural and recreational resources is required for effective planning. This section describes the recreational resource characteristics and existing uses of the property. Recreational resources are examined to identify the opportunities and constraints they present

Graffiti on the Bunker

Unauthorized Campfire Use

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.

B.1 Recreation Resource Elements

Currently, there are no developed recreational facilities at the property; with the exception of an informal footpath that spans the length of the maintenance berm along the canal. The path begins at the park entrance and runs along the north side of the canal to Biscayne Bay. The Preserve is not officially open to the public, although public access occurs informally along the trail from Old Cutler Road and from Biscayne Bay. The Preserve is used extensively for fishing and Biscayne Bay sight-seeing.

B.2 Assessment of Use

Historically, unauthorized access and use has adversely affected the environmental quality and archaeological significance of the Preserve. Mountain biking on the spoil mounds adjacent to the canal has caused considerable damage to the pine rockland area near the entrance of the park, resulting in the establishment of a fence to restrict access to the pine rockland. Since the spoil mounds were removed, impacts from mountain biker use has become negligible. Canoe launching and associated parking historically also affected the banks of Snapper Creek Canal near the entry, although access control has limited these impacts in recent years. During the late 1980's or early 1990's, a large tree house structure was illegally constructed in the mangroves on the shore of Biscayne Bay, north of the canal. The structure was quite elaborate and significantly degraded a large area of mangroves. In addition, a large garbage pile accumulated at this tree house. The structures and garbage were removed in the early 1990's, but the site was occasionally still used as an overnight camping area. Campfires within the Preserve have caused several ground fires. Such camping activities are not appropriate for this area and are not included in the proposed program for the Preserve.

C. Conceptual General Plan

The following narrative documents the current conceptual general land use plan for the Preserve. The conceptual land use plan described here is the long-term, optimal development plan, based on current conditions, location in the regional landscape and the Preserve's resources. As new information is revealed, the conceptual land use plan may be amended (see Map 8 - Conceptual Development Design). A detailed development plan for the Preserve and a site plan for specific facilities will be developed based on this conceptual land use plan, as funding becomes available.

During the development of the management plan, MDPROS assessed potential impacts of proposed uses or development on the park resources and applied that analysis to the future physical plan as well as the scale and character of proposed facilities. All new facilities will designed and constructed using best management practices to avoid impacts and to mitigate those that cannot be avoided. Federal, state and local regulatory requirements will be incorporated into the final design.

This includes the design of all new facilities consistent with the universal access requirements of the ADA. After any new facilities are constructed, Preserve staff will monitor conditions to ensure that impacts remain within acceptable levels.

C.1 Potential Uses

The Preserve offers unique opportunities for open space preservation, environmental education and outdoor recreation. Located in a densely urbanized population, it provides outdoor recreation in close proximity to where people live and serves as an integral link in the continuum of green space along the Biscayne Bay Aquatic Preserve. In addition to outdoor recreation, the Preserve is an ideal setting for supervised public environmental and cultural educational programs.

C.2 Development Areas

Use of the Preserve will be divided into three main areas that will be defined by Snapper Creek, wetlands and disturbed areas, and existing development adjacent to the property.

Canal Berm for Bike Path

Area A – This section of the Preserve is north of the Snapper Creek Canal. If it is determined that vehicle parking is a necessity, a parking lot will be constructed in disturbed areas near Old Cutler Road. A nature trail will be developed using the existing maintenance trails and firebreaks. The existing trail on the maintenance berm adjacent to the canal will be maintained as a bicycle/pedestrian trail through the mangrove out to Biscayne Bay. Additional trails may be considered as conditions warrant to provide limited access to the pine rockland area with connections back to the main trail. The bunker will be secured to limit public access. Educational signage about the natural and cultural resources at the Preserve will be located at various intervals along the trail. The trails at R. Hardy Matheson will support pedestrian and bicycle use.

A canoe landing area will be located near the park entrance within walking distance from the entry. The landing will improve access from the bay and provide safe landing areas from the water.

Area B – This area is the section of the Preserve that is south of the Snapper Creek Canal and ends at SW 128th Street. This section will remain undeveloped and closed to the public and be designated as a natural area.

Area C – This is the section of the Preserve that is directly north of Chapman Field Park and south of residential development. The channel on this section of the Preserve connects to the east lake of Chapman and extends out into the bay. The water trails will provide paddlers' access to Biscayne Bay and the opportunity to experience mangrove wetland communities first hand. No other improvements are anticipated in this area of the Preserve.

C.3 Proposed Facilities

C.3.1 Access Improvements

Objective 3.1: Provide compatible public access to Biscayne Bay.

Objective 3.2: To provide an interpretative trail system designed for compatible non-destructive pedestrian and bicycle use.

The current entrance to the Preserve is located on a curved section of Old Cutler Road, which makes traffic visibility difficult. Improvements for vehicular access to the site would need to be done as part of entry improvements and/or parking facilities if determined to be necessary. Additional signage and possibly a traffic light may be necessary to assure safe vehicular and pedestrian access into the park.

Although a bike path exists to the north and south of the property, pedestrian access has been limited by the lack of right-of-way. The Old Cutler Bike Path currently ends just after Fairchild Tropical Garden on the east side of Old Cutler Road and begins again at the intersection of Red Road (SW 57th Avenue) and Old Cutler Road on

Map 8: Conceptual General Plan

the west side of the road. The right-of-way on both sides of Old Cutler Road narrows to about 8 feet shortly before approaching R. Hardy Matheson and widens after the intersection at SW 57th Avenue (Red Road). Proposals to provide pedestrian and bicycle access to the Preserve should be limited to those that do not impact Preserve archaeological, historical, or natural resources.

The proposed canoe landing will increase access from the Bay and other destinations within the County's Blueway Plan, developed by Florida International University (2002). The Blueway system will provide paddlers the opportunity to travel from one park to another by water. The proposed routes will connect several County parks that are in or along the Bay including: Crandon, Matheson Hammock, Chapman Field, The Deering Estate, Black Point and now R. Hardy Matheson.

C.3.2 Interpretive Signage

Objective 3.2: To provide an interpretative trail system designed for compatible non-destructive pedestrian and bicycle use.

The interpretive signage provided at the Preserve entry and along the bike trail will educate visitors about the rare pine rockland habitat and the other unique coastal habitats within the Preserve. Signage will describe the fauna and flora found within each distinct habitat and will educate visitors on how to protect these resources. In the areas proposed for restoration, signs will describe the process, the effects of natural events on pine rocklands, and maintenance issues such as prescribed burns and exotic species control and eradication.

Over time, additional signage may be installed to interpret cultural resources on the Preserve. These could include materials that describe the culture and traditions of the early Tequesta inhabitants whose remains have been found in several locations throughout the Preserve. Additional signage and education materials may be developed to document the recent history of the site, including early settlements, the old highway, construction of the canal and the use of the bunker.

C.3.3 Security

Fences have been installed on the Preserve boundaries adjacent to Old Cutler Road. Additional fencing along the northern boundaries of the Preserve, including the North Addition, will be evaluated if unauthorized public access becomes a problem. Fencing that is installed will be compatible with fire management and wildlife use. In addition, the site will be closed to the public during non-operating hours. Once the site is fully operating, portions of the site will be open to the public from sun-up to sun-down. The portions of the Preserve lying south of the canal will be closed to the public year round.

Controlling access at the major entrance, located on Old Cutler Road, will protect the site. Access into the pine rockland, rockland hammock, and mangrove and salt marsh areas will be carefully regulated to minimize damage to sensitive natural features.

The MDPROS has implemented a security force that monitors activity in all County-owned and operated park and recreational facilities.

Fencing and Access Control Sign

C.3.4 Maintenance and Operations

In order to maintain a safe and secure environment for employees and visitors, routine property maintenance will be implemented. Operations will be done by MDPROS staff as guided by the preserve manager. Staff will conduct waste removal from the site on a regular basis. Additional trash receptacles may be placed on the site when the bike path is completed, although this will be determined at the time of the bike path construction. Additional trash removal is done as part of the annual Miami-Dade Coastal Cleanup program.

C.3.5 Staffing

MDPROS will provide staffing for the management of the project site. These staff may include the following:

- Security
- Park Manager
- Maintenance Crew (for routine maintenance)

C.3.6 Monitoring

Conditions of the facilities will be monitored by the NAM of MDPROS. Routine repairs and maintenance will be scheduled accordingly to ensure user safety and extended life of the facilities and amenities. In the event of storms or other destructive occurrences damage assessment reports will be filed immediately to the appropriate County office and repairs will begin as soon as possible.

During the routine maintenance of landscape areas, damage or diseased vegetation and the recognition of invasive plant species will be noted and addressed with appropriate follow-up action.

C3.7 Alternative Uses

Due to the sensitive nature of the natural and cultural resources found on the site, no alternative uses have been considered for the property.

C.4 Facilities Development

Preliminary costs for the development of the biking trail is estimated to be $315,000. Preliminary costs for the construction of fishing piers is estimated to be $7,500 per pier. Specific costs will be determined at the time of design and construction of these improvements.

C.5 Additional Considerations

C.5.1 Property that Warrants Acquisition

There are four parcels of land adjacent to the northern boundary of the Preserve that are on the Miami-Dade County Environmentally Endangered Lands Program Acquisition List as potential additions to the Preserve (**Map 9** – Potential Acquisition Areas). Together, these parcels total 21.46 acres. These parcels are not essential to the management of the Preserve. At this time, there are no pending or targeted acquisitions.

C.5.2 Property Conflicting with or Threatening Planned Use

At this time, there is no property adjacent to the park which threatens or conflicts with the planned use of this site.

C.5.3 Determinations of Surplus Property

At this time, a determination of land for surplus property is not applicable. The Department is currently using the site for recreation and preservation purposes, and does not intend to request that any of the acreage be deemed surplus.

C.5.4 Determinations of Consistency

A Letter of Compliance from the City of Coral Gables, dated September 18, 2012 has been issued regarding the zoning and land use consistency of the Preserve (**Attachment O**). The letter states that zoning and land use for the site is consistent for the use. The North Addition was acquired by the Miami-Dade Environmentally Endangered Lands Program to further protect the undeveloped lands contiguous to the Preserve.

Snapper Creek Canal

Cave in Rockland Hammock

Bluff at Margin of Rockland Hammock

Currently, the land use and zoning designations for this small addition have not been changed to preservation or conservation. Nevertheless, the addition is protected as preservation land by Chapter 24-50 of the Code of Miami-Dade County. If possible, the County will work with the City to amend the land use and zoning through the City's periodic Comprehensive Plan Evaluation and Appraisal Report process.

C .5.5 Optimum Boundary

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.

C.5.6 Incompatible Uses

Incompatible uses for the Preserve include camping, timber harvesting other than that required for management of the pine rocklands or rockland hammocks, hunting, horseback riding, recreational OHV use outside of the designated area and mountain biking (except on the approved trail). The potential of the Park to accommodate secondary management purposes was analyzed during the development of this plan. Secondary purposes such as water resource development, water supply projects, stormwater management, linear facilities, mineral extraction, and sustainable forestry and/or agriculture are not consistent with this plan.

C.5.7 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 alternation 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, although these can be precluded in particularly sensitive habitats. All decisions involving the use of protected zones are made on a case-by-case basis after careful site planning and analysis.

The rockland hammocks south of the canal and mangrove areas throughout the Preserve are protected zones within the Preserve.

Map 9: Potential Future Acquisitions

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IMPLEMENTATION COMPONENT

MIAMI-DADE COUNTY R. HARDY MATHESON PRESERVE

The resource management and land use components of the 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 reposts on the MDPROS progress toward achieving resource management, operational and capital improvement goals and objectives since approval of the previous management plan for this Preserve. 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.

A. Management Progress

A management plan for the R. Hardy Matheson Preserve was last adopted 1994. Since that time, the majority of the progress made in management has been in the areas of exotic species removal, habitat restoration and shore stabilization as described below:

- Spring of 2006 – Cleared 5.4 acres of Brazilian pepper dominated uplands on the north side of Snapper Creek Canal.
- Summer of 2005 – Removed approximately 300,000 cubic yards of excess fill from the site and restored approximately 2.5 acres of mangrove habitat.
- 2007 – North EEL addition acquired.
- 2007-2009 – Planted over 1,000 trees and understory plants in the area cleared of Brazilian pepper.
- 2010 – Cleared the 1.5 acres of Brazilian pepper on north property edge near mangroves. This area still requires continued restoration efforts.
- 2012 – Completed the shoreline stabilization project along the north bank of Snapper Creek Canal.

The site has received annual invasive plant control treatments since 1991 to present. All portions of the Preserve are considered to be in maintenance condition (less than 5% cover invasive plant species) other than the margins of the North Addition.

B. Management Plan Implementation

This management plan is written for a timeframe of ten years, as required by Section 253.034 Florida Statutes. Table 3 summarizes the management goals, objectives and actions that are recommended for implementation over this period. A timeframe for completing each objective and action is provided. Preliminary cost estimates for each action requiring more than staff time are provided and the estimated total costs to complete each objective are computed. The ability to complete any identified objectives and actions outlined in the management plan is contingent on the availability of funding and other resources being available for the purposes specified.

B.1 Schedule of Land Management Activities

The schedule shall include for each activity a timeline for completion, quantitative measures, and detailed expense and manpower budgets. The schedule shall provide a management tool that facilitates development of performance measures.

B.2 Summary Budget for Land Management Activities

1. Annually monitor and treat the pine rockland / rockland hammock habitats to remove exotic species - $10,000 / yr
2. Annual rare plant species monitoring - $1,500 / yr
3. Cultural resource comprehensive survey - $20,000
4. Develop and implement educational signage - $2,000
5. Canal berm plantings - $50,000
6. Fence maintenance and replacement - $35,000
7. Bike trail construction - $315,000
8. Fishing pier (per pier) - $7,500
9. Cover open on floor of bunker - $TBD
10. Canal landing improvements - $TBD

Table 3: Schedule of Land Management Activities
How to Use: goals and objectives are identified above each corresponding table of activities. Priority activities are highlighted in **green**. Short-term is defined as less than two (2) years. Long-term is two (2) or more years.

Goal 1: Restore and maintain habitat structure and function to maximize native biotic diversity and preserve natural resource values.

Objective 1.1: To control and /or extirpate populations of invasive plants and exotic nuisance animals.

Activity	Short -term	Long-term	Priority	Year/ Frequency	Responsible Entity(ies)
1. Continue to survey pest plant infestations on the Preserve.	Yes	Yes	Yes	On-going	Miami-Dade County
2. Continue to control invasive pest plants and exotic animals in natural areas.	Yes	Yes	Yes	On-going	Miami-Dade County
3. Ensure that control measures are not deleterious to native species.	Yes	Yes	Yes	On-going	Miami-Dade County
4. Coordinate with the Montgomery Botanical Gardens to limit exotic species invasion into the Preserve.	Yes	Yes	Yes	On-going	Miami-Dade County

Objective 1.2: To maintain or restore the viability of rare and endemic species consistent with the preservation and restoration of the habitat.

Activity	Short -term	Long-term	Priority	Year/ Frequency	Responsible Entity(ies)
1. Implement the Miami-Dade County Natural Areas Management Plan for habitats on the Preserve.		Yes		<2 yrs.	Miami-Dade County
2. Create a restoration plan for the mangrove, salt marsh, tropical hardwood hammocks, and pine rockland habitats.	Yes	Yes	Yes	On-going	Miami-Dade County

Objective 1.3: To maintain or restore the viability of rare and endemic species consistent with the preservation and restoration of the habitat.

Activity	Short-term	Long-term	Priority	Year/ Frequency	Responsible Entity(ies)
1. Continue the long-term monitoring program for plants and animals of special concern.	Yes	Yes	Yes	On-going	Miami-Dade County; Contractor
2. Evaluate information gained through monitoring to modify and improve successful management actions.	Yes	Yes		On-going	Miami-Dade County
3. Continue to track and monitor rare plant locations and implement land management activities in a manner that protects rare plants.	Yes	Yes	Yes	On-going	Miami-Dade County
4. Reintroduce populations of extirpated species and augment existing populations of rare species where appropriate.		Yes		<10 yrs.	Miami-Dade County; Fairchild
5. For federally listed species, use USFWS Recovery Plans as guides.		Yes		<10 yrs	Miami-Dade County

Objective 1.4: Institute a fire management program under the direction of the Florida Forest Service including prescribed burns to restore and maintain fire dependent communities and their historic ecotones.

Activity	Short-term	Long-term	Priority	Year/ Frequency	Responsible Entity(ies)
1. Develop and initiate a prescribed burn plan per Miami-Dade County Natural Areas Management Plan.		Yes		<2 yrs	Miami-Dade County, Florida Forest Service
2. Coordinate with the Florida Forest Service and Miami-Dade Fire Rescue to ensure that wildfire response is sensitive to the perpetuation of pine rockland, rockland hammock, mangrove, and salt marsh habitats.	Yes	Yes	Yes	On-going	Miami-Dade County; Florida Forest Service; Miami-Dade Fire Rescue
3. Continue dialogue with the local community to provide informational and educational materials on and notices of upcoming prescribed burns.	Yes	Yes		Prior to burns	Miami-Dade County

Goal 2: Manage the site's cultural resources in a manner compatible with historic preservation standards and regulations.

Objective 2.1: To protect and preserve cultural resources on R. Hardy Matheson Preserve.

Activity	Short-term	Long-term	Priority	Year/ Frequency	Responsible Entity(ies)
1. Conduct a systematic archaeological survey of the Preserve to identify and describe prehistoric and historic sites and features and prepare a historic and archaeological report that describes periods of significant human activity, historic resources and structures, and recommendations for interpretation and preservation.		Yes		<2 yrs.	Miami-Dade County
2. Continue to monitor identified sites and locate areas of probable archaeological sensitivity.	Yes	Yes	Yes	On-going	Miami-Dade County
3. Continue monitoring ground disturbing activities by notifying the County's Archaeologist and obtaining a Certificate to Dig from the Regulatory and Economic Resources Department, Office of Historic Preservation.	Yes	Yes	Yes	On-going	Miami-Dade County
4. Close the listening station bunker to public access prior to the completion of the bike trail.	Yes			<2 yrs	Miami-Dade County

Goal 3: Provide authorized public access and increase public awareness while protecting natural areas and cultural resources from adverse human impacts.

Objective 3.1: Provide compatible public access to Biscayne Bay.

Activity	Short-term	Long-term	Priority	Year/ Frequency	Responsible Entity(ies)
1. Provide pedestrian access at appropriate locations.	Yes		Yes	<1 yr.	Miami-Dade County
2. Provide canoe and kayak opportunities.	Yes	Yes		On-going	Miami-Dade County
3. Provide a blueway linkage to other coastal public sites such as the Deering Estate at Cutler, Chapman Field Park and Matheson Hammock Park.		Yes		On-going	Miami-Dade County

Objective 3.1: Provide compatible public access to Biscayne Bay. (cont.)

Activity	Short-term	Long-term	Priority	Year/ Frequency	Responsible Entity(ies)
4. Continue to allow permitted mangrove pruning that will provide adequate visual access to the residents of Mar Street and San Pedro Road.	Yes	Yes		5 to 10+ yrs.	Miami-Dade County
5. Provide fishing platform(s) along the north berm of Snapper Creek Canal subject to regulatory approval and funding availability.		Yes		5 to 10+ yrs.	Miami-Dade County; District

Objective 3.2: To provide an interpretative trail system designed for compatible non-destructive pedestrian and bicycle use.

Activity	Short-term	Long-term	Priority	Year/ Frequency	Responsible Entity(ies)
1. Evaluate opportunities to create a nature trail through appropriate uplands.	Yes		Yes	<2 yrs.	Miami-Dade County
2. Create an accessible trail along snapper creek.		Yes		5 to 10+ yrs.	Miami-Dade County
3. Provide educational signage to introduce visitors to the natural and cultural/archaeological features of the north side of the Preserve.		Yes		Within 5-10 years	Miami-Dade County
4. Identify opportunities to establish native canopy to provide shade on the Snapper Creek Canal berm compatible with canal operations and maintenance requirements of the SFWMD .		Yes		Within 5-10 years	Miami-Dade County

Objective 3.3: To control public access to the Preserve and restrict uses that are incompatible with protection of resources.

Activity	Short-term	Long-term	Priority	Year/ Frequency	Responsible Entity(ies)
1. Institute appropriate access control measures such as fences and gates, and monitor and repair as needed.	Yes	Yes	Yes	5 to 10+ yrs.	Miami-Dade County
2. Control access to highly sensitive habitats on site	Yes	Yes	Yes	On-going	Miami-Dade County
3. Supervise public access to all sensitive areas.	Yes	Yes	Yes	On-going	Miami-Dade County
4. Maintain signs to identify environmentally protected areas, designate areas for public access, and to discourage inappropriate public use.	Yes	Yes	Yes	On-going	Miami-Dade County
5. Enforce existing rules and regulations concerning the protection of natural resources.	Yes	Yes		On-going	Miami-Dade County
6. Continue coordinating with Miami-Dade Police Department to enforce regulations within natural areas.	Yes	Yes		As Needed	Miami-Dade County
7. Facilitate vehicular limited access connection to the Canal for County and SFWMD maintenance activities and emergency access.	Yes	Yes		On-going	Miami-Dade County

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MANAGEMENT PLAN: **ATTACHMENTS**

Management Plan Compliance Checklist - Natural Resource Lands	
Requirements	**Page Numbers**
18-2.021 Acquisition and Restoration Council.	
1. Executive Summary	12
Management Plans. Plans submitted to the division for ARC review under the requirements of Section 253.034 F.S.should be in a form and manner prescribed by rule by the board and in accordance with the provisions of S. 259.032 and should contain where applicable to the management of resources the following:	
2. The common name of the property.	16
3. A map showing the location and boundaries of the property plus any structures or improvements to the property.	16
4. The legal description and acreage of the property.	18
5. The degree of title interest held by the Board, including reservations and encumbrances such as leases.	19
6. The land acquisition program, if any, under which the property was acquired.	19
7. The designated single use or multiple use management for the property, including other managing agencies.	19
8. Proximity of property to other significant State/local/federal land or water resources.	19
9. A statement as to whether the property is within an Aquatic Preserve or a designated Area of Critical State Concern or an area under study for such designation. If yes, make sure appropriate managing agencies are notified of the plan.	19
10. The location and description of known and reasonably identifiable renewable and non-renewable resources of the property including, but not limited to, the following:	
A. Brief description of soil types, using U. S. D. A. maps when available;	24
B. Archaeological and historical resources*;	24
C. Water resources including the water quality classification for each water body and the identification of any such water body that is designated as an Outstanding Florida Waters;	30
D. Fish and wildlife and their habitat;	32
E. State and federally listed endangered or threatened species and their habitat;	35
F. Beaches and dunes;	35
G. Swamps, marshes and other wetlands;	35
H. Mineral resources, such as oil, gas and phosphate;	36
I. Unique natural features, such as coral reefs, natural springs, caverns, large sinkholes, virgin timber stands, scenic vistas, and natural rivers and streams; and	36
J. Outstanding native landscapes containing relatively unaltered flora, fauna, and geological conditions.	37
11. A description of actions the agency plans , to locate and identify unknown resources such as surveys of unkhnown archeological and historical resources.	40

12. The identification of resources on the property that are listed in the Florida Natural Areas Inventory.	40
13. A description of past uses, including any unauthorized uses of the property. (Example #4)	41
14. A detailed description of existing and planned use(s) of the property. (Example #5)	41
15. A description of alternative or multiple uses of the property considered by the managing agency and an explanation of why such uses were not adopted.	47
16. A detailed assessment of the impact of planned uses on the renewable and non-renewable resources of the property and a detailed description of the specific actions that will be taken to protect, enhance and conserve these resources and to mitigate damage caused by such uses.	48
17. A description of management needs and problems for the property.	48
18. Identification of adjacent land uses that conflict with the planned use of the property, if any.	53
19. A description of legislative or executive directives that constrain the use of such property.	53
20. A finding regarding whether each planned use complies with the State Lands Management Plan adopted by the Trustees on March 17, 1981, and incorporated herein by reference, particularly whether such uses represent "balanced public utilization", specific agency statutory authority, and other legislative or executive constraints.	55
21. An assessment as to whether the property, or any portion, should be declared surplus.	55
22. Identification of other parcels of land within or immediately adjacent to the property that should be purchased because they are essential to management of the property. Clearly defined map of parcels can be used.	55
23. A description of the management responsibilities of each agency and how such responsibilities will be coordinated, including a provision that requires that the managing agency consult with the Division of Archives, History and Records Management before taking actions that may adversely affect archaeological or historic resources. (Example #6)	55
24. A statement concerning the extent of public involvement and local government participation in the development of the plan, if any, including a summary of comments and concerns expressed. (Example #7)	56
Additional Requirements—Per Trustees	
25. Letter of Compliance of the management plan with the Local Government Comprehensive Plan. Letter from local government saying that the plan is in compliance with local government's comprehensive plan.	60
253.034 State-Owned Lands; Uses. —Each entity managing conservation lands shall submit to the Division of State Lands a land management plan at least every 10 years in a form and manner prescribed by rule by the Board.	
26. All management plans, whether for single-use or multiple-use properties, shall specifically describe how the managing entity plans to identify, locate, protect and preserve, or otherwise use fragile nonrenewable resources, such as archaeological and historic sites, as well as other fragile resources, including endangered plant and animal species.	64
27. The management plan shall provide for the conservation of soil and water resources and for the control and prevention of soil erosion.	64
28. Land management plans submitted by an entity shall include reference to appropriate statutory authority for such use or uses and shall conform to the appropriate polices and guidelines of the state land management plan.	64
29. All land management plans for parcels larger than 1,000 acres shall contain an analysis of the multiple-use potential of the parcel, which analysis shall include the potential of the parcel to generate revenues to enhance the management of the parcel.	64
30. Additionally, the land management plan shall contain an analysis of the potential use of private managers to facilitate the restoration or management of these lands.	64
31. A physical description of the land.	65
32. A desired outcome	65

33. A quantitative data description of the land which includes an inventory of forest and other natural resources; exotic and invasive plants; hydrological features; infrastructure, including recreational facilities; and other significant land, cultural, or historical features.	65
34. A detailed description of each short-term and long-term land management goal, the associated measurable objectives, and the related activities that are to be performed to meet the land management objectives. Each land management objective must be addressed by the land management plan, and where practicable, no land management objective shall be performed to the detriment of the other land management activities.	66
35. A schedule of land management activities which contains short-term and long-term land management goals and the related measurable objectives and activities. The schedule shall include for each activity a timeline for completion, quantitative measures, and detailed expense and manpower budgets. The schedule shall provide a management tool that facilitates development of performance measures.	72
36. A summary budget for the scheduled land management activities of the land management plan. For state lands containing or anticipated to contain imperiled species habitat, the summary budget shall include any fees anticipated from public or private entities for projects to offset adverse impacts to imperiled species or such habitats, which fees shall be used solely to restore, manage, enhance, repopulate, or acquire imperiled species habitat. The summary budget shall be prepared in such a manner that it facilitates computing an aggregate of land management costs for all state-managed lands using the categories described in s. 259.037(3).	86
37. Each management plan shall describe both short-term and long-term management goals, and include measurable objectives to achieve those goals. *Short-term and long-term management goals shall include measurable objectives for the following, as appropriate:* ***(A)** Habitat restoration and improvement;*	88
(B) Public access and recreational opportunities;	88
(C) Hydrological preservation and restoration;	88
(D) Sustainable forest management;	88
(E) Exotic and invasive species maintenance and control;	88
(F) Capital facilities and infrastructure;	88
(G) Cultural and historical resources;	88
(H) Imperiled species habitat maintenance, enhancement, restoration, or population restoration	88
253.036 Forest Management. —	
38. For all land management plans for parcels larger than 1,000 acres, the lead agency shall prepare the analysis, which shall contain a component or section prepared by a qualified professional forester which assesses the feasibility of managing timber resources on the parcel for resource conservation and revenue generation purposes through a stewardship ethic that embraces sustainable forest management practices if the lead management agency determines that the timber resource management is not in conflict with the primary management objectives of the parcel. (Example #8)	93
259.032 Conservation And Recreation Lands Trust Fund; Purpose. —	
(10)(a) State, regional or local governmental agencies or private entities designated to manage lands under this section shall develop and adopt, with the approval of the Board of Trustees, an individual management plan for each project designed to conserve and protect such lands and their associated natural resources. Private sector involvement in management plan development may be used to expedite the planning process.	
39. Individual management plans required by s. 259.032(10)(b), for parcels over 160 acres, shall be developed with input from an advisory group - Management plan should list advisory group members and affiliations.	96
40. The advisory group shall conduct at least one public hearing in each county in which the parcel or project is located. Managing agency should provide DSL/OES with documentation showing date and location of public hearing.	96

41. Notice of such public hearing shall be posted on the parcel or project designated for management, advertised in a paper of general circulation, and announced at a scheduled meeting of the local governing body before the actual public hearing. Managing agency should provide DSL/OES with copy of notice.	96
42. The management prospectus required pursuant to 259.032 (9)(d) shall be available to the public for a period of 30 days prior to the public hearing.	97
43. Summary of Advisory Group Meeting should be provided to DSL/OES.	97
44. Individual management plans shall conform to the appropriate policies and guidelines of the state land management plan and shall include, but not be limited to:	98
A. A statement of the purpose for which the lands were acquired, the projected use or uses as defined in s. 253.034, and the statutory authority for such use or uses.	98
B. Key management activities necessary to achieve the desired outcomes, including, but not limited to, providing public access, preserving and protecting natural resources, protecting cultural and historical resources, restoring habitat, protecting threatened and endangered species, controlling the spread of nonnative plants and animals, performing prescribed fire activities, and other appropriate resource management activities.	98
C. A specific description of how the managing agency plans to identify, locate, protect, and preserve, or otherwise use fragile, nonrenewable natural and cultural resources.	98
D. A priority schedule for conducting management activities, based on the purposes for which the lands were acquired. (Example #10) The schedule must include a goal, an objective, and a time frame for completion.	99
E. A cost estimate for conducting priority management activities, to include recommendations for cost-effective methods of accomplishing those activities. *Using categories as adopted pursuant to 259.037, F.S., is suggested. These are: (1) Resource Management; (2) Administration; (3) Support; (4) Capital Improvements; (5) Visitor Services/Recreation; and (6) Law Enforcement.*	101
F. A cost estimate for conducting other management activities which would enhance the natural resource value or public recreation value for which the lands were acquired. The cost estimate shall include recommendations for cost-effective methods of accomplishing those activities. *Using categories as adopted pursuant to 259.037, F.S., is suggested. These are: (1) Resource Management; (2) Administration; (3) Support; (4) Capital Improvements; (5) Visitor Services/Recreation; and (6) Law Enforcement.(Example #10) Include approximate monetary cost and cost effective methods. Can be placed in the appendix.*	103
45. A determination of the public uses and public access that would be consistent with the purposes for which the lands were acquired.	105
259.036 Management Review Teams.—	
46. The managing agency shall consider the findings and recommendations of the land management review team in finalizing the required 10-year update of its management plan. *Can be addressed in the body of the plan or addressed in an appendix. If not in agreement, the managing agency should reply in a statement in the appendix.*	108
Other Requirements	
47. This checklist table at front of plan (pursuant to request of ARC and consensus agreement of managing agencies.)	112
48. Accomplishments (implementation) from last plan (format variable by agency)	112
49. FNAI-based natural community maps (may differ from FNAI in some cases)	113
50. Fire management plans (either by inclusion or reference)(259.032)	113
51. A statement regarding incompatible uses [ref. Ch. 253.034 (9)]	115
52. Cultural resources, including maps of all sites except Native American sites*	115
53. Arthropod control plan	115

ATTACHMENT A: MANAGEMENT AGREEMENT

MANAGEMENT AGREEMENT

FOR CERTAIN STATE LANDS WITHIN DADE COUNTY

Agreement No. 013-0003

THE BOARD OF TRUSTEES OF THE INTERNAL IMPROVEMENT TRUST FUND OF THE STATE OF FLORIDA, referred to herein as the "Board" and the STATE OF FLORIDA DEPARTMENT OF NATURAL RESOURCES, DIVISION OF STATE LANDS, as agent for the Board referred to here as "State Lands" grant to METROPOLITAN DADE COUNTY, a political subdivision of the State of Florida, herein referred to as "County", authorization to manage the area described in the Exhibit A attached hereto and made a part hereof, which shall be managed for recreation purposes as a part of the County park system. Specifically, authorization is hereby granted to the County to manage these lands for public health and safety, for property protection, and for management as a park and recreation area.

WITNESSETH:

The Board and the County, for and in consideration of the covenants hereinafter contained do hereby covenant as follows:

1. Subject to all existing encumbrances and the terms and conditions of the subject parcel, the Board, by this agreement, designates the County as the managing agency for the subject property, to act as management coordinator and supervisor for the effective management of the subject property. The County as the supervising agency shall have responsibility for the implementation of any/all provisions of any management plan, draft or program provided for by the terms of this Agreement. The County as the managing agency shall be specifically responsible for:

   A. Compiling an overall management plan for submittal pursuant to Section 253.034, Florida Statutes; and

   B. More specific management activities which shall include the following:

      1. Management of the subject property for user health and safety protection and property protection, which shall not conflict with

2. All management activities specified by this Agreement shall be designed to conserve, protect and enhance the environmentally unique and irreplaceable lands covered by this Agreement as provided for under Chapter 253, Florida Statutes.

3. In addition to the management responsibilities specified herein, the managing agency will provide the following:

   A. The management plan developed for the subject property shall be consistent with any/all applicable policies of the State Lands Management Plan. The County shall submit a draft of the master management plan to State Lands, within 180 days of the effective date of this agreement. The draft will be submitted to the Board for approval. Management activities shall be reviewed by the participating agencies for compliance with the draft on an annual basis until such time as the master plan is approved by the Board. Subsequent to its adoption by the Board, the master plan shall be the directive for all management activities on the subject parcel. The Plan shall be reviewed jointly by the participating parties and the Board, or its agent, at no greater than five year intervals, and updated as necessary.

   B. The participating agencies shall not clear, plant, build, alter or use the property except as provided for in the approved draft or master plan without the advance written approval of the Board.

   C. The Board, or its duly authorized agent shall retain the right to engage in management activities not inconsistent with any plan or provision provided for by this Agreement. To accomplish this the Board may from time to time grant compatible uses of the property to other parties during the life of this Agreement subject to mutual approval by the

any of its covenants contained in this Agreement, the Board shall have the right to terminate this Agreement on the 180th day following written notice to the County, provided that the County fails to initiate procedures to correct the deficiency within the 180 day period, and further provided that if the County takes corrective action, satisfactory evidence of the corrective action taken shall be submitted to the Board or its agent. If correction or justification is not made after 180 days of receipt of written notice, the Board, or its duly authorized agency may terminate the County's responsibilities by providing thirty days written notice of such pending action.

E. Whenever a greater public purpose may be served, the Board, shall have the right to terminate this agreement upon 180 days written notice, to the County, provided that such notification is in writing from the Executive Director of the Department of Natural Resources, acting as agent to the Board.

4. The County shall not engage in any activity except as provided for in the management plan without the advance written approval of the Board, pursuant to Section 253.034(4), Florida Statutes, and applicable rules.

5. This agreement shall endure so long as the County wishes to manage the area for the purposes stated herein, or until the agreement is terminated, as provided for herein.

6. The County shall have the right to terminate this agreement upon providing 180 days written notice to the Board.

7. This agreement and any rights and privileges contained herein are for the sole use of the County and shall not be assigned or transferred to another party without the approval of the Board.

occupy the property for the purposes necessary to fulfill its designated responsibilities, including the protection of the property. The County, its agents and employees shall take all reasonable measures to provide security against property damage, property degradation and unauthorized uses.

8. The County agrees to investigate all claims of any nature at its own expense and shall idemnify, protect, defend, hold and save the Board harmless, to the extent of the limitation included within Section 768.28 F.S. from any and all liabilities, lawsuits or claims, or losses and causes or actions which may arise solely as a result of the County's negligence; however, nothing in this section shall idemnify the Board for any liability or claim arising out of negligence, performance or failure of performance required of the Board or as a result of the negligence of any third party authorized by the Board to use the area pursuant to Paragraph 3 (C) on the area maintained.

9. The County further agrees to assume all responsibility for liability that accrues to the subject property or to improvements thereon, including any and all drainage or special assessments or taxes of every kind and description which are now or may be hereafter lawfully assessed and levied against the subject property during the life of this Agreement.

10. Execution of this agreement in no way affects any of the parties' obligations pursuant to Chapter 267, Florida Statutes. The collection of artifacts or the disturbance of archaeological and historical sites on state-owned lands is prohibited unless prior authorization has been obtained from the Division of Archives, History and Records Management (DAHRM). The land management plan prepared pursuant to Section 253.034, F.S. shall be reviewed by the DAHRM to insure that adequate measures have

conflict(s), the matter may be referred to the Board for final resolution.

IN TESTIMONY WHEREOF, the legally designated agent of the Board, and the legally designated agent of the County, have hereunto set their hands.

THE BOARD OF TRUSTEES OF THE
INTERNAL IMPROVEMENTS TRUST
FUND OF THE STATE OF FLORIDA

BY: _____
Dr. Elton J. Gissendanner
Executive Director
Department of Natural Resources

Attest and Seal
(or 2 Witnesses)

BY: _____ DATE: 3-26-84

METROPOLITAN DADE COUNTY, FLORIDA
BOARD OF COUNTY COMMISSSIONERS

Attest and Seal

BY: _____
M.R. Stierheim
County Manager

BY: _____ DATE: 2-13-84
DEPUTY Clerk

APPROVED AS TO
FORM & LEGALITY

DEPARTMENT ATTORNEY

EXHIBIT A

Legal Description

All of the following pieces, parcels, or tracts of land, situate, lying and being in the County of Dade, State of Florida, and more particularly described as follows:

PARCEL #1: All of SNAPPER CREEK PROPERTY, according to the Plat thereof, recorded in Plat Book 34, Page 31, of the Public Records of Dade County, Florida; LESS that portion lying West and North of Old Cutler Road as it presently exists, and less the .43 acres more or less, conveyed by the Grantor herein to ELEANOR F. JENNINGS, by Deed dated February 28, 1957, which is recorded in Official Records Book 178, Page 425. of the Public Records of Dade County, Florida; and,

PARCEL #2: Tract 2 of AVOCADO LAND COMPANY'S SUBDIVISION, Section 7, Township 55 South, Range 41 East, according to the Plat thereof, as recorded in Plat Book 2, Page 44, of the Public Records of Dade County, Florida; and,

PARCEL #3: Tract 4, of AVOCADO LAND COMPANY'S SUBDIVISION, Section 7, Township 55 South, Range 41 East, according to the Plat thereof, as recorded in Plat Book 2, Page 44, of the Public Records of Dade County, Florida.

RESOLUTION NO. R-623-83

RESOLUTION AUTHORIZING THE EXECUTION OF A MANAGEMENT AGREEMENT WITH THE STATE OF FLORIDA FOR STATE LANDS KNOWN AS THE ITT-SNAPPER CREEK HAMMOCK; AND AUTHORIZES THE COUNTY MANAGER TO EXERCISE FURTHER ACTIONS THEREIN

WHEREAS, this Board desires to accomplish the purposes outlined in the accompanying memorandum and documents, copies of which are incorporated herein by reference,

NOW, THEREFORE, BE IT RESOLVED BY THE BOARD OF COUNTY COMMISSIONERS OF DADE COUNTY, FLORIDA , that this Board approves a Management Agreement between Dade County and the Board of Trustees of the Internal Improvement Trust Fund of the State of Florida, for State Land known as the ITT-Snapper Creek Hammock; and authorizes the County Manager to take appropriate action to accomplish the provisions; and authorization to exercise the cancellation provisions therein.

The foregoing resolution was offered by Commissioner who moved its adoption. The motion was seconded by Commissioner , and upon being put to a vote, the vote was as follows:

Barbara M. Carey
Clara Oesterle
Beverly B. Phillips
James F. Redford, Jr.
Harvey Ruvin
Barry D. Schreiber
Ruth Shack
Jorge E. Valdes
Stephen P. Clark

The Mayor thereupon declared the resolution duly passed and adopted this 10th day of June, 1983

STATE OF FLORIDA)
) SS:
COUNTY OF DADE)

I, RICHARD P. BRINKER, Clerk of the Circuit Court in and for Dade County, Florida, and Ex-Officio Clerk of the Board of County Commissioners of said County, DO HEREBY CERTIFY that the above and foregoing is a true and correct copy of Resolution No. R-623-83, adopted by the said Board of County Commissioners at its meeting held on May 17, 19 83.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal on this 10th day of June, A. D. 19 83.

RICHARD P. BRINKER, Ex-Officio Clerk
Board of County Commissioners
Dade County, Florida

By Lynn Boykin
Deputy Clerk

SEAL

EXHIBIT A

Legal Description

All of the following pieces, parcels, or tracts of land, situate, lying and being in the County of Dade, State of Florida, and more particularly described as follows:

PARCEL #1: All of SNAPPER CREEK PROPERTY, according to the Plat thereof, recorded in Plat Book 34, Page 31, of the Public Records of Dade County, Florida; LESS that portion lying West and North of Old Cutler Road as it presently exists, and less the .43 acres more or less, conveyed by the Grantor herein to ELEANOR F. JENNINGS, by Deed dated February 28, 1957, which is recorded in Official Records Book 178, Page 425. of the Public Records of Dade County, Florida; and,

PARCEL #2: Tract 2 of AVOCADO LAND COMPANY'S SUBDIVISION, Section 7, Township 55 South, Range 41 East, according to the Plat thereof, as recorded in Plat Book 2, Page 44, of the Public Records of Dade County, Florida; and,

PARCEL #3: Tract 4, of AVOCADO LAND COMPANY'S SUBDIVISION, Section 7, Township 55 South, Range 41 East, according to the Plat thereof, as recorded in Plat Book 2, Page 44, of the Public Records of Dade County, Florida.

ATTACHMENT B: MIAMI-DADE BOARD OF COUNTY COMMISSIONERS EEL ACQUISITION LIST RESOLUTION

MEMORANDUM

genda Item No. 3(A)(25)

To: Honorable Chairperson and Members
Board of County Commissioners

Date: June 18, 1996

From: Armando Vidal, P.E.
County Manager

Subject: Environmentally Endangered Lands (EEL) Acquisition List

RECOMMENDATION

It is recommended that the Board adopt the attached resolution approving the Environmentally Endangered Lands (EEL) Acquisition List as shown in Attachment A. With one exception. this list was unanimously recommended by the Land Acquisition Selection Committee (LASC) following their public hearing on February 29. 1996.

BACKGROUND

In this site selection round. the LASC reviewed nine proposed sites in accordance with procedures established by the EEL Ordinance (Chapter 24A of the Code of Metropolitan Dade County). The LASC studied the evaluations, inspected the sites, reviewed the County Manager's recommendations, and conducted a public hearing. The LASC then recommended that the changes described below be made to the current Acquisition List, which was approved by the Commission's Resolution R-1361-95.

Priority A List Additions. Seven properties are recommended for addition to the Priority A List. Three new upland forest sites are as follows: the 39 acre Federal GSA Pineland, the 17 acre Eachus Pineland, 19 acre pine rockland/tropical hardwood hammock complex known as the Silver Palm Addition. Three new coastal wetland properties are as follows: the 21 acre Hardy Matheson Addition, the 1,300 acre Cutler Wetlands, and the 271 acre Black Point Wetlands. The previously approved Dolphin Center Addition will be moved from the Priority B List to the Priority A List.

Priority B List Additions. Properties on the B List may be acquired only if the cost to EEL is 50% or less of the appraised value. New sites recommended for addition are the 18.2 acre Railroad Pineland, the 27 acre Dixie Heights Pineland, and the 32 acre Notre Dame Pineland. The Kings Highway Pineland and Maddens Hammock will be moved from the A List to the B List.

Deletions: Two projects are recommended for removal from the Acquisition List. Tamiami 15 should be removed because the owners chose to develop the site and permits have been issued. Whispering Pines should be removed because some parcels have deteriorated in quality and others are unavailable, creating serious and costly management problems.

The LASC recommendation to remove Oleta Tract D from the Acquisition List is not included in this resolution. Although staff made this recommendation to LASC early this year because the acquisition appeared infeasible, a new opportunity to negotiate on this property has recently been presented. Therefore, I recommend that Oleta River Tract D remain on the Acquisition List so that this opportunity can be explored.

Agenda Item No. 3(A)(25)
6-18-96

RESOLUTION NO. R-660-96

RESOLUTION APPROVING THE ENVIRONMENTALLY ENDANGERED LANDS ACQUISITION LIST WITH ADDITIONS AND CHANGES AS RECOMMENDED BY THE LAND ACQUISITION SELECTION COMMITTEE; AUTHORIZING THE COUNTY MANAGER TO PROCEED WITH APPRAISALS, ENVIRONMENTAL ASSESSMENTS, AND OTHER ACTIVITIES AS NECESSARY TO PURSUE ACQUISITION OF PROJECTS ON THE LIST.

WHEREAS, to accomplish the purposes of Section 24A of the Code of Metropolitan Dade County and to accomplish the purposes outlined in the accompanying memorandum, a copy of which is incorporated herein by reference.

NOW, THEREFORE BE IT RESOLVED BY THE BOARD OF COUNTY COMMISSIONERS OF DADE COUNTY, FLORIDA, that this Board hereby approves the EEL Acquisition List shown on Attachment A which incorporates the following recommendations of the Land Acquisition Selection Committee:

1. add the Federal GSA Pineland, Eachus Pineland, Silver Palm Addition, Hardy Matheson Addition, Cutler Wetlands, and Black Point Wetlands to the Priority A List, and
2. add the Railroad Pineland, Dixie Heights Pineland, and Notre Dame Pineland to the Priority B List, and
3. move Dolphin Center Addition from the Priority B List to the Priority A List, and
4. move Kings Highway and Madden's Hammock from the Priority A List to the Priority B List, and
5. remove Tamiami 15 and Whispering Pines projects from the Acquisition List,

2

and authorizes the County Manager to proceed with appraisals, environmental assessments, and other activities as necessary to pursue the acquisition of projects on the Priority A and Priority B Acquisition Lists and to negotiate for the acquisition of each project in its entirety, or for any portion thereof, that would further the purposes for which the Environmentally Endangered Lands Program was established and to present any and all purchase contracts which are negotiated pursuant to this resolution to the Board of County Commissioners for final approval unless the contract is exempted by R-1619-95.

The foregoing resolution was offered by Commissioner **Gwen Margolis**, who moved its adoption. The motion was seconded by Commissioner **James Burke** and upon being put to a vote, the vote was as follows:

James Burke	**aye**	Miguel Diaz de la Portilla	**aye**
Betty T. Ferguson	**aye**	Maurice A. Ferre	**absent**
Bruce Kaplan	**aye**	Gwen Margolis	**aye**
Natacha S. Millan	**aye**	Dennis C. Moss	**aye**
Alexander Penelas	**absent**	Pedro Reboredo	**aye**
Katy Sorenson	**aye**	Javier D. Souto	**absent**
Arthur E. Teele, Jr.	**absent**		

The Chairperson thereupon declared the resolution duly passed and adopted this 18th day of June, 1996.

DADE COUNTY, FLORIDA
BY ITS BOARD OF
COUNTY COMMISSIONERS
HARVEY RUVIN, CLERK

By: **KAY SULLIVAN**
Deputy Clerk

Approved by County Attorney as
to form and legal sufficiency.

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ATTACHMENT A

ACQUISITION LIST: Sites To Be Acquired

Environmentally Endangered Lands Program

as recommended by the Planning, Environment, Consumer Services, and the Arts Committee on May 30, 1996

PRIORITY A LIST	Partially Acquired	S-T-R	TYPE	ACRES	LOCATION
1. Bird Key		8-53-42	Mangrove & Rookery	37.5	NW 79 St. & Biscayne Bay
2. Black Creek Forest	*	7-56-40	Pineland & Hammocks	32.0*	SW 216 St. & 112 Ave.
3. Coastal Wetlands:					
Biscayne Wetland		4/5,8,9-57-40	Wetlands	670.0	SW 280 St & 107 Ave.
Black Point Wetlands		28-56-40	Wetlands	271.0	SW 248 St. & SW 97 Ave.
Cutler Wetlands		Numerous	Wetlands	1,300.0	SW 196 St. & 232 St.
Hardy Matheson Addition		7-55-41	Scrub Mangroves	21.0	Old Cutler Rd. and 108 St.
4. Deering Coastal Addition (FCT)	*	25/26-55-40	Wetland	5.1*	SW 152 St. & 67 Ave.
5. Dolphin Center Addition		2-52-41	Xeric Coastal Scrub	4.2	NW 196 St & 17 Ave.
6. Miami Rockridge Pinelands CARL Projects:					
Boystown (CARL '95)		10-55-39	Pineland	90.0	SW 112 St. & 137 Ave.
Goulds (CARL 6)	*	13-56-39	Pineland	9.7*	SW 224 St. & 120 Ave.
Goulds Addition (CARL '95)		13-56-39	Pineland	35.8	SW 232 St. & 117 Ave.
Ingram (CARL 12)		6-57-39	Pineland	10.4	SW 288 St. & 167 Ave.
Navy Wells #2 (CARL '95)		15-57-38	Pineland	20.0	SW 328 St. & 197 Ave.
Navy Wells #23 (CARL '95)		25-57-38	Pineland	29.0	SW 352 St. & 182 Ave.
Navy Wells #39 (CARL '95)		28-57-38	Pineland	20.0	SW 360 St. & 212 Ave.
Palm Drive (CARL 16)	*	21-57-38	Pineland	10.0*	SW 344 St &212 Ave.
Quail Roost (CARL 7)	*	10-56-39	Pineland	5.0*	SW 200 St. & 144 Ave.
School Board (CARL 10)		35-56-39	Pineland	18.7	SW 268 St. & 129 Ave.
West Biscayne (CARL 13)		2-57-38	Pineland	17.0	SW 288 St. & 190 Ave.
Wilkins--Pierson (CARL '95)		32-55-39	Pineland	20.0	SW 184 St. & 164 Ave.
7. Oleta River Corridor:					
Tract A		9-52-42	Hammock & Mangroves	2.7	NE171 St. & US-1
Tract B		16-52-42	Buffer	8.0	NE165 St. & US-1
Tract D		4-52-42	Mangrove	7.8	NE191 St. & 24 Ave.
8. Other Rockridge Pinelands:					
Calderon Pineland		3-56-39	Pineland	17.5	SW 192 St & 140 Ave.
Eachus Pineland		34-55-39	Pineland	17.0	SW 184 St. & SW 142 Ave.
Federal GSA Pineland		26-55-39	Pineland	39.0	SW 152 St. & SW 130 Ave.
Silver Palm Addition		16-56-39	Pineland	19.0	SW 232 St. & SW 152 Ave.
9. South Dade Wetlands:	*				
C-111 (SOR)	*	Numerous	Wetlands	7,533.0	SOUTH DADE COUNTY
Model Land Basin (SOR)		Numerous	Wetlands	40,106.0	SOUTH DADE COUNTY
10. Tropical Hammocks of the Redlands:					
Big George Addition		21-55-39	Hammock	3.7	SW 141 St. & 151 Ave.
Castellow #28	*	16-56-39	Hammock	11.0*	SW 226 St. & 157 Ave.
Castellow #31		17-56-39	Hammock	10.0	SW 218 St. & 157 Ave.
Castellow #33		17-56-39	Hammock	7.5	SW 226 St. & 157 Ave.
Castellow Addition (CARL 7)		17-56-39	Hammock	7.8	SW 223 St. & 157 Ave.
Holiday Hammock (CARL 5)		9/10-58-38	Hammock	32.0	SW 400 St. & 207 Ave.
Loveland Hammock (CARL 3)		32-57-38	Hammock	15.6	SW 360 St. & 222 Ave.
Lucille Hammock (CARL 2)		29-57-38	Hammock	11.0	SW 352 St. & 222 Ave.
Owaissa Bauer Addition (CARL)	*	30/31-56-37	Hammock & Pineland	1.5*	SW 264 St. & 170 Ave.
Ross (CARL 8)	*	16-56-39	Hammock	18.0*	SW 223 St. & 157 Ave.
Round Hammock		8-58-38	Hammock	32.6	SW 408 St. & 219 Ave.
SW Island Hammock (CARL 4)		3-58-38	Hammock	12.5	SW 392 St. & 207 Ave.
PRIORITY B LIST					
1. Barnacle Addition (CARL & City of Miami)		22-54-41	Hammock & Buffer	7.0	Main Highway
2. Dixie Heights Pineland		35-56-39	Pineland	27.0	SW 268 St. & SW 132 Ave.
3. Hammock Island		32-57-38	Hammock & Slough	100.0	SW 360 St . & L-31 E.
4. Hattie Bauer Hammock (FCT)		33-56-39	Hammock	15.0	SW 267 St. SW 157 Ave.
5. Kings Highway (CARL14)		10-57-38	Pineland	31.1	SW 304 St. & 202 Ave.
6. Maddens (CARL 10)		15-52-40	Hammock	60.0	NW 154 St. & 87 Ave.
7. Notre Dame Pineland		2-57-39	Pineland	32.0	SW 280 St. & 132 Ave.
8. Railroad Pineland		4-56-39	Pineland	18.2	SW 184 St. &147 Ave.

* A portion of this project has been acquired. Acreage shown is acreage not yet purchased.

Note: Acronyms in parentheses following the project name indicate the source of matching funds for which the project has been approved.
Funding sources are: CARL = Conservation And Recreation Lands.; FCT = Florida Communities Trust; SOR = Save Our Rivers

STATE OF FLORIDA)
) SS:
COUNTY OF DADE)

I, HARVEY RUVIN, Clerk of the Circuit Court in and for Dade County, Florida, and Ex-Officio Clerk of the Board of County Commissioners of said County, DO HEREBY CERTIFY that the above and foregoing is a true and correct copy of Resolution No. R-660-96, adopted by the said board of County Commissioners at its meeting held on Juen 18 19 96.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal on this 28th day of June, A.D. 19 96.

HARVEY RUVIN, Clerk
Board of County Commissioners
Dade County, Florida

By _____ Deputy Clerk

SEAL

Board of County Commissioners
Dade County, Florida

CLK/CI 587 3/93

ATTACHMENT C: MIAMI-DAD BOARD OF COUNTY COMMISSIONERS EEL PRESERVE DESIGNATION

Approved _____ Mayor
Veto _____
Override _____

Agenda Item No. 7(D)(1)(B)
5-11-04

OFFICIAL FILE COPY
CLERK OF THE BOARD
OF COUNTY COMMISSIONERS
DADE COUNTY, FLORIDA

RESOLUTION NO. R-552-04

RESOLUTION ACCEPTING FIVE PARK NATURAL AREAS FOR MANAGEMENT BY THE ENVIRONMENTALLY ENDANGERED LANDS (EEL) PROGRAM, ADDING THESE NATURAL AREAS TO THE EEL PRIORITY A ACQUISITION LIST AND AUTHORIZING THE COUNTY MANAGER TO TRANSFER FUNDS FROM THE EEL ACQUISITION TRUST FUND TO THE EEL MANAGEMENT TRUST FUND

WHEREAS, this board desires to accomplish the purposes of Section 24A of the Code of Miami-Dade County and to accomplish the purposes outlined in the accompanying memorandum, a copy of which is incorporated herein by reference,

NOW, THEREFORE, BE IT RESOLVED BY THE BOARD OF COUNTY COMMISSIONERS OF MIAMI-DADE COUNTY, FLORIDA, that this Board hereby:

(1) accepts the natural areas of Bill Sadowski Park, Camp Owaissa Bauer, Larry & Penny Thompson Park, Matheson Hammock Park, and the R. Hardy Matheson Preserve, as shown in Attachment A-1 through A-5, into the EEL Program for the purpose of management in perpetuity as environmental lands in accordance with the purposes and requirements of the EEL program; and

(2) places said natural areas on the Environmentally Endangered Lands (EEL) Priority Acquisition List, as shown in Attachment B; and

(3) authorizes the County Manager to transfer five million dollars from the EEL Acquisition Trust Fund to the EEL Management Trust Fund.

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MEMORANDUM

(Revised)

TO: Hon. Chairperson Barbara Carey-Shuler, Ed.D. and Members, Board of County Commissioners

DATE: May 11, 2004

FROM: Robert A. Ginsburg
County Attorney

SUBJECT: Agenda Item No. 7(D)(1)(B)

Please note any items checked.

_____ "4-Day Rule" ("3-Day Rule" for committees) applicable if raised

_____ 6 weeks required between first reading and public hearing

_____ 4 weeks notification to municipal officials required prior to public hearing

_____ Decreases revenues or increases expenditures without balancing budget

_____ Budget required

_____ Statement of fiscal impact required

_____ Bid waiver requiring County Manager's written recommendation

_____ Ordinance creating a new board requires detailed County Manager's report for public hearing

_____ Housekeeping item (no policy decision required)

_____ No committee review

3

Agenda Item No. 7(D)(1)(B)
Page No. 2

The foregoing resolution was offered by Commissioner Jose "Pepe" Diaz, who moved its adoption. The motion was seconded by Commissioner Dr. Barbara Carey-Shuler and upon being put to a vote, the vote was as follows:

Dr. Barbara Carey-Shuler, Chairperson	aye		
Katy Sorenson, Vice-Chairperson	aye		
Bruno A. Barreiro	absent	Jose "Pepe" Diaz	aye
Betty T. Ferguson	absent	Sally A. Heyman	absent
Joe A. Martinez	absent	Jimmy L. Morales	aye
Dennis C. Moss	aye	Dorrin D. Rolle	aye
Natacha Seijas	aye	Rebeca Sosa	aye
Sen. Javier D. Souto	aye		

The Chairperson thereupon declared the resolution duly passed and adopted this 11th day of May, 2004. This resolution shall become effective ten (10) days after the date of its adoption unless vetoed by the Mayor, and if vetoed, shall become effective only upon an override by this Board.

COUNTY COMMISSIONERS DADE COUNTY FLORIDA

MIAMI-DADE COUNTY, FLORIDA
BY ITS BOARD OF COUNTY
COMMISSIONERS

HARVEY RUVIN, CLERK
KAY SULLIVAN
By:_____
Deputy Clerk

Approved by County Attorney as
to form and legal sufficiency.
Robert A. Duvall

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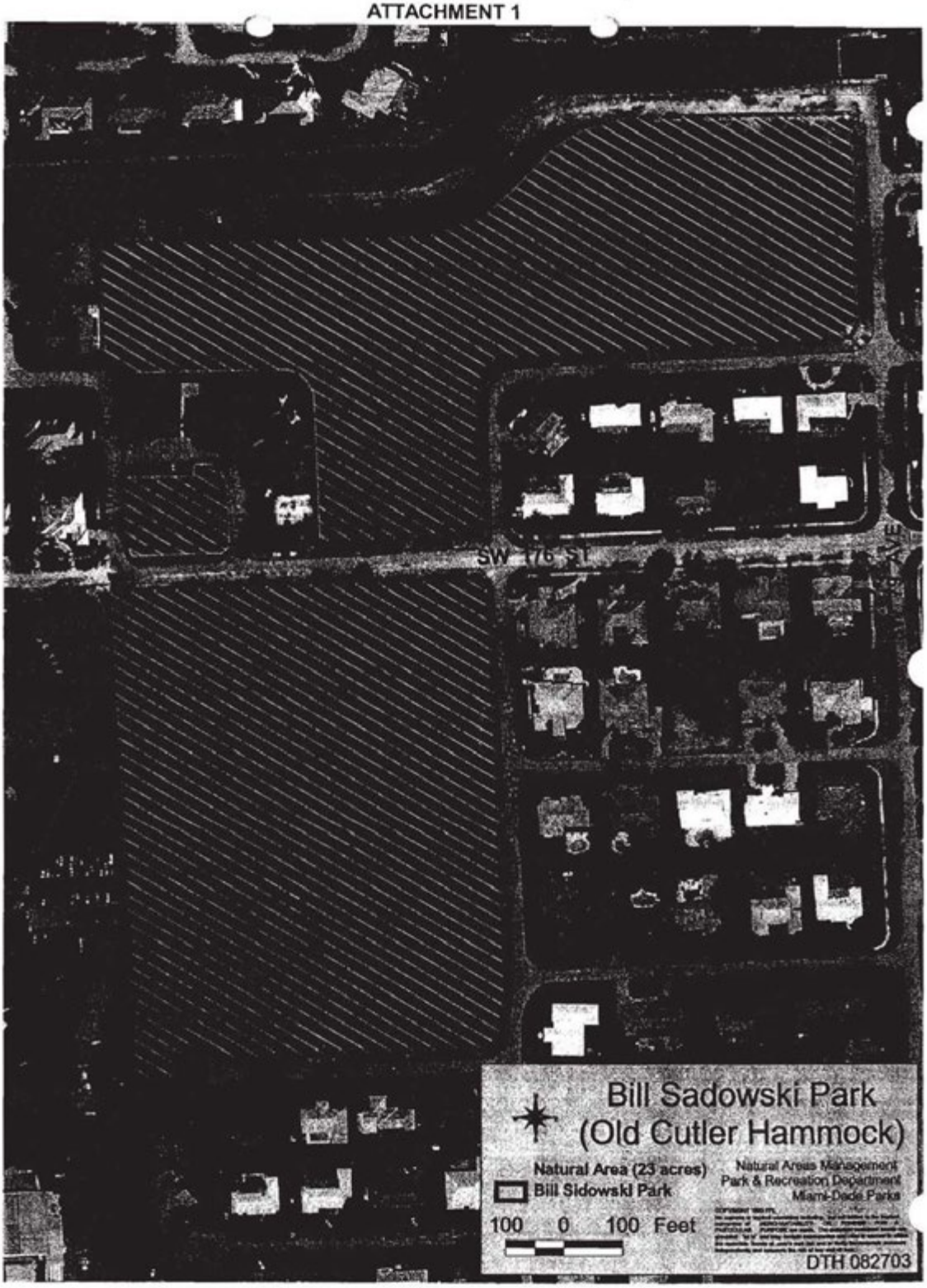
ATTACHMENT 1



MEMORANDUM

Agenda Item No. 7(D)(1)(B)

TO: Hon. Chairperson Barbara Carey-Shuler, Ed.D. and Members, Board of County Commissioners

DATE: May 11, 2004

SUBJECT: Resolution Accepting Park Natural Areas for Management by the Environmentally Endangered Lands (EEL) Program by Placing the Natural Areas on the EEL Priority A List and Authorizing Funds for Management

FROM: George M. Burgess
County Manager

RECOMMENDATION

It is recommended that the Board adopt the attached resolution accepting five natural areas, which are currently managed by the Park and Recreation Department, into the Environmentally Endangered Lands (EEL) Program for management with EEL funds, by placing them on the EEL Priority A Acquisition List. The resolution also authorizes the transfer of five million dollars from the EEL Acquisition Trust Fund to the EEL Management Trust Fund. This resolution is based on the recommendations made by the Land Acquisition Selection Committee (LASC) following their March 17, 2004 public hearing.

BACKGROUND

The primary purpose of this resolution is to provide funds from the EEL Management Trust Fund to maintain five important natural areas in the following Parks: Bill Sadowski Park, Camp Owaissa Bauer, Larry & Penny Thompson Park, Matheson Hammock Park, and the R. Hardy Matheson Preserve. (See maps in Attachments A-1 through A-5). Sec. 24A-8 of the County Code enables the EEL Program to accept qualified properties for management by EEL with EEL funds.

In September 2003, the Park and Recreation Department proposed 17 natural areas in existing County Parks to the EEL Program for management. Funds to support the management of natural areas in County parks have been dwindling in recent years. In FY '03-'04, no County funds were budgeted for the care of the natural areas in County parks.

In making their recommendations, the LASC considered these five Park natural areas in accordance with procedures established by the EEL Ordinance. The LASC held a workshop, conducted site inspections, studied site evaluations and budgetary implications, reviewed the County Manager's recommendations, and conducted a public hearing on March 17, 2004. The Director of the Department of Environmental Resources Management and the Director of the Park & Recreation Department have concurred with the LASC's recommendations.

Natural Areas. The subject natural areas lie within Bill Sadowski Park, Camp Owaissa Bauer, Larry & Penny Thompson Park, Matheson Hammock Park, and the R. Hardy Matheson Preserve. All of the subject natural areas qualify as "environmental lands" under EEL criteria. R. Hardy Matheson is an existing preserve. An addition, purchased by EEL and managed by EEL, lies between R. Hardy Matheson Preserve and Matheson Hammock Park. A portion of Larry & Penny Thompson Park abuts a 140 acre EEL Pineland. This resolution will unify the management of these natural areas and assure their status as environmental lands in perpetuity.

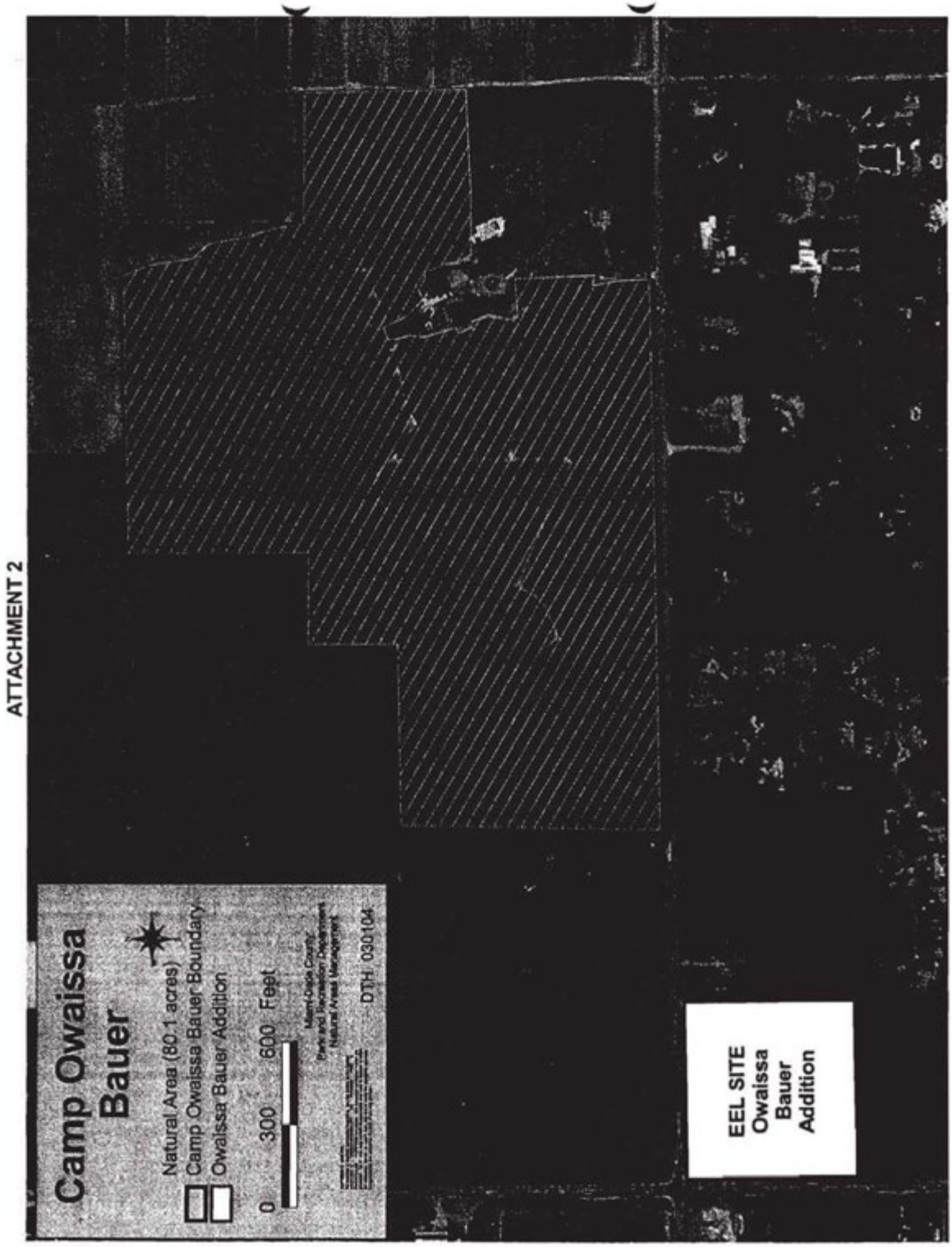
The Park & Recreation Department will continue to maintain responsibility for the buildings and other developed, landscaped, or cleared areas at these parks.

EEL Trust Funds. The EEL Management Trust Fund is a unique feature of the EEL Program. The EEL Ordinance established a $10 million permanent capital fund. The interest earned on that permanent capital fund provides revenue for managing properties, which are acquired or accepted by the EEL Program, but the permanent capital fund cannot be spent. The EEL Ordinance anticipated that additional funds would be needed in the future and provides for the County Commission to add to the Management Trust Fund by transferring money from the EEL Acquisition Fund, grant awards, and other sources. (See Sec. 24A-6(2) of the County Code.)

The Commission has already directed grant revenues received by EEL into the Management Trust Fund, increasing the permanent capital fund to some $15 million. However, the interest revenues, which can be spent on land management, have been low because interest rates have been low. Projections indicate that in accepting these properties for management, a shortfall in EEL funds for management is likely to occur in 2007. Therefore, the LASC has recommended that $5 million be transferred from the EEL Acquisition Fund to the EEL Management Trust Fund as expendable revenue, rather than as permanent capital. The Acquisition Trust Fund currently maintains a balance of $17 million in unencumbered funds. This transfer will provide funding for a longer timeframe so that these lands can be managed in a well-planned and effective manner.

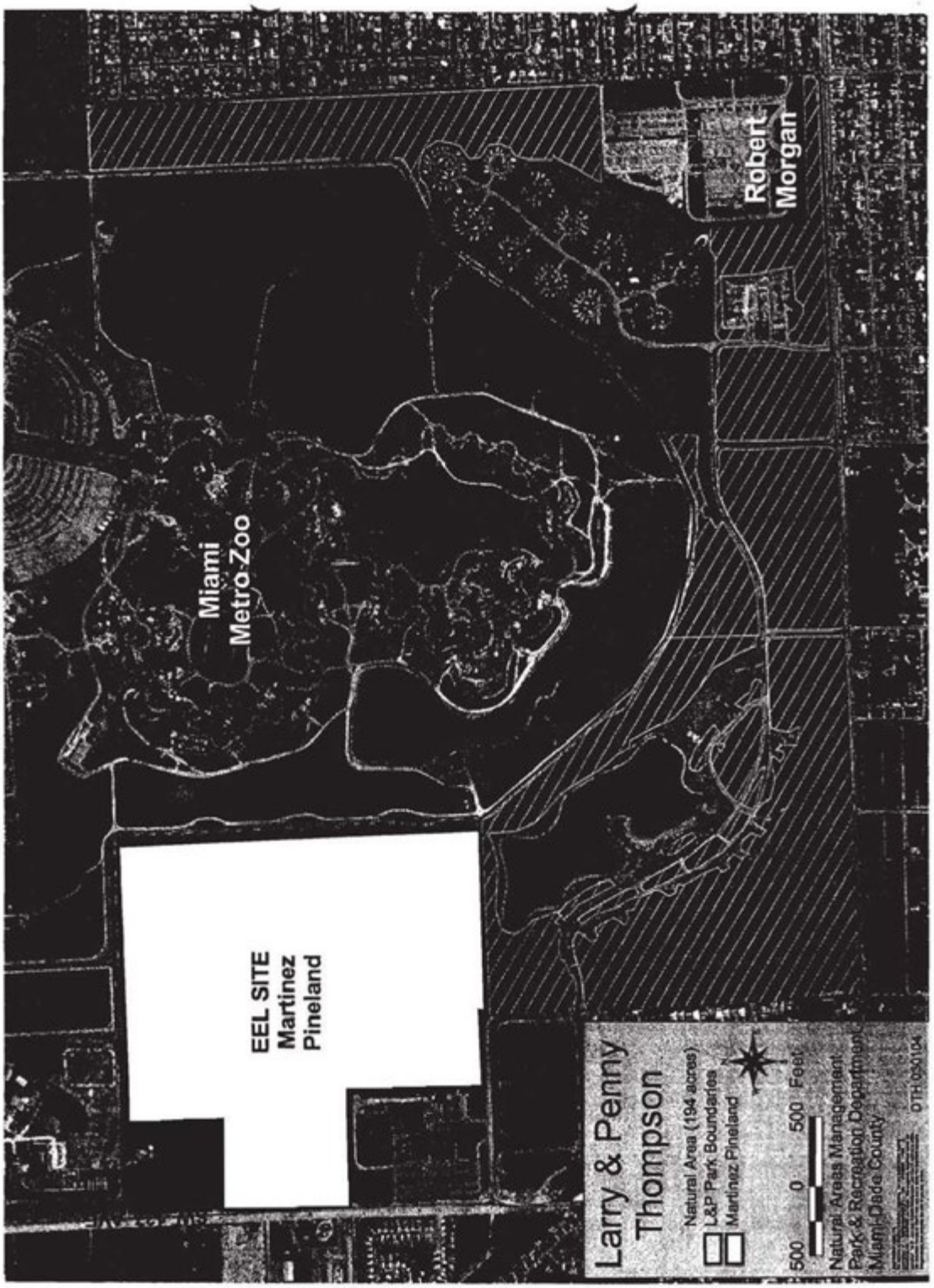
Assistant County Manager

ATTACHMENT 2



7

ATTACHMENT 3



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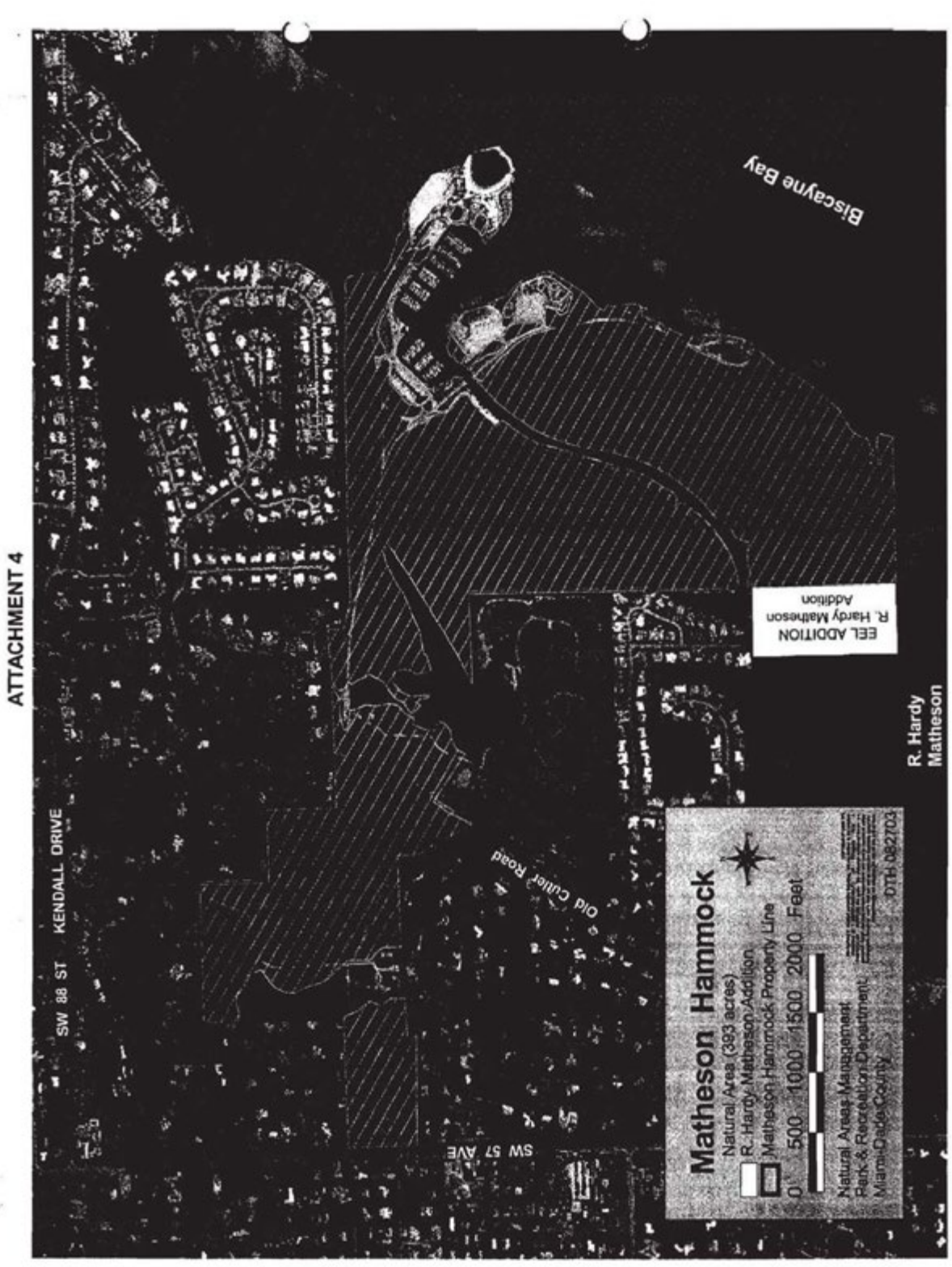
ATTACHMENT 4
Biscayne Bay
EEL ADDITION
R. Hardy Matheson
Addition
R. Hardy
Matheson
SW 88 ST KENDALL DRIVE
Old Cutler Road
SW 57 AVE
Matheson Hammock
Natural Area (393 acres)
R. Hardy Matheson Addition
Matheson Hammock Property Line
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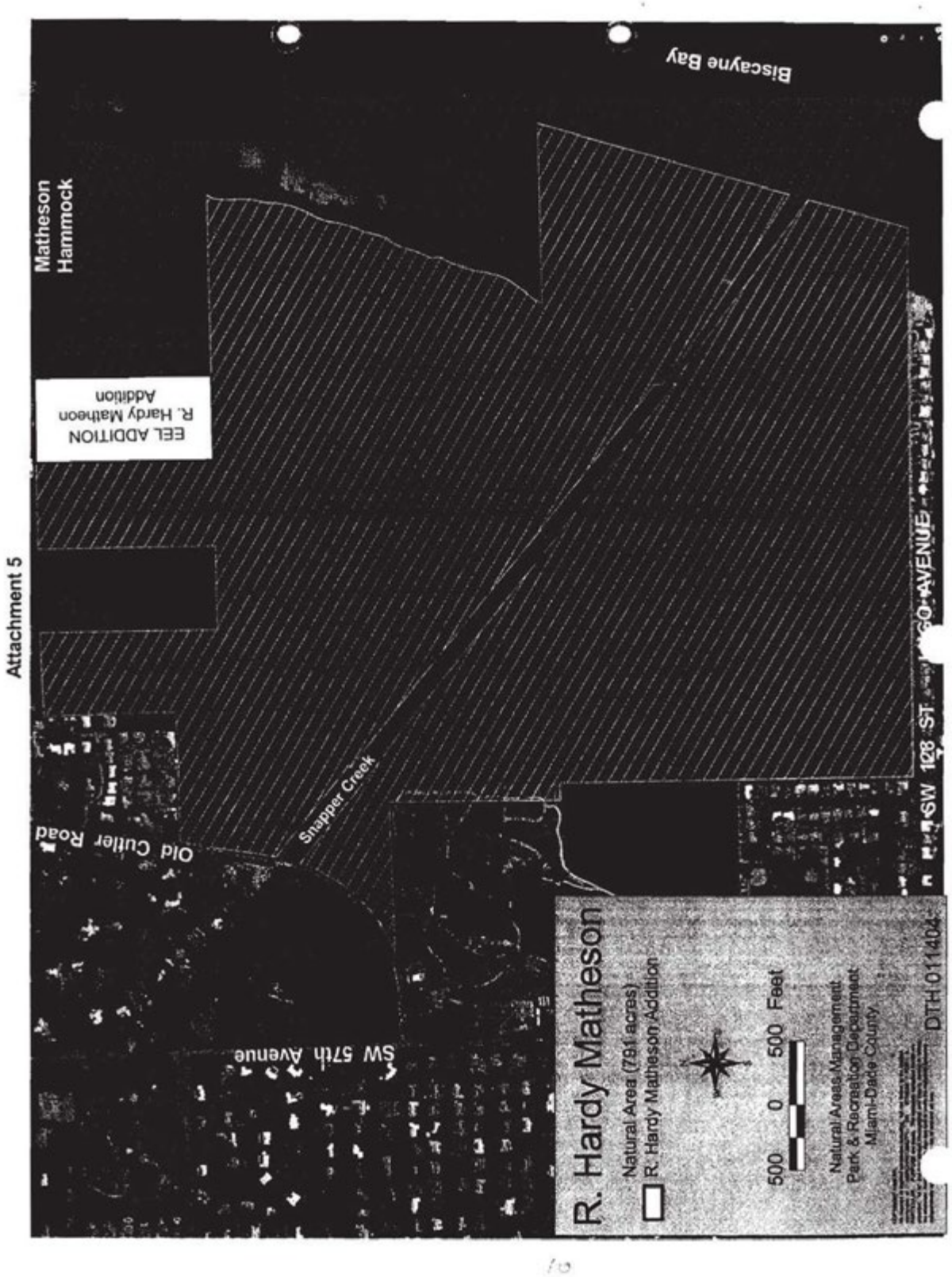
Natural Areas Management
Park & Recreation Department
Miami-Dade County
DTH 082703

9


Attachment 5
Biscayne Bay
Matheson Hammock
EEL ADDITION
R. Hardy Matheson Addition
SW 108 ST
SW 60 AVENUE
Snapper Creek
Old Cutler Road
SW 57th Avenue
R. Hardy Matheson
Natural Area (78± acres)
R. Hardy Matheson Addition
500 0 500 Feet
Natural Areas Management
Park & Recreation Department
Miami-Dade County
DTH 011404

ATTACHMENT D: SUMMARY OF PUBLIC HEARING (TBD)

ATTACHMENT E: SNAPPER CREEK PRESERVE NATURAL AREAS PROTECTION PLAN

SNAPPER CREEK PRESERVE

NATURAL AREAS PROTECTION PLAN

October 8, 1991

Metro-Dade County Park & Recreation Department

The Nature Conservancy

Fairchild Tropical Garden

ACKNOWLEDGMENT

We would like to acknowledge the following for their contributions to this document:

Bob Doren - Everglades National Park
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Jim Snyder - Big Cypress National Preserve

This document was written by:

Geoff Babb - The Nature Conservancy
Janice Duquesnel - The Nature Conservancy
Steve Gatewood - The Nature Conservancy
Rob Line - Metro-Dade Park and Recreation Department
Carol Lippincott - Fairchild Tropical Garden

_____ _____
Janice Duquesnel - The Nature Conservancy Date

_____ _____
Steve Gatewood - The Nature Conservancy Date

_____ _____
Rob Line - Metro-Dade Parks Date

_____ _____
Carol Lippincott - Fairchild Tropical Garden Date

SNAPPER CREEK PRESERVE

NATURAL AREAS PROTECTION PLAN

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B Vascular Plant Inventory
B-1 Code Explanations
B-2 Special Plants List
B-3 Special Animals List
C Park Natural Areas Boundary Map
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B-1 Fire Management Plan
C Management Unit Map/Vegetation Map

Appendix V A Monitoring Methodology

I RESOURCE MANAGEMENT INITIATIVE

Introduction

At the turn of the century, Dade County encompassed lands of outstanding natural diversity. Here, the freshwater of the vast Everglades prairies still blended with coastal mangrove marshes and estuaries. A string of barrier islands rimmed the marine seagrass flats of the narrow northern portion of Biscayne Bay. These islands of shifting sand dunes, white beaches and mangroves moved, unimpeded, ever southward. Further down the coast, the barely-emerged islands of the upper Florida Keys divided the Atlantic Ocean from the shallow bay waters. These rocky outcrops of fossilized coral reef were blanketed with dense subtropical forests. To the east, living coral reefs outlined shallow offshore banks.

In the middle of Dade County lay the "high ground", the sweeping arc of limestone known as the Miami rockridge. This slab of rock formed while submerged in shallow, ancient seas. As the oceans receded, plants and animals arrived from the north and south, and became established on the pitted surface of the new land. Gradually, extensive pine forests developed which were very different from the sandy pine flatwoods to the north. In the "pine rocklands" of Dade County's rockridge evolved plants and animals which were found nowhere else on the planet. Within the broad expanse of pines, scattered "rockland hammocks" harbored assemblages of Caribbean species found nowhere else in the United States.

Today, Dade County's globally-unique pinelands and hammocks are critically endangered. At the turn of the century, the 180,000 acres of limestone uplands of the Miami rockridge were a single forest of pines dotted with hammocks and crisscrossed by transverse glades. Rapid post-World War II clearing of the Miami rockridge has drastically reduced these once extensive forests. In a mere half century, the natural habitat for plants and animals which occur only in Dade County has been almost eliminated. Today, 98% of the upland forests in Dade County, outside of Everglades National Park, have been destroyed, and the remaining 3500 acres exist in scattered fragments. About one-third (1200 acres) of the remaining pinelands and hammocks of the Miami rockridge, including many of the largest and best parcels, are currently owned or managed by the Metropolitan Dade County Park and Recreation Department.

Dade County Conservation Partnership

In order to avert the impending cascade of extinction in Dade County's upland forests, The Nature Conservancy, Fairchild Tropical Garden, and Metro-Dade Parks, with the vital support of The Elizabeth Ordway Dunn Foundation, have established the Dade County Conservation Partnership. The goal of the partnership is to establish a permanent resource management program within Metro-Dade County Parks Department to ensure the long-term perpetuation of natural areas in Dade County parks through ecological management based on current scientific information. A primary goal of this resource management program is to restore and maintain the naturally occurring plant and animal communities of the pine rockland and rockland hammock ecosystems.

Natural Resource Protection Plans

To achieve this goal, the Dade County Conservation Partnership is developing and implementing Natural Area Protection Plans for parks containing significant natural areas. Priority has been given to natural areas containing rare and endangered species. Within each park,

areas considered essential for the long-term perpetuation of a natural resource are designated as Natural Resource Protection Areas, based on criteria used by The Nature Conservancy. The boundaries of the protection areas are mapped and the plant communities inventoried and described. Populations of endangered species are mapped, where feasible, and monitored.

The protection plans contain the historical background of the park, current management issues and recommendations, designated management units, compatible use criteria, and management priorities. The plans are intended to be guidelines for ecological management and may be revised as new information is obtained.

Public Benefits of Natural Resource Protection

Dade County's remaining natural areas, scattered within an urban/agricultural landscape, are invaluable public resources. Most obvious is the simple enjoyment of natural settings for observing wildlife and seasonal changes in wildflowers. Less obvious are the irreplaceable public services provided by filtering air pollution and buffering urban noise, coastal storm protection and providing clean recharge areas for the Biscayne Aquifer.

The remarkable diversity of plants and animals in even remnant subtropical natural areas may contain undiscovered medicinal chemicals and other genetic secrets useful to humans. Natural areas are research laboratories for understanding the complex global ecosystem on which we rely for our survival. Choosing to ignore this wealth of potentially valuable information ultimately reduces our options for survival. By preserving them, studying them and learning from them, our quality of life is enhanced.

Urban natural areas are ideal for educating students about the compelling need for environmental protection, an essential aspect of this long-term resource management program. Community and neighborhood involvement in management of natural areas provides citizens with an opportunity to better understand the ecology of south Florida while doing something beneficial for the environment.

Our remaining natural areas are the last opportunities to see Dade County as it once was. A natural heritage so rich in globally-unique plants and animals, so biologically diverse, so different from any else in the United States, and so critically endangered with extinction warrants protection. These protection plans are the first step towards that goal.

A. **Executive Summary**

Site Description

Snapper Creek Preserve is a 640 acre state owned property which contains a combined wealth of biological, historical and archeological resources. Located along the edge of Biscayne Bay, Snapper Creek Preserve contains five distinct biotic communities, including rockland hammock, pine rockland, salt marsh and mangroves. These natural areas provide a rich diversity of habitats for at least 200 native plant species and numerous animal species.

Snapper Creek Preserve contains 15 acres of rockland hammock and pine rockland. This is one of the few northern pine rocklands remaining in Dade County. Mangroves and salt marsh occupy 539 acres of Snapper Creek Preserve, and are integral to the Biscayne Bay Aquatic Preserve ecosystem. Snapper Creek Preserve provides habitat for 13 rare plant species and 34 animal species of special concern, including five plant species which are candidates for the federal list of

endangered species. Twenty of these plants and animals occur only in South Florida. Restoration of the transitional ecotone between the pine rockland and rockland hammock is a critical objective.

Exotic species make up about 20% of Snapper Creek Preserve's plant inventory. Of these 69 exotic species, 28 are considered to be a significant threat to the natural areas.

Plan Recommendations

- This plan identifies 554 acres of natural areas whose protection and management is essential to maintaining the long term viability of the natural resources at Snapper Creek Preserve.
- This plan provides specific management goals to guide in the decision-making process for park development and management, placing a high priority on protection of these natural areas.
- This plan proposes a long-term ecological monitoring program to ensure effective management based on current scientific information. Target taxa will include the 8 plant species that are considered to be endemic plants restricted to the pine rocklands of South Florida.
- This plan proposes a prescribed fire program to ensure the perpetuation of the pine rockland community. The prescribed fire program divides the pine rockland into three fire management units.
- This plan recommends the development of a permanent exotic species removal program.

B. **Action Plan**

Prepared by Rob Line, Metro-Dade Park and Recreation Department

1991-1992

- Register property with The Nature Conservancy's Heritage Program.
- Herbicide all Brazilian pepper and Burma reed along Old Cutler Road.
- Herbicide Australian pines along north boundary in Unit #1 and Unit #2.
- Prepare long-range hammock restoration sequence, including survey of canopy gaps, survey of significant populations of exotic pest plants, and revegetation plans.
- Systematically survey for and remove and/or herbicide all Brazilian pepper and exotic vines from Unit #5.
- Mow cleared areas in Unit #2.
- Set up permanent photo-points to monitor effects of prescribed fire and exotic species removal.

- Train "volunteer leaders" to organize volunteer workforce to assist with survey and eradication of exotic plants such as air potato, jasmine, Brazilian pepper, and sewer vine.
- Continue removing debris from park.
- Erect informative signs identifying the property as a "Natural Resource Protection Area" along appropriate boundaries.
- Secure north fence boundary to prevent unauthorized access.
- Do not renew the contract with the bee-keeper.

1992-1993

- Continue with treatment of 91-92 restoration project areas.
- Begin hammock restoration sequence in Unit #5.
- Remove Australian pine in Unit #5.
- Prepare Unit #1 for a prescribed burn in early summer.
- Conduct archeological survey of property.
- Maintain photomonitoring of areas undergoing active restoration.
- Remove treehouse in Unit #3.
- Contact South Florida Water Management regarding maintenance of canal road and the possible reopening of the culverts connecting the canal to Unit #3.

II HISTORICAL BACKGROUND OF THE PARK

The Dade County Conservation Partnership proposes that the property known as Snapper Creek/ITT be referred to as "Snapper Creek Preserve". Therefore, Snapper Creek Preserve will be used throughout this document.

A. General Park Description

Snapper Creek Preserve is a 640 acre park owned by the State of Florida and managed by Metro-Dade Parks. It is bordered on the east by Biscayne Bay, on the northeast by Matheson Hammock Park, on the north by a residential developments, on the west by Snapper Creek Lakes residential subdivision, the privately owned Snapper Creek Marina and Four Fillies Farm (owned by the University of Miami). On the south, Snapper Creek Preserve is bordered by the 120 acre Montgomery Foundation (an affiliate of Fairchild Tropical Garden) and the Gables-By-The-Sea residential subdivision.

Two 20 acre in-holdings exist on the north side of Snapper Creek Preserve. One consists of a dwarf mangrove forest, while the other consists of a borrow pit surrounded by red mangroves, with a narrow berm that prevents direct tidal flow to Biscayne Bay.

Snapper Creek Preserve contains 22 acres of rockland hammock, pine rockland and disturbed upland, approximately 535 acres of salt marsh and mangrove, with the remaining acreage being submerged land in Biscayne Bay. This property contains one of the most extensive and best developed white mangrove communities in South Florida, most of which has colonized old agricultural fields. Agricultural drainage ditches still crisscross the mangrove forest.

Snapper Creek Canal flows through the middle of Snapper Creek Preserve. Built in 1912-13, Snapper Creek Canal was one of the first drainage canals constructed in South Florida. Dredging of this canal drastically altered the water table in the area, depleting the freshwater springs which once attracted settlers to the site. A large spoil berm from excavation of the canal is piled along the length of the north side of the canal. A man-made peninsula created by this berm juts into Biscayne Bay. This peninsula and the north bank of the canal are popular fishing spots. Construction of two bridges over Snapper Creek Canal during the last fifty years has severely altered this area.

The original roadbed of the old Ingraham Highway, which once extended from the Miami River southwest to Cape Sable, runs through the property on both sides of the canal. The roadbed is still discernible from where it forks off of the present Old Cutler Road and curves towards Snapper Creek Canal. At the canal, the original bridge is long gone, and the old roadway is again visible through the hammock on the south side of the canal, although it is densely covered with Brazilian pepper (Schinus terebinthifolius). This roadbed has historical significance and should be maintained as an access road for management of the site.

The Preserve contains a Tequesta Indian midden part of which was disturbed by construction of Ingraham Highway and Snapper Creek Canal.

On the north side of the canal, power lines cross the property and lead to an abandoned concrete structure which has been vandalized. The history of this structure is unknown.

B. **Public Acquisition**

Originally part of Charles Deering's estate, the Snapper Creek property was sold in 1969 for $7.2 million to South Florida Development Corporation, a subsidiary of the International Telephone and Telegraph Corporation (ITT). ITT's development plans for the property included two hotel towers and a golf course. Because of the archeological and biological value of the parcel, many environmental groups worked to include Snapper Creek on the acquisition list of the State of Florida's Conservation and Recreational Lands (CARL) program.

In early 1982 the State of Florida purchased the Snapper Creek parcel from ITT for $6.1 million. This was the first time that CARL funds were used to acquire property in Dade county.

Responsibility for the management of Snapper Creek Preserve was transferred to Metro-Dade Parks in 1982, although the State still holds title to the property.

Because of the archeological importance of Snapper Creek Preserve, the Florida Division of Archives, History and Records Management expressed an interest in managing the site. However, because they approved of the management plan proposed by Metro-Dade Parks, which provided for protection of the archeological site, they withdrew their request to manage this area.

Prior to state acquisition of the property, Fairchild Tropical Garden and the Montgomery Foundation had requested that the hammock and mangrove areas be deeded to them to be

preserved and used for scientific and educational purposes. After the state bought the site, Fairchild Garden and the Montgomery Foundation applied to Metro-Dade Parks requesting this use in exchange for management of the hammock. However, due to liability concerns, this proposal was never executed.

In 1986, a 180 acre disjunct addition, called the Snapper Creek Addition, was added to Snapper Creek Preserve. This parcel was purchased from the Gables-By-The-Sea development using money from the State of Florida's Environmentally Endangered Lands Fund. The Addition is located east of S.W. 57 Ave, south of Bella Vista Ave. and north of Chapman Field Park. This property includes remnant salt marsh predominated by black rush, mangrove forest and submerged land in Biscayne Bay. Resource management plans for the Addition will be included in the Natural Area Protection Plan for Chapman Field Park.

C. **Recreational Program Development**

The approved management plan for Snapper Creek Preserve submitted by Metro-Dade Parks, emphasized protection of the archeological sites and the preservation and restoration of ecological communities (See Appendix II B, Management Agreement). Plans for the park included passive recreation such as hiking, fishing, picnicking, canoeing, and guided hammock tours. These activities were to be centralized in the upland areas on the north side of Snapper Creek Canal. All the mangrove areas were to remain untouched. Metro-Dade Parks estimated that it would cost $400,000.00 to prepare the park for public use.

In 1985 a lease agreement was reached between the State and Metro-Dade Parks, and a final management plan was approved in 1988.

Between 1985 and 1988, Metro-Dade Parks and South Florida Water Management District initiated restoration work at Snapper Creek Preserve. On the north side of the canal, Australian pine (Casuaring equisetifolia) and Brazilian pepper were removed along the spoil bank to provide a path to the bay. Culverts were installed on the north side of the canal to maintain tidal flushing into the mangroves and to provide a pedestrian/vehicle path to the bay. Several of these culverts have since collapsed or have become clogged, inhibiting tidal flushing.

To control unauthorized access, a gate was installed at the entrance to the property. In 1988, Dade County Public Works Department installed a substantial barrier along Old Cutler Road on the north side of the canal to prevent unauthorized vehicular entry into the property.

D. **Archeological Sites or Significance**

Snapper Creek Preserve contains the remains of a prehistoric Indian village dating to 500 B.C.. This midden, believed to have been occupied by Tequesta Indians, includes a village and possibly a cemetery. Unearthed artifacts include tools made from bones, pieces of broken pottery, and axheads made out of conch shells.

During the 17th and 18th centuries, settlers built their camps here near the numerous large sinkholes that bubbled with freshwater. Early 20th century settlers planted mangos, sapodillas and other dooryard trees, some of which still remain. This property was a popular picnic location because of the freshwater springs, until construction of the Snapper Creek Canal in the early 1900's dried up water flow.

Despite the illegal digging of artifacts and the effects of dredging the canal, Snapper Creek Preserve is still considered a significant archeological site and may be eligible to be designated as

a National Historic Site.

The management plan for the Preserve seeks to protect the archeological integrity of the site. Only archeological investigations permitted by the Florida Division of Archives, History and Records Management, the Dade County Archeologist, and Metro-Dade Parks will be allowed. A Certificate to Dig should be obtained from the Dade County Archeologist before heavy exotic removal begins in these areas of the Preserve.

III NATURAL RESOURCES

A. History of Natural Areas

1. Geologic and Hydrologic History

The Miami rockridge is composed of oolite which is the aggregation of ooids. Ooids are spherical to egg-shaped grains composed of almost pure calcite crystals that form in warm, clear, shallow seawater by biochemical processes. When exposed by falling sea levels, rainwater erodes the uppermost ooid grains. As the dissolved solution percolates through the limestone mass, it reacts like cement bonding the ooids together and forming the oolite. This process has been repeated over the course of the Sangamon Interglacial and Wisconsin Ice Ages, and formed what is known as the Miami rockridge. Due to the ebb and flood of tides across the deposited oolitic limestone, relief channels called transverse glades were produced, separating the rockridge into distinct islands. These transverse glades acted as conduits carrying water overflow from the interior sawgrass marshes, but have since been altered due to the construction of canals along the glades. However, because of the separation of the oolitic islands, there remains a definite and unique separation of plant communities along the Miami rockridge.

The exposed geological formation of the Miami rockridge has been subject to thousands of years of dissolution by rainwater, resulting in solution holes and underground caverns and streams. The prevalence of solution holes is important in determining the species composition of an area. Historically, these holes contained free standing water and sediment. This maintained a humid environment and promoted the growth of ferns and epiphytes as well as tropical hardwood hammock trees. Because the water table level has dropped as a result of man made intervention, the composition and diversity of the solution hole plant community has been altered.

The highly porous limestone of the Miami rockridge acts as an excellent aquifer. Known as the Biscayne Aquifer, it supplies the ground water to residents in Dade County. The Biscayne Aquifer is wedge shaped in cross-section, extends from Florida Bay in the south to Palm Beach County in the north, and is one of the most permeable and productive shallow aquifers in the world. On the Miami rockridge, surface and sub-surface waters are closely related. Replenishment of the aquifer is almost entirely by local rainfall, while the rest of the water comes from surface flow from the north. Salt water encroachment from Biscayne Bay and the Atlantic Ocean is becoming a serious problem and many wells that had previously been functional as a source of fresh water are now useless.

With the construction of the canal system and the alteration of the water table, there have been drastic limits placed on the capacity of aquifer storage (See Appendix III A-1, History of Canal Construction). The problem is that aquifer depletion down to the controlled elevation of the canals is rapid and has ecological consequences particularly to the pine rocklands and rockland hammocks (See Appendix III A, Maps of Groundwater Levels). The impacts from this regional lowering of the water table on the composition and dynamics of natural communities is uncertain.

2. **Historic Biotic Communities**

Pine rocklands and rockland hammocks were historically found on limestone substrate in three disjunct areas of South Florida: on the oolitic Miami rockridge at the southern edge of the Atlantic Coastal Ridge, on oolitic limestone islands of the lower Florida Keys and on limestone outcrops in areas of the Big Cypress Swamp. Rockland substrate consists of eroded limestone with occasional large deposits of acidic sands. Soil development is generally poor, with small accumulations of marl and other organic materials in depressions and crevices in the rock surface. Sinkholes and solution holes are common in rockland habitats, and are often highly developed in rockland hammocks.

Pine Rocklands

Pine rocklands are characterized by an open canopy dominated by a single overstory tree, the endemic South Florida slash pine. The pineland understory is a mosaic of over 200 species of shrubs, palms, graminoids and herbs of tropical, temperate and endemic origin. On the Miami rockridge, plant species composition of pine rocklands varies from north to south.

Pine rocklands are habitat for several tropical plant species which occur nowhere else in the United States. In addition, these pinelands harbor a diverse array of plants and several animals, called "endemics", which are only found in this plant community and nowhere else on the planet. Estimates of the number of endemic plant taxa in pine rocklands are as high as 43, or 20% of the total flora. Approximately 17 of these endemic plants are restricted to the pine rocklands of the Miami rockridge. Because of severe reduction of pine rockland habitat on the Miami Rockridge, most of these endemic taxa are considered threatened, and several with historically-narrow ranges are now critically endangered with extinction.

Fires, historically ignited by summer lightning storms and by aboriginal people, are an essential abiotic factor in the continuation of the pine rockland plant community. Fire maintains an open pine canopy and a mosaic of woody and herbaceous understory vegetation. In the absence of fire, pine rockland vegetation is replaced by hardwood species and the herbaceous pineland understory vegetation is eventually eliminated.

Since the endemic plants of pine rocklands are primarily elements of the herbaceous forest understory, distribution of these plants is primarily a function of the fire history of that pine rockland. Generally, a higher diversity of endemic species occurs in areas with a recent history of periodic fire. In areas where fire has been excluded over time, a hardwood subcanopy develops and the herbaceous understory flora is greatly reduced.

The pine rockland community provides a habitat for a host of resident and migratory species of animals. Although some of these animals utilized several habitats, pine rocklands were important to their survival. This habitat also provided the necessary temporary refuge for migratory birds.

Some of the animals which inhabited the pine rockland community include: Florida panther (Felis concolor coryi), Sherman's fox squirrel (Sciurus niger shermani), bobcat (Lynx rufus), red-cockaded woodpecker (Picoides borealis), southern kestrel (Falco sparverius paulus), great horned owl (Bubo virginianus), swallow-tailed kite (Elanoides forficatus), eastern indigo snake (Drymarchon corais couperi), rim-rock crowned snake (Tantilla oolitica), Florida scarlet snake (Cemophora coccinea coccinea), eastern coachwhip snake (Masticophes flagellum flagellum), southern toad (Bufo terrestris), bobwhite quail (Colinus virginianus), rufous-sided towhee (Pipilo erythrophthalmus),

marsh rabbit (Sylvilagus palustris), hispid cotton rat (Sigmodon hispidus), cotton mouse (Peromyscus gossypinus), and butterflies including Florida atala (Eumaeus atala florida), Bartram's hairstreak (Strymon acis bartrami), and Florida leafwing (Anaea floridalis).

Rockland Hammocks

In contrast to pine rocklands, rockland hammocks are characterized by a dense upper canopy of tropical and temperate tree species. The hammock subcanopy consists of shade-tolerant trees, shrubs and vines. Terrestrial orchids are found in the hammock understory and large sinkholes and solution holes provide habitat for rare ferns. Trees located on the edges and in the upper canopy of the hammock are host to light-dependent epiphytic ferns, bromeliads and orchids.

Although there are no plants which are endemic strictly to rockland hammocks, these forests are habitat for several species of tropical ferns, orchids and hardwood trees which only occur in the hammocks of South Florida and nowhere else in the United States.

Rockland hammocks were located throughout the Miami rockridge and often formed near the edges of transverse glades or around solution holes. Because of naturally high moisture levels within rockland hammocks, fires would rarely penetrate into the interior of dense hammocks.

The rockland hammock community provided refuge for a variety of resident and migratory animal species. The dense canopy of the hammock maintained an environment conducive to a host of bird populations and provided a valuable refuge for their migratory needs. Although many animals utilized several habitats, the rockland hammocks were crucial to their survival.

Animals which historically inhabited rockland hammocks include: Florida black bear (Ursa americanus floridanus), Florida mastiff bat (Eumops glaucinus floridanus), ivory-billed woodpecker (Campephilus principalis), black-whiskered vireo (Vireo altiloquus), Florida tree snail (Liguus fasciatus), banded tree snail (Orthallicus spp.), rim-rock crowned snake, Schaus' swallowtail (Heraclides aristodemus ponceanus), and Florida purplewing (Eunica tatila tatilista).

Pine rockland/Rockland hammock Ecotone

Historically, fires frequently burned from pine rocklands into the edges of rockland hammocks, maintaining a narrow shifting ecotone which provided habitat for species not commonly found in either of the adjacent plant communities. These natural fire patterns created a mosaic of tree canopy and light availability ideal for plants which are not fire-adapted, yet which require more light than is available in dense hammocks. Many species which are important components of ecotones, such as wild tamarind and Mexican alvaradoa, colonize rapidly and grow quickly, and are thus well-adapted to the shifting nature of the ecotone habitat. Light-dependent epiphytic bromeliads and orchids and algae-grazing tree snails are abundant in pine rockland/rockland hammock ecotones.

With the exclusion of fire, many ecotone species have become abundant in pine rocklands which were once dominated by fire-tolerant species. With succession, ecotone species will eventually be displaced by shade tolerant hardwoods. Through the implementation of prescribed burning programs in pine rocklands, perpetuation of ecotone species will rely on restoration and maintenance of ecotones at all available pine rockland/rockland hammock interfaces.

Alteration of Miami Rockridge Forests

In the late 1800's, pioneers began to arrive in South Florida to establish homesteads on the relatively high ground of the Miami rockridge, first clearing the pine rocklands and rockland hammocks for homesites. Heavy logging of the pine rocklands and rockland hammocks began with the construction of the Florida East Coast Railway in the early 1900's, and logging operations continued into the 1940's. All of the pine rocklands of the Miami rockridge have been logged for timber at least once.

The extensive clearing of the pine rocklands and rockland hammocks of the Miami rockridge for farming was exacerbated in the 1940's with the invention of the rockplow, which pulverized the rough limestone substrate. This single tool was responsible for the conversion of large areas of rockland forest into agricultural fields for production of winter fruits and vegetables.

Prior to the construction of drainage canals which channeled water flow across the rockridge, many low-lying pine rocklands and rockland hammocks were inundated by shallow, slow-flowing freshwater during the summer rainy season. With today's altered surface drainage, the pine rocklands and rockland hammocks of the rockridge are wet for only short periods following heavy rains.

Currently, rapid urban expansion combined with lack of ecological management are responsible for the loss or deterioration of the last scattered remnants of these forest habitats on the Miami rockridge.

Submerged Communities

The marine habitat consists of four major shallow-water communities: soft bottom, hard bottom, seagrass, and mangrove. Although each is distinct, all share interconnected functions of surrounding communities, including upland systems. There is an intermingling of communities which allows for a mosaic of marine plant and animal life. Fish, crustaceans and other animals move freely from one community to the other, often relying on each during different stages of their life cycles, breeding habits, and diurnal or seasonal migrations. Therefore the condition and health of any of these communities is critical to the condition and health of surrounding communities.

Soft Bottom

The soft bottom community consists of mud substrate scattered with a few algae species. This substrate is composed of several inches of soft and silty mud overlying limestone rock. There is very little wave action, resulting in the build up of this fine sediment. Crustaceans, mollusks, and other marine organisms utilize this habitat burrowing their way through the soft bottom to hide from predators. Because of the consistency and composition of the substrate, as well as the anaerobic (containing no free oxygen) conditions below the substrate surface, very few plant species take root leaving the surface relatively barren. Typically, bivalves such as clams and oysters, along with a variety of worms and crustaceans, can be found here.

Hard Bottom

The hard bottom community is composed of calcareous limestone that is often, but not always, covered by a thin layer of slightly coarse sand. Plants found here include many calcareous algae such as merman's shaving brush (Penicillus capitatus), oatmeal algae (Halimeda opuntia), mermaids wine cup (Acetabularia crenulata), and fern algae (Caulerpa spp.), along with various

species of red and brown algae. These calcareous algae draw in calcium carbonate from the seawater and incorporate it into their tissue, forming something similar to a skeleton. When the algae die and decompose, the calcium carbonate remains to become a major component of the surrounding sandy sediment.

Most of the algae utilize the hard bottom to anchor themselves by their holdfasts, absorbing nutrients through their entire structure instead of through a root system.

The animal life that can be found in a hard bottom community includes: seawhip (Pterogorgia anceps), seaplume (Pseudopterogorgia acerosa), loggerhead sponge (Spheciospongia vesparia), vase sponge (Ircina campana), queen conch (Strombus gigas), and finger coral (Porites spp.). Sponges, particularly loggerhead sponges, provide shelter for pistol shrimp (Synalpheus spp.), and many house small fish such as blennies (Blenidae) and gobies (Gobiidae).

Seagrasses

The three main types of seagrasses found off the east coast of Florida are turtle grass (Thalassia testudinum), which has a wide flat blade; manatee grass (Syringodium filiforme), which has a rounded blade; and shoal grass (Halodule wrightii) which has a thin flat blade. These are flowering plants that attach themselves to the substrate by underground runners called rhizomes. Seagrasses are found growing in dense mats close to shore, but have a tendency to thin out as the depth increases beyond 15 to 20 feet. The blades of seagrass, particularly Thalassia in very shallow water, help to slow down water movement, trapping suspended sediment, and improving visibility of offshore water.

The quantity of plant life in the seagrass community creates a great amount of photosynthetic production making it an abundant source of nutrients for the marine food web. The plant and animal life associated with the seagrass community range from large marine organisms to tiny epiphytic algae. Seagrass blades act as a substrate for various red, green and brown algae which in turn provide a valuable source of food for the tiny mollusks and crabs that travel along the blades.

The West Indian Manatee (Trichechus manatus) and several of sea turtle species including green sea turtle (Chelonia mydas), were often seen feeding among the seagrass beds. Additional inhabitants of this ecosystem include the sea urchin (Lytechinus variegatus), tulip snail (Fasciolata tulipa), seahorse (Hippocampus sp.), horseshoe crab (Limulus polyphemus), spotted sea hare (Aplysia dactilomela), star coral (Montastrea spp.), spiny lobster (Panularus argus), stone crab (Menippe mercenaria), blue crab (Callinectes sapidus), upside down jellyfish (Cassiopeia xamachana), yellow spotted stingray (Urolophus jamaicensis), bottlenose dolphin (Tursiops truncatus), and a variety of juvenile fish such as barracuda (Sphyraena barracuda), gray snapper (Lutianus griseus), and grunt (Haemulon spp.).

This community provides intermediate habitat between mangroves and offshore habitats. Because of the abundant food source, larger predators such as tarpon (Megalops atlanticus), snook (Centropomeis undecimalis), and sharks, including lemons (Negaprion brevirostris) and black tips (Carcharhinus limbatus), will forage close to shore in seagrass flats, often in very shallow water.

Mangroves

The mangrove community is comprised primarily of three species: red mangrove (Rhizophora mangle), black mangrove (Avicennia germinans), and white mangrove (Laguncularia racemose).

The buttonwood (Conocarpus erecta), a mangrove associate, is in the same family as the white mangrove and is generally found along the upland edge of the white mangrove community. However, it lacks a few of the characteristics common to mangroves, and is often considered in a separate class from them. Most notable of these characteristics is the ability to reproduce through viviparity, the germination of a seedling on a parent tree.

Mangroves are able to grow in fresh or saltwater but are typically found in saltwater. In freshwater habitats, many other tree species can readily outcompete mangroves. Mangroves have adapted a variety of mechanisms for surviving in the saltwater environment.

Red mangroves are easiest to identify due to adventitious root system known as prop roots. These trees typically grow along the edge of the water with their roots intertwined, helping to stabilize the substrate. On the surface of these prop roots are yellowish bumps which along with aerial roots, help the tree to exchange gases. Aerial roots descend from lateral branches, becoming part of the prop root system if they embed themselves in the substrate.

Red mangroves are salt excluders. As seawater is absorbed into the tree, red mangroves separate the freshwater from the saltwater, and only absorb freshwater. To retain as much freshwater as possible, red mangroves have a thin protective waxy coating on the leaves. This cuticle helps to slow moisture loss from transpiration due to sun, wind and salt.

Seedlings of red mangroves, known as propagules, are long, thin, and green with a brown base. Once the propagule matures on the tree, it will fall off and float horizontally until a significant amount of water is absorbed into the base. The propagule then orientates itself vertically, floating until it embeds itself in substrate. From there, leaves emerge and prop roots form.

Black mangroves are found upland of the red mangrove zone. This intertidal zone is an area where tidal fluctuations cause a wide salinity range and anaerobic substrate. Unlike red mangroves, black mangroves have no prop roots. Instead, rising from the lateral roots are fingerlike projections extending upwards known as pneumatophores. The pneumatophores allow for gas exchange and oxidation of the substrate.

Black mangroves are salt-excreters, siphoning saltwater into the tree and excreting salt through glands located on the leaves. When unwashed by rain or dew for a number of days leaves will be covered with a layer of salt crystals.

Propagules of black mangroves are much smaller than those of red mangroves. This difference in size and shape helps determine the zonation of the mangrove communities and gives an indication of salt tolerance of the propagules.

Although white mangroves are typically found in areas of higher elevation, landward of the intertidal zone, they can be found growing in all mangrove communities. Due to the higher elevation, this zone is infrequently inundated with saltwater. The salinity level is lower and the salinity range is narrow.

White mangroves have a system of modified pneumatophores, differing from those of black mangroves in their development and gas exchange. Depending upon the elevation above normal mean high tide, these pneumatophores sometimes develop in abundance and other times do not develop at all. Unlike black mangroves, when they do develop, they will function for only a short period of time.

The propagules of white mangroves, like those of black mangroves are small and adapted to survive in areas not frequently inundated by salt water.

Other typical vegetation found in association with mangroves include: sea purslane (Sesuvium spp.), saltwort (Batis maritima), glasswort (Salicornia virginicia), and sea ox-eye daisy (Borrichia arborescens).

The mangrove community as a whole functions in several biologically important ways. Because of the intricate root systems of black and red mangroves, sediment and decaying organic matter (known as detritus) are trapped and held in place. Although mangroves are not aggressive land builders, they offer resistance to erosion especially in areas where tidal fluctuation is minimal and the current is slow. Their extensive and stable root systems absorb wave energy protecting the islands they border. Mangroves also help to filter pollutants that trickle through the sediment and root systems.

The mangrove community functions as a nursery ground for a host of marine organisms. Detritus is an important food source that is produced by the conversion of plant tissue into protein. When a mangrove leaf falls into the water, the debris is broken down by fungus and bacteria, resulting in this high protein food.

Attached to the prop roots of red mangroves is a submerged community of plants and animals including various species of algae and a collection of animals that permanently attach themselves to the prop roots or utilize them to find refuge including: mermaids wine cup, fire sponge (Tedania ignis), purple sponge (Haliclona permollis), chicken liver sponge (Suberites ficus), acorn barnacle (Balanus spp.), oyster (Ostrea frons), plumed hydroid (Schizotricha tenella), horned flatworm (Prosthecereaus maculosus), feather duster worm (Sabella spp.), tube worm (Onuphis magna), shrimp (Hippolytidae), and sailfin molly (Poecillia latipinna).

Larger animals can be found swimming through or crawling under the prop roots. These include tarpon, snook, snapper, striped mullet (Mugil cephalus), Atlantic spadefish (Chaetodipterus faber), barracuda (Sphyraena barracuda), blue crab (Callinectes sapidus), lady crab (Ovalipes ocellatus), sea star (Asterias spp.), and grunt are a few species that have been observed. The Florida spiny lobster (Panularis argus), in particular, relies heavily upon the health of this community for its survival. Other occasional visitors to the water surrounding the mangrove community include bottle-nosed dolphin and West Indian manatee.

Mangroves are vitally important to bird populations because they provide a source of food as well as a nesting area. Sometimes congregating in large rookeries, certain birds will nest among the mangrove branches while many other species can be found roosting in the mangroves year round. Mangroves are critical habitat for wading bird populations as well as the wintering migratory birds. Bird species that utilize the mangrove community include: great white heron (Ardea herodias occidentalis), little blue heron (Florida caerulea), tricolor heron (Hydranassa tricolor), snowy egret (Egretta thula), great egret (Casmerodius albus), brown pelican (Pelecanus occidentalis carolinensis), frigate bird (Fregata magnificens rothschildi), double-crested cormorant (Phalacrocorax auritus), southern bald eagle (Haliaeetus leucocephalus), osprey (Pandion haliatus), white ibis (Eudocimus albus), mangrove cuckoo (Coccyzus minor), Florida prairie warbler (Dendroica discolor paludicola), black-whiskered vireo (Vireo altiloquus), and white-crowned pigeon (Columba leucocephala).

In the zone where black and red mangroves grow, getting a foothold among the roots and substrate can be difficult. Only a few species of reptiles and mammals venture into this area. Although the red wolf (Canis rufus) is no longer found in the wild in South Florida, they were known

to once inhabit the mangrove community. Other animal species that were typically found here include: fiddler crab (Uca spp.), American crocodile (Crocodylus acutus), mangrove terrapin (Malaclemys terrapin), mangrove water snake (Nerodia clarkii compressicauda), mangrove crab (Aratus pisonni), gray fox (Urocyon cinereoargenteus), mangrove fox squirrel (Sciurus niger avicennia), raccoon (Procyon lotor), gray squirrel (Sciurus carolinensis), marsh rabbit (Sylvilagus palustris), river otter (Lutra canadensis), and a large number of insects.

3. **Fire History**

There is no recorded history of prescribed burns at Snapper Creek Preserve. At least one wildfire has occurred in the pine rockland on the north side of the canal, probably in the last few years. In 1988 arson fires were set in the Australian pines on the north side of the canal.

B. **Natural Areas Description**

1. **Snapper Creek Hammock**

The majority of Snapper Creek Hammock occupies 10 acres on the south side of Snapper Creek Canal. The hammock historically covered a larger area, but was quartered by the construction of Snapper Creek Canal and Ingraham Highway. Hammock remnants still exist on the north side of the canal. The University of Miami's Four Fillies Farm harbors 6 acres of the original hammock. A 2 1/2 acre portion of the hammock on the Montgomery Foundation, has been used for planting of exotic species.

Snapper Creek Hammock's native canopy consists primarily of tropical tree species such as pond apple (Annona glabra), gumbo limbo (Bursera simaruba), red bay (Persea borbonia), strangler fig (Ficus aurea), West Indian cherry (Prunus mrytifolia), mastic (Mastichodendron foetidissimum), and black ironwood (Krugiodendron ferreum). The National Champion specimen of guiana plum (Drypetes lateriflora) and very large specimens of Jamaica dogwood (Piscidia piscipula) occur in Snapper Creek Hammock. Several species of bromeliad (Tillandsia spp.) and a few orchid species grow epiphytically within the upper canopy.

The native rockland hammock understory includes spicewood (Calyptranthes pallens), marlberry (Ardisia escallonioides) and redberry stopper (Eugenia confusa). The rockland hammock substrate consists of highly eroded limestone pinnacle rock in the eastern portion of the rockland hammock where freshwater once poured from extensive cavernous underground upwellings. (One of these caves, now dry, was recently explored and extended underground for at least 150 feet.) Along the steep edges of this highly eroded rock grows the slender spleenwort (Asplenium trichomanes-dentatum), a fern-relative which is very rare in North America.

On the north side of the canal, disjunct remnants of Snapper Creek Hammock edge the east side of the rockridge. Human activity has fragmented this area and has eliminated the original ecotone between the rockland hammock and adjacent pine rockland. Plants found in this portion of rockland hammock are very similar to those species which occur on the south side of the canal, although more epiphytic bromeliads and orchids occur here due to increased light availability. The rockland hammock vegetation continues down the slope of the rockridge to the edge of the white mangrove forest.

2. **Disturbed Upland**

Also on the north side of Snapper Creek is approximately six acres of disturbed land

containing isolated remnants of rockland hammock. The disturbed land is primarily located in the southwest corner of the parcel and is characterized by highly modified substrate due to road, bridge and canal construction. Rockland hammock in this disturbed area contains species such as Jamaica dogwood, mastic, live oak (Quercus virginiana), pigeon plum (Coccoloba diversifolia), myrsine (Myrsine floridana) and wild coffee (Psychotria nervosa). The remainder of the disturbed parcel consists of open areas of native and exotic grass and herbaceous species surrounded by taller exotic plants such as Brazilian pepper.

3. **Pine Rockland**

The north side of the canal contains about 4 acres of pine rockland. The understory of the pine rockland was cleared sometime in the early 1970's by Dade County Environmental Nuisance Control (ENCO) at the request of neighbors who perceived the area as a hazard. ENCO has since examined its erroneous assumption that urban natural areas posed public health hazards, and with the assistance of Dade County Department of Environmental Resource Management (DERM), ENCO's policies now provide for protection of forest communities.

In spite of this disturbance to the understory, the native species diversity in the pine rockland is high. The site contains a diversity of age-classes of South Florida slash pines (Pinus elliottii var. densa), with many young pines and several remaining older trees. The understory is a mosaic of saw palmetto (Serenoa repens) and cabbage palm (Sabal palmetto) mixed with open areas of native grasses and other herbaceous plant species. Hardwood subcanopy is greatly reduced in the pine rockland.

Areas of exposed limestone substrate in the pine rockland support a wide diversity of grasses and other herbaceous species, including 11 plant taxa which occur only in Florida (see Appendix III B-2, Special Plants List). Of these Florida endemics, 8 are found only in pine rocklands of South Florida and nowhere else on the planet. Pine rockland endemics found at Snapper Creek Preserve include five candidates for the federal list of endangered species, such as Carter's flax (Linum carteri var. carteri), pineland jacquemontia (Jacquemontia curtisii) and pineland poinsettia (Poinsettia pinetorum). Also found here is quail berry (Crossopetalum illicifolium), a tropical plant which is rare in North America.

4. **Pine Rockland/Rockland Hammock Ecotone**

Along the western side of Snapper Creek Hammock bordering Old Cutler Road, many plants typical of pine rockland/rockland hammock ecotones can still be found. These include various epiphytes, saw palmetto, silver palm (Coccothrinax argentata), coontie (Zamia integrifolia), and Gulf graytwig (Schoepfia chrysophylloides). This ecotone should be managed to maintain this rare plant association.

5. **Salt Marsh**

The northwest corner of Snapper Creek Preserve contains a remnant salt marsh characterized by open sunny areas of saltmarsh cordgrass (Spartina patens) and sea ox-eye daisy mixed with white and black mangroves. Mangroves and buttonwood densely cover the drainage ditches. This area is inundated by tidal flow during monthly high tides. Dade County Mosquito Control District uses this site as a test area for mosquito density.

6. **Mangrove**

On the eastern side of the hammock on both sides of Snapper Creek Canal, the limestone ridge abruptly drops and the mangrove community begins. Buttonwood and white mangrove are prevalent on the drier ground, mixed with leather fern (Acrostichum aureum), mangrove mallow (Pavonia spicata) and mangrove rubber vine (Rhabdadenia biflora). A basin mangrove forest of large white mangroves and dwarf mangroves occupy an extensive area at Snapper Creek Preserve, between the high ground of the Miami rockridge and the edge of Biscayne Bay, where red mangroves predominate. Along the shore of the bay, red and black mangroves form a dense fringing forest. Two natural tidal streams, probably portions of the original drainage for Snapper Creek prior to its channelization, drain into Biscayne Bay along the east side of the Preserve.

All of the mangrove areas at Snapper Creek Preserve have previously been carved by drainage ditches for mosquito control and farming. Farming of low-lying salt marshes at the mouth of freshwater transverse glades, such as Snapper Creek, was discontinued after repeated hurricanes inundated the soil with saltwater. These ditches are still visible on aerial photographs. Some of the ditches on the south side of the canal are deep enough for canoe and small boat access, and provide an excellent opportunity to explore a mangrove forest and to observe birdlife.

A naturally occurring low sand berm runs just inside the edge of the red mangroves along the shore of Biscayne Bay. This berm is colonized by plants such as seagrape (Coccoloba uvifera), sea purslane and Christmas berry (Lycium carolinianum).

7. Submerged Habitats

Tidal flats and seagrass beds in Biscayne Bay occupy the submerged lands on the eastern edge of Snapper Creek Preserve. This shallow area includes the hard bottom, soft bottom, and seagrass bed ecosystems.

South of where Snapper Creek Canal meets Biscayne Bay, a large tidal flat area is completely exposed at low tide. This area is frequently visited.

Much of the submerged land in this area of Biscayne Bay has been greatly effected by improper handling of power boats. This is evidenced by the lines of prop scars that run through the seagrass beds. Nets that are dragged by shrimp boats are also destroying the natural features of Biscayne Bay, getting caught among sponges and other plants and animals that are permanently attached to the substrate. The mud and sand that is disturbed by both of these actions causes the suspended sediment to decrease the amount of light that is able to penetrate through the water. This is very detrimental to the health of the ecosystem.

8. Animal Habitat

The pine rockland, rockland hammock, and wetland habitats, support a rich diversity of animal life. Over 50 species of resident and migratory birds have been identified. The mangroves provide important habitat for a number of birds including: brown pelican, mangrove cuckoo, great white heron, little blue heron, tricolor heron, great blue heron (Ardea herodias), yellow-crowned night heron (Nyctanassa violacea), snowy egret, great egret and double crested cormorant. A colony of nesting pileated woodpeckers (Dryocopus pileatus) has been sited in the mangroves on the north side of the canal.

Other animals that have been observed include: West Indian manatee, spotted skunk

(Spilogale putorius), striped skunk (Mephitis mephitis), gray fox, mangrove crab (Aratus pisonni), white-crowned pigeon, osprey, mangrove water snake, red-shouldered hawk, red-tailed hawk (Buteo jamaicensis), fiddler crab (Uca spp.), swallowtail kite, and at least two colorforms of Florida tree snail (Liguus fasciatus).

The surrounding tidal flats and seagrass beds are host to a tremendous amount of marine life including: queen conch, cushion star (Oreaster reticulatus), tulip snail, Florida spiny lobster, grunt, blacktip shark, blue crab, sailfin molly, snapper and porcupine fish.

The health of Biscayne Bay and its surrounding wetland habitats is critical to the survival of many terrestrial and marine species at Snapper Creek Preserve. Appendix III B-3, Special Animals List, contains the federal and state listed species that have historically depended upon the habitats at Snapper Creek Preserve for their survival.

C. Preserve Design

The preserve design process identifies the primary factors considered essential in maintaining the long term viability of the biological resource for which the preserve is being established. A major function of the preserve design is to identify and map boundaries of primary preserves and of secondary areas which influence the primary preserve.

The primary preserves, termed Natural Resource Protection Areas (NRPA), delineate essential locations where the biological protection goals may not be attained unless all of the area is protected. The secondary areas are vital for protecting the primary preserves and integrating them with the active recreation areas of the parks. Secondary areas include but are not limited to buffer lands, additional habitats and recreational areas (See Appendix III C, Park Natural Areas Boundary Map and Appendix III C-1, Preserve Design Boundary Map).

IV NATURAL AREAS MANAGEMENT

A. Management Goals

- restore and maintain naturally occurring plant and animal communities of the pine rockland, rockland hammock and wetland ecosystems.
- restore and maintain the non-living processes which historically influenced the plant and animal communities of the pine rockland, rockland hammock and wetland ecosystems.
- develop and utilize models for restoration and management based on historical documentation of the natural history of South Florida and on recent scientific studies of the remaining parcels of pine rockland, rockland hammock and wetland ecosystems.

B. Management Issues and Recommendations

1. Exotic Plants and Animals

The pine rockland, rockland hammock, and wetland communities of Snapper Creek Preserve have been impacted to varying degrees by exotic plants. Appendix IV B, Exotic Pest Plant List, contains a list of exotic plants that have been found in Snapper Creek Preserve, categorized by the potential threat of the species to the natural areas of the park.

Snapper Creek Hammock is severely impacted by a variety of exotic vines and trees. Exotic vines, mostly skunk vine (Paederia foetida), cover the western portion of Snapper Creek Hammock resulting in shading and death of canopy trees. Exotic vines on the hammock floor are preventing regeneration of native hammock species. Exotic trees, many apparently seeding in from the adjacent Montgomery Foundation property, are displacing native species. Nearby plantings at the Montgomery Foundation should be carefully evaluated for their potential for spreading into the adjacent hammock. Brazilian pepper has densely covered the south canal bank along the edge of the hammock.

Exotics found on the mangrove shoreline berm, such as seaside mahoe (Thespesia populnea), lather leaf (Colubrina asiatica), inkberry (Scaevola sericea) and Australian pine should be removed.

The pine rockland and rockland hammock on the north side of the canal are threatened by the spread of Burma reed in addition to exotic species found on the south side of the canal.

Populations of exotic animal species in the park should be evaluated for their impact to the NRPA. Feral animals, such as cats (Felis domesticus) and dogs, pose a threat to the wildlife in the park. Populations of domestic animals should be trapped and removed, and illegal dumping of any animal must be prohibited.

2. **Fire Management**

Pine rocklands of the Miami rockridge support a flora adapted to frequent fires. The high incidence of lightning strikes and highly flammable fuels dominated by pine needle litter, grasses, saw palmetto and other tropical shrubs have resulted in frequent fire over the past several thousand years.

Fire is the major factor that prevents the succession of pine rocklands to rockland hammocks. Where fire has been absent for an extended period of time, hardwoods are numerous and large. As hardwoods develop, conditions become too shady for pine regeneration and pine rockland understory species, including most of the endemics, are eventually displaced.

Fire rarely penetrates the interior of dense hammocks. However, under extreme conditions, such as severe drought, fire may cross even the largest hammocks, often killing large hardwoods and consuming organic soils. Studies at Everglades National Park (ENP) have shown that soil moisture is the most important consideration when determining whether a hammock will burn. ENP has found that organic hammock soils will burn at 80% moisture content. Generally, organic soil consumption is detrimental to hammocks, however it may be desirable at times to burn small areas of hammock soils to create germination sites for species requiring rocky mineral conditions. Certain hammock species are capable of resisting fire, and some large trees may survive intact or resprout. Species that require light for successful establishment may appear following hammock burns.

Fire management studies in ENP have provided valuable information on restoration of pine rocklands. These studies have shown that fire season, interval, and intensity are important variables in pine rockland restoration and management. Initial burns following long periods of fire exclusion are typically patchy with areas of unburned hardwoods. Subsequent growing season burns significantly reduce the hardwood subcanopy. In the restoration phase, hardwoods and exotics are most effectively reduced by hot fires which may also kill pine trees. The high fuel buildup in unburned pine rocklands may make pine mortality difficult or impossible to control. Some pines will be killed in early fuel reduction burns. As understory fuels are decreased, fire intensity and scorch

height will also decrease, reducing pine mortality. Once a pine rockland has been restored and is in a maintenance phase, the objective will be to maintain a mosaic of vegetation, providing a greater diversity of habitat.

Healthy vertebrates are rarely killed by prescribed fire in pine rocklands. Fire reduces shade and cover favoring animals that require these open sites, while displacing those dependent on sheltered conditions.

Fire management activities at Snapper Creek Preserve will be directed at the restoration and maintenance of the pine rockland and pine rockland/rockland hammock ecotone. The pine rockland is small and control problems are not anticipated. Smoke management problems due to proximity to homes and Old Cutler road require a westerly wind to avoid smoke in these sensitive areas (See Appendix IV B-1, Fire Management Plan).

Fire Management Goals

The goals of fire management at Snapper Creek Preserve are to:

- restore and maintain the natural components and processes of the pine rockland and rockland hammock communities.
- allow fire to maintain natural ecotones between pine rockland and rockland hammock communities. Eliminate firebreaks that interrupt natural ecotones.
- promote a range of pine tree age classes and a mosaic of pine rockland canopy gaps to enhance the diversity of understory plant species.
- control exotic plant species.
- develop a wildfire response plan that is appropriate to sensitive natural resource.
- reduce hazardous fuel loads.

3. **Access Control**

Since Snapper Creek Canal is a well-known and popular fishing spot, unauthorized vehicular access on the north side of the canal has been a continual problem. Although only one road (Ingraham Highway) leads into Snapper Creek Preserve, unauthorized entry on foot and by all-terrain vehicles (ATV) has been a problem. A gate was installed at the entrance of Ingraham Highway but has been ineffective in controlling trespassing. A fence is needed along the north upland property line to control access into this area of the Preserve.

In 1983, Metro-Dade Parks obtained a special permit from the City of Coral Gables to construct a seven foot tall fence around the northwest corner of the property. Sections of this fence were knocked down and repaired nine times before the fence was replaced in 1988 with a more substantial barricade.

Snapper Creek Hammock is surrounded by a fence along Old Cutler Road and the Montgomery Foundation property. Numerous holes have been cut in this fence, which needs to be repaired. Access to the hammock is limited to a gate in the southwest corner, which needs to be replaced. Dense growths of Brazilian pepper along the Old Cutler Road fenceline and along the south canal bank further limit pedestrian access. The adjacent Montgomery Foundation is closed to public access.

A rope swing over Snapper Creek Canal was recently constructed by teenagers who removed and burned Brazilian pepper and other exotic trees from along the canal bank.

Although this has not directly harmed the adjacent hammock, this type of unauthorized activity, especially when fires are used to control mosquitos, has the potential for damaging the hammock, and presents a liability problem to Metro-Dade Parks Department.

Mangrove and salt marsh areas of Snapper Creek Preserve are readily accessible via a system of large drainage ditches accessible from Biscayne Bay and via residential neighborhoods to the north and south. A large treehouse has been constructed in the mangroves on the shore of Biscayne Bay north of the canal. The structure is quite elaborate and has involved removal of significant tree canopy, as evidenced by aerial photographs. A large garbage pile has accumulated at this treehouse. This structure should be removed to avoid further damage to the mangrove forest.

Access must be controlled to prevent dumping, to protect the archeological site from vandalism and to prevent theft of desirable epiphytes, colorful tree snails and other species from the hammock.

Homeless persons are inhabiting the north side of the canal. This activity and its associated problems need to be addressed. Campfires lit in this area present a hazard to the Preserve.

To notify the public of the need for controlled access, the perimeter of the park should be clearly posted as a METRO-DADE COUNTY NATURAL RESOURCE PROTECTION AREA. This sign should have an identifiable logo and a positive and informative public message.

4. **Illegal Dumping**

Prior to installation of the barricade, dumping of construction and household debris was a problem on the north side of the canal. Currently, vehicles are still entering the property through a gap in the fence along the north property line, which is accessible because of construction activity on that property.

Illegal dumping of garbage and construction debris needs to be controlled and all trash properly disposed of at the nearest public dump.

A clean-up project, sponsored by the Sierra Club in 1990, removed the debris that had been illegally dumped on the north side of Snapper Creek Canal.

5. **Buffer Zones and Surrounding Properties**

Snapper Creek Preserve is bordered on the east by Biscayne Bay, on the northeast by Matheson Hammock Park, on the north by a residential developments, on the west by Snapper Creek Lakes residential area, Snapper Creek Marina and Four Fillies Farm. Snapper Creek Preserve is bordered on the south by the Montgomery Foundation and the Gables-By-The-Sea residential area. Two 20 acre inholdings exist on the north side of Snapper Creek Preserve.

A management agreement should be reached with property owners adjacent to Snapper Creek Hammock (i.e. Four Fillies Farm and the Montgomery Foundation) to avoid activities which could negatively impact the hammock and to encourage management of their portions of the hammock.

Residents from the nearby Snapper Creek Lakes subdivision were concerned with the proposal by the City of Coral Gables to construct a fire station at this site. As a result, they organized the

Snapper Creek Archeological and Botanic Preserve Conservancy. The goal of this organization is to protect and preserve the natural and historical resources of the Preserve.

6. Compatible Uses

All recreational, educational and research activities within parks containing Natural Resource Protection Areas (NRPA) must be compatible with the perpetuation of the natural resource. Within a NRPA, public use must be controlled and managed to avoid negative impacts, and must not require significant alterations to the natural resource. Access within the NRPA will utilize existing trails or firebreaks, with restricted improvements. Within the secondary areas, activities must not have a negative impact on the NRPA.

Where compatible use activities are allowed, infrastructure will be focused in highly degraded areas. Where highly degraded areas are not available, infrastructure will be considered only within a limited portion of the NRPA.

a. Recreation

Low impact recreational activities such as nature study, hiking, canoeing, fishing, birdwatching, and photography are considered to be compatible within the NRPA.

Currently the site is used for fishing and occasional bicycling. With easy access to Biscayne Bay, the Preserve offers excellent opportunities for canoeing along Snapper Creek Canal and through the mangrove forest, for fishing from the canal bank, for birdwatching, picnicking, nature walks and limited hiking and bicycling trails on the north side of the canal.

b. Education

Community and scholastic educational opportunities should be offered on a continuing basis in conjunction with the resource management program. Schools and other organizations should be encouraged to study the natural history of the park, with the educational activities compatible within the NRPA focusing on non-destructive instruction. This may include limiting the size of student groups and restricting harvest of plant material in order to prevent cumulative impacts to the resource.

The Preserve's rich archeological/cultural history and biological values provide excellent opportunities for interpretative programs for the public. Interpretive trail markers would facilitate the use of NRPA for environmental education. Resource materials for countywide natural resource management should be developed and distributed.

c. Research

Scientific research should be encouraged in NRPA's. Valid research can provide valuable information which will assist in the ecological management of the natural resource.

Only legitimate scientific researchers who have received a permit from Metro-Dade Parks will be allowed to collect any live or dead specimens from the park. These researchers will be required to have in their possession the applicable permits from appropriate federal, state and local agencies.

Research projects will be evaluated on their contribution to the understanding and perpetuation of the NRPA. Research techniques shall be non-destructive whenever possible, and

data made available to Metro-Dade Parks.

7. **Other Management Issues**

a. **Mosquito Control**

At the present time, only a few county parks are subject to ground mosquito control spraying, by request of the park manager. An ultra low volume mist of pure insecticide is administered by truck. The use of aerial application of insecticide is utilized in this section of Dade County.

Because the chemicals used for mosquito control may also effect non-target beneficial organisms such as pollinating insects or tree snails, aerial application of mosquito control chemicals over Snapper Creek Preserve should be prohibited.

b. **Landscaping and Restoration**

Within Primary Preserves

All future ornamental landscaping and natural area restoration projects within NRPA should consist only of site-specific native plant material, and should utilize site-specific seed sources where possible.

Within Secondary and Recreational Areas

All future ornamental landscaping and natural area restoration projects in secondary areas should utilize site-specific native plant material whenever possible. Use of non-site-specific plant material or use of exotic plant species should be carefully evaluated prior to planting for their potential to invade natural areas or to hybridize with existing native plants within the park.

Existing plant material which has been planted for ornamental landscaping or for natural area restoration should be evaluated for potential threats to the native plant community.

c. **Plant and Animal Introductions**

Introduction and/or reintroduction of plants or animals into the NRPA will require a permit from Metro-Dade Parks. A written proposal will be submitted to the Resource Manager in consultation with appropriate scientific authorities. Introduction proposals must be based on scientific criteria and will be evaluated on their potential impacts to existing native plant and animal communities. Criteria for approval of introduction proposals will include but not be limited to historic range of the species, gene pool of the introduced individuals, competition with or displacement of existing native species, minimum viable habitat for the species, and monitoring and evaluation of the introduced species.

d. **Plant and Seed Collection**

Collection of native plant material for propagation and/or sale by groups such as non-profit organizations, commercial businesses or individuals will not be allowed in Metro-Dade Parks except by a permit from the Resource Manager. Each written request will be considered on a case by case basis in consultation with the appropriate scientific authorities and evaluated for their potential impacts to existing native plant and animal communities.

e. **Proposed Fire Station**

The City of Coral Gables has petitioned the state for purchase of 1.7 acres of land on the north side of the canal for the construction of a fire station. This proposed project is in conflict with management goals and compatible uses as set forth in this protection plan. This proposal is being actively opposed by neighbors and local environmental groups.

C. **Management Units**

Snapper Creek Preserve has been divided into five units for ecological management purposes. Boundaries of each unit are defined by existing features such as plant community type, roads, trails, canals, and property lines. In some areas, blocks of plant communities which are separated by existing roadways have been combined into one management unit (See Appendix IV C, Management Unit Map/Vegetation Map).

Unit #1:Disturbed Upland - 6 acres

This is the proposed location of future passive park facilities for picnicking, canoeing, fishing, and limited parking. Much of this unit is badly disturbed by canal and road construction in the first half of this century. The original roadbed of the Ingraham Highway serves as access to the area. An electrical power line connects to an abandoned concrete structure. Piles of construction debris and trash were dumped in this unit prior to purchase of the site by the State of Florida. Much of the trash already has been removed, and the remainder is scheduled to be removed in the winter of 1991.

Although small remnant islands of rockland hammock vegetation still persist, most of the unit is dominated by exotic vegetation such as Brazilian pepper, Australian pine, Gold Coast jasmine, and Burma reed.

Approximately eighty beehives are in this unit. A lease agreement with the beekeeper will expire August 31, 1991. Since exotic honey bees (Apis mellifera) compete with native pollinators for nectar and pollen, the lease must not be renewed. Because the public utilizes the Preserve, bees present a liability problem.

Approximately 1 acre of this unit is designated as an archeological zone which cannot be developed and must be protected. A Certificate to Dig should be obtained before heavy exotic removal begins in this area of the unit.

The City of Coral Gables has proposed building a fire station on 1.7 acres in the western corner of this unit. This would eliminate 1/3 of the area available for recreational facilities in the Preserve. This proposed project is in conflict with management goals and compatible uses as set forth in this protection plan.

Unit #2:Pine Rockland to Rockland Hammock - 5 acres

This unit contains the northern most coastal pine rockland (4 acres) in public ownership in the United States. Although small in size and disturbed by previous human activities, it is remarkably diverse. Numerous exotics, particularly Australian pine and Burma reed are problems in this unit. The eastern border of the unit is heavily invaded by large Brazilian pepper. Unauthorized vehicles entering through the north boundary fence, have been a problem, and vandalism of pine trees has recently occurred. ATV's have been difficult to keep off the property. A new fence is needed

along the northern boundary.

Prescribed fire will be required in the pine rockland, and burning into the edges of the remnant rockland hammock (1 acre) in the southern portion would re-establish the natural ecotone between these two plant communities.

Construction debris and concrete is being dumped in construction areas along the north fenceline.

Unit #3:Mangrove Forest/Saltmarsh - 318 acres

The mangrove forest in this unit is large and in excellent condition. Exotic plants have become established only in areas of disturbance, particularly upon spoil piled along Snapper Creek Canal. This spoil berm forms the southern boundary of the unit and extends into the submerged communities in Biscayne Bay. Australian pine, Burma reed and Brazilian pepper have become established on this spoil berm. A fire killed many of the pines in 1988, but did not penetrate the mangrove forest. Two acres of huge Brazilian pepper with scattered native hammock species are growing along the mangrove fringe at the western edge of the unit.

Culverts that were constructed under the spoil berm, some of which have collapsed, should be replaced to increase tidal flushing of this mangrove forest. Additional culverts may be necessary.

This unit contains the original drainage channels of Snapper Creek and the remnant riverine mangrove forest that grew along its shores. Construction of Snapper Creek Canal altered the flow of saltwater inland and channeled a rapid flow of freshwater to the bay. The edges of the canal has become dominated by white mangroves growing in old marl farmland. These fields, once saltmarshes, were abandoned in the 1930's because of canal construction and increased salinity.

This unit contains remnant saltmarsh in its northwest corner. This area is regularly surveyed by Mosquito Control for mosquito density. White mangroves and buttonwoods in this area have been cut.

Unit #4:Mangrove Forest/Saltmarsh - 221 acres

Dredging of drainage ditches has had tremendous effects upon the development and succession of the mangrove forest in this unit. Originally, this unit contained a narrow fringing mangrove forest along the bay, with a larger area of basin mangroves and salt marsh further inland. As a result of agricultural drainage ditches, most of the salt marsh was eliminated. Since construction of the canal, the mangrove forest has expanded to occupy nearly the entire unit.

The spoil left from drainage ditch construction provided an avenue for exotic intrusion into the mangroves. A scattered group of Australian pine are growing in the southwestern corner and along the south boundary of the unit. Neighborhood dumping is a minor problem along this edge. Brazilian pepper has colonized saltmarsh, which was previously farmed, on the western edge of the unit. Massive Brazilian peppers form a barrier on the eastern side of Unit #5, against the edge of Snapper Creek Hammock. Hoop withe is growing on the berm at the southeastern edge of this unit.

Unit #5:Rockland Hammock - 10 acres

A gate at the southwest corner of the unit provides access to old Ingraham Highway. The old road is lined with Brazilian pepper which, once removed, will allow maintenance vehicles to enter

and drive through the hammock 100 feet southeast of Old Cutler Road.

Several holes have been cut into the fence along Old Cutler Road. The majority of people using this access are travelling to the rope-swing attached to Australian pines along the canal. This will remain a problem until these trees are cut down.

The majority of the remaining Snapper Creek Hammock is within this management unit. Although some portions are in good condition, the majority of the hammock has been moderately to heavily impacted by exotic plants. This is a result of numerous human disturbances in the hammock such as Ingraham Highway, Snapper Creek Canal, farming activity, and early pioneer homesteads and dooryard plantings. The edge of the canal, neighboring plant collections, and roadways are the sources of heaviest exotic infestations. Some of the most invasive exotic vine species in Florida are found here. Exotic plants become somewhat less dense as you move away from disturbed areas.

Bald cypress (Taxodium distichum) once was associated with the lower lying areas of the hammock edge, now west of Old Cutler Road. The canal was dredged through the lowest outlet of Snapper Creek through the hammock, destroying much of the original creek bed. A small section of the original creek bed, now dry, has been colonized by Brazilian pepper. As exotics are eliminated, the creek bed should be revegetated with appropriate native species.

An archeological zone is located in the hammock. A Certificate to Dig should be obtained before heavy exotic removal begins in this area of the hammock.

V NATURAL AREAS MONITORING

A. Monitoring Goals

The goal of natural areas monitoring is to ensure the perpetuation of the pine rockland, rockland hammock and wetland biotic communities through effective ecological management based on current scientific information. Monitoring and management of target taxa shall be given high priority. For the purposes of the program at Snapper Creek Preserve, "target taxa" shall be endemic plants whose global survival is dependent upon protection and management of the pine rocklands, rockland hammocks and wetland habitats of South Florida (See Appendix III B-2, Special Plants List).

1. Pilot Monitoring Program

A pilot monitoring program will be implemented by staff of Fairchild Tropical Garden prior to June, 1992 (See Appendix V A, Monitoring Methodology). The goals of this pilot program are to:

a. compile an inventory of exotic and native flora of the pine rockland, rockland hammock and wetland areas.

b. identify target taxa; determine target taxa population size and distribution, and map individuals, where feasible.

c. gather basic phenological data for target plant taxa so that their survival and reproduction is better understood in relation to management decisions

d. monitor changes over time in target taxa population size and distribution, particularly in response to management techniques and to human use of the park.

e. evaluate proposed and current management techniques and human uses of the park for potential impacts on the pine rockland, rockland hammock and wetland biotic community.

2. **Long-Term Monitoring Program**

A long-term monitoring program should be implemented which will provide the resource manager with information on plant community response to management techniques and human use patterns. Tasks which should be included in an on-going monitoring program for the long-term management of the pine rockland, rockland hammock and wetland habitats include:

a. maintain current inventory of native and exotic plants

b. monitor introduction and distribution of exotic plants

c. monitor changes in plant community structure (including species composition, diversity, dominance, density) in response to management techniques and human use of the park:

- Fire Monitoring - monitor plant community responses to prescribed burns and wildfires, especially in relation to burn season, burn frequency, fire intensity, and firing and mop-up techniques which significantly alter rockland substrate. Monitor long-term species diversity of pine rockland and pine rockland/rockland hammock ecotone in absence of fire management and in response to fire analog management (manual removal of duff layer and hardwoods to create a vegetation mosaic).

- Exotic Plant Monitoring - monitor plant community responses to establishment, spread and removal of exotic plants. Evaluate impact of exotic plants on native plant colonization of hammock canopy gaps. Evaluate long-term impact of manual and chemical methods for control of exotic plants. Evaluate plant community response to manual techniques and equipment which result in disturbance to rockland substrate or significant alteration of plant community structure. Evaluate habitat implications of herbicide use (short- and long-term soil residues, broad spectrum vs. target chemicals, potential non-target and other cumulative impacts, formulation choices, proper labeling, methods of application, training and certification of applicators). Evaluate cost-effectiveness of manual and chemical control methods in relation to enhancement of rockland habitat.

- Human Use Monitoring - monitor plant community responses to human use of pineland, hammock and adjacent areas, including implications such as exotic plant introduction, indirect pesticide exposure, alteration of rockland substrate, nutrient overloading and runoff, wildfire ignition, disruption of insect pollination mechanisms, and destruction or removal of plants (incl. plant parts) and animals.

d. Monitor slash pine density, mortality, regeneration, growth rate, seed production / dispersal / viability / germination.

e. Monitor target taxa:

- Status Survey - on-going assessment of target taxa population size, status (phenology, mortality) and distribution, with accurate mapping of individuals where feasible.

- Life History / Reproductive Biology - for plants, obtain data on phenology, asexual

ATTACHMENT F: 1847 SURVEYOR LOG

East Florida.

T LV. S. R. XLI. E.

Contents

No	Area	No	Area	No	Area

Surveyed and marked in the Month of February 1847 by
John Jackson Dept. Surveyor

John Keane
William Cole } Chainmen

Scale 40 Chains to an inch
Variation 5° 15' East

Examined compared with field notes and approved September 20 1847

Wm. Minor
Surv. General

ATTACHMENT G: COMMON AND SCIENTIFIC NAMES FOR PLANT AND WILDLIFE SPECIES REFERENCED IN THE PLAN

Common Name	Scientific Name
air potato	*Dioscorea bulbifera*
American crocodile	*Crocodylus acutus*
Australian pine	*Casuarina sp.*
bird's nest fern	*Asplenium serratum*
black ironwood	*Krugiodendron ferreum*
black mangrove	*Avicennia germinans*
bottlenose dolphin	*Tursiops truncatus*
Brazilian pepper	*Schinus terebinthifolius*
brown pelican	*Pelecanus occidentalis*
buttonwood	*Conocarpus erectus*
cabbage palm	*Sabal palmetto*
cardinal airplant	*Tillandsia fasciculata var. densispica*
Cartagena prairie-clover	*Dalea carthagenensis*
Carter's small-flowered flax	*Linum carteri var. carteri*
Christmas berry	*Crossopetalum ilicifolium*
feral pig	*Sus scrofa*
filmy fern	*Trichomanes punctatum ssp floridanum*
five-petaled leaf-flower	*Phyllanthus pentaphyllus var. floridanus*
Florida flatsedge	*Cyperus floridanus*
Florida keys nutrush	*Scleria lithosperma*
Florida tree fern	*Ctenitis sloanei*
giant airplant	*Tillandsia utriculata*
gumbo limbo	*Bursera simaruba*
holly fern	*Lomariopsis kunzeana*
iguana	*Iguana iguana*
Jamaica dogwood	*Piscidia piscipula*
golden leather fern	*Acrostichum aureum*
little blue heron	*Egregga caerulea*
live oak	*Quercus virginiana*
manatee grass	*Syringodium filiforme*
mangrove mallow	*Pavonia paludicola*
mangrove rubber vine	*Rhabdadenia biflora*
marlberry	*Ardisia escallonioides*
mastic	*Mastichodendron foetidissimum*
pineland jacquemontia	*Jacquemontia curtissii*
poisonwood	*Metopium toxiferum*
red bay	*Persea borbonia*
redberry stopper	*Eugenia confusa*
red mangrove	*Rhizophora mangle*
red-tailed boa	*Boa constrictor*
rockland painted-leaf	*Poinsettia pinetorum*
royal palm	*Roystonea regia*
saw palmetto	*Serenoa repens*
sewer vine	*Paederia cruddasiana*
shoal grass	*Halodule wrightii*
silver palm	*Coccothrinax argentata*
Simpson's stopper	*Myrcianthes fragrans var. simpsonii*
slender spleenwort	*Asplenium dentatum*
south Florida slash pine	*Pinus elliottii var. densa*
Spanish stopper	*Eugenia foetida*
spicewood	*Calyptranthes pallens*
strangler fig	*Ficus aurea*
turtle grass	*Thalassia testudinum*
villose fennel	*Eupatorium villosum*
West Indian cherry	*Prunus myrtifolia*
West Indian manatee	*Trichechus manatus*
white mangrove	*Laguncularia racemosa*
white stopper	*Eugenia axillaris*
wood stork	*Mycteria americana*
yellowspike orchid	*Polystachya concreta*

ATTACHMENT H: INSTITUTE FOR REGIONAL CONSERVATION PLANT LIST

Plants of South Florida · Plants by Conservation Area · Plants by County · Plants by Habitat
Submit Data · Quick Search · Advanced Search

R. Hardy Matheson Preserve

County: **Miami-Dade County**
Size: **823** acres
Latitude: **25.66599°** Longitude: **-80.27809°**
Section: **7,8,17,18** Township: **55** Range: **41**
Managing Agency: **Miami-Dade County Department of Parks and Recreation**

There are 336 taxa reported for
R. Hardy Matheson Preserve

Group By Family: ☐ Show Results

Scientific Name:	Occurrence:	Native Status:	Introduced Status:	Invasive Status:	Cultivated Status:	Reference:	Voucher:
Abildgaardia ovata	Present	Native	Not Introduced	Native		14624	
Abrus precatorius	Present	Not Native, Naturalized	Introduced	Invasive		14624	
Acacia auriculiformis	Present	Not Native, Naturalized	Introduced	Invasive		14624	
Acalypha chamaedrifolia	Present	Native	Not Introduced	Native		14624	
Acmella oliosa	Present	Not Native, Naturalized	Introduced	Ruderal		4759	4759
Acrocomia aculeata	Presumed Extirpated	Not Native, Naturalized	Introduced, Presumed Extirpated	Formerly Cultivated	Formerly Cultivated	14624	
Agrostichum aureum	Present	Native	Not Introduced	Native		15030	
Agrostichum danaeifolium	Present	Native	Not Introduced	Native		14624	
Adenanthera pavonina	Present	Not Native, Naturalized	Introduced	Invasive		15030	
Agalinis fasciculata	Present	Native	Not Introduced	Native		15030	
Agave sisalana	Present	Not Native, Naturalized	Introduced	Invasive		14624	
Albizia lebbeck	Present	Not Native, Naturalized	Introduced	Invasive		14624	
Alternanthera flavescens	Present	Native	Not Introduced	Native		14624	
Alysicarpus vaginalis	Present	Not Native, Naturalized	Introduced	Ruderal		14624	
Ambrosia artemisiifolia	Present	Native	Not Introduced	Ruderal		14624	
Amyris elemifera	Present	Native	Not Introduced	Native		14624	
Andropogon glomeratus var. glomeratus	Present	Native	Not Introduced	Native		15030	
Andropogon glomeratus var. pumilus	Present	Native	Not Introduced	Native		14624	
Andropogon virginicus var. decipiens	Present	Native	Not Introduced			51856	0
Andropogon virginicus	Recorded as Present in Error					15030	
Anemia adiantifolia	Present	Native	Not Introduced	Native		14624	
Annona glabra	Present	Native	Not Introduced	Native		14624	
Ardisia elliptica	Present	Not Native, Naturalized	Introduced	Invasive		15030	
Ardisia escallonioides	Present	Native	Not Introduced	Native		14624	
Aristida purpurascens	Present	Native	Not Introduced			226895	0
Asclepias curassavica	Present	Not Native, Naturalized	Introduced	Invasive		14624	4758
Asparagus densiflorus	Present	Not Native, Naturalized	Introduced	Invasive		14624	
Asplenium dentatum	Present	Native	Not Introduced	Native		15030	18645
Aster subulatus	Present	Native	Not Introduced	Native		14624	
Avicennia germinans	Present	Native	Not Introduced	Native		14624	
Avonia euphorbioides	Present	Native	Not Introduced	Native		15030	
Bachelot angustifolia	Present	Native	Not Introduced	Native		14624	
Bachelot oblongifolia	Present	Native	Not Introduced	Native		14624	
Bachelot halimifolia	Present	Native	Not Introduced	Native		14624	
Batis maritima	Present	Native	Not Introduced	Native		14624	
Baptisia simplex	Present	Not Native, Naturalized	Not Introduced			15030	0
Bidens alba var. radiata	Present	Native	Not Introduced	Ruderal		14624	
Bischofia javanica	Present	Not Native, Naturalized	Introduced	Invasive		14624	
Blechum pyramidatum	Present	Not Native, Naturalized	Introduced	Ruderal		14624	
Blutaparon vermiculare	Present	Native	Not Introduced	Native		14624	
Boehmeria cylindrica	Present	Native	Not Introduced	Native		14624	
Borrichia arborescens	Present	Native	Not Introduced	Native		15030	
Borrichia frutescens	Present	Native	Not Introduced	Native		14624	
Bursera simaruba	Present	Native	Not Introduced	Native		14624	
Caesalpinia bonduc	Present	Native	Not Introduced	Native		14624	
Cakile lanceolata	Present	Native	Not Introduced	Native		14624	
Callisia americana	Present	Native	Not Introduced	Native		14624	
Calotropis gigantea	Present	Native	Not Introduced	Native		15030	
Canna indica	Present	Not Native, Naturalized	Introduced	Potentially Invasive		14624	
Carica papaya	Present	Not Native, Naturalized	Introduced	Invasive		14624	
Casuela nitida	Present	Not Native, Naturalized	Introduced	Invasive		14624	
Casythaphiformis	Present	Native	Not Introduced	Native		14624	
Casuarina cunninghamiana	Present	Not Native, Naturalized	Introduced				0
Casuarina equisetifolia	Present	Not Native, Naturalized	Introduced	Invasive		14624	
Casuarina glauca	Present	Not Native, Naturalized	Introduced	Potentially Invasive	Cultivated	15030	
Catharanthus roseus	Present	Not Native, Naturalized	Introduced	Ruderal		14624	
Celtis laevigata	Present	Native	Not Introduced	Native		14624	
Cenchrus echinatus	Present	Native	Not Introduced	Native		14624	
Cenchrus incertus	Present	Native	Not Introduced	Native		14624	
Centrosema virginianum	Present	Native	Not Introduced	Native		14624	
Chamaecrista fasciculata	Present	Native	Not Introduced	Native		15030	
Chamaecrista nictitans var. aspera	Present	Native	Not Introduced	Native		14624	
Chamaesyce celsii	Present	Not Native, Naturalized	Introduced	Invasive		14624	
Chamaesyce blodgettii	Present	Native	Not Introduced	Native		14624	
Chamaesyce conferta	Present	Native	Not Introduced	Native		15030	
Chamaesyce hirta	Present	Native	Not Introduced	Ruderal		14624	
Chamaesyce hypericifolia	Present	Native	Not Introduced	Ruderal		14624	
Chamaesyce mendezii	Present	Native	Not Introduced	Ruderal		14624	

Chamaesyce mesembrianthemifolia	Present	Native	Not Introduced	Native		14624	
Chamaesyce ophthalmica	Present	Native	Not Introduced	Ruderal		14624	
Chamaesyce prostrata	Present	Native	Not Introduced	Ruderal		14624	
Chiococca alba	Present	Native	Not Introduced	Native		14624	
Chiococca parvifolia	Present	Native	Not Introduced	Native		14624	
Chromolaena odorata	Present	Native	Not Introduced	Native		14624	
Chrysophyllum cainito	Present	Not Native, Naturalized	Introduced	Invasive		14624	
Citharexylum spinosum	Present	Native	Not Introduced	Native		14624	
Citrus aurantifolia	Present	Not Native, Naturalized	Introduced	Potentially Invasive		15090	
Citrus aurantium	Present	Not Native, Naturalized	Introduced	Invasive		15090	
Coccoloba diversifolia	Present	Native	Not Introduced	Native		14624	
Coccoloba uvifera	Present	Native	Not Introduced	Native		14624	
Coccothrinax argentata	Present	Native	Not Introduced	Native		14624	
Codiaeum variegatum var. pictum	Present	Not Native, Cultivated Only	Not Introduced	Cultivated Only	Cultivated	14624	
Colubrina asiatica	Present	Not Native, Naturalized	Introduced	Invasive		14624	
Commelina diffusa	Present	Not Native, Naturalized	Introduced	Ruderal		14624	
Conocarpus erectus	Present	Native	Not Introduced	Native		14624	
Conyza canadensis var. pusilla	Present	Native	Not Introduced	Ruderal		14624	
Crossopetalum ilicifolium	Present	Native	Not Introduced	Native		14624	
Crotalaria pumila	Present	Native	Not Introduced	Native		14624	
Crotalaria rotundifolia	Present	Native	Not Introduced	Native		14624	
Croton glandulosus	Present	Native	Not Introduced	Native		14624	
Croton linearis	Present	Native	Not Introduced	Native		14624	
Cynodon dactylon	Present	Not Native, Naturalized	Introduced	Potentially Invasive		14624	
Cyperus floridanus	Present	Native	Not Introduced	Native		1811	1801
Cyperus ligularis	Present	Native	Not Introduced	Native		14624	
Cyperus polystachyos	Present	Native	Not Introduced	Native		14624	
Cyperus retrorsus	Present	Native	Not Introduced	Native		14624	
Dactyloctenium aegyptium	Present	Not Native, Naturalized	Introduced	Ruderal		14624	
Dalbergia ecastaphyllum	Present	Native	Not Introduced	Native		14624	
Dalea carthagenensis var. floridana	Present	Native	Not Introduced	Native		14624	
Desmanthus virgatus	Present	Native	Not Introduced	Native		14624	
Desmodium incanum	Present	Native	Not Introduced	Native		14624	
Desmodium tortuosum	Present	Not Native, Naturalized	Introduced	Ruderal		14624	
Desmodium triflorum	Present	Not Native, Naturalized	Introduced	Ruderal		14624	
Dichanthelium commutatum	Present	Native	Not Introduced	Native		14624	
Dichondra caroliniensis	Present	Native	Not Introduced	Native		14624	
Dioscorea alata	Present	Not Native, Naturalized	Introduced	Invasive		14624	
Dioscorea bulbifera	Present	Not Native, Naturalized	Introduced	Invasive		14624	
Dioscorea sansibarensis	Present	Not Native, Naturalized	Introduced	Invasive		14624	
Dioscorea dumetorum	Present	Not Native, Naturalized	Introduced	Invasive		15090	
Distichlis spicata	Present	Native	Not Introduced	Native		14624	
Drypetes lateriflora	Present	Native	Not Introduced	Native		14624	
Echites umbellatus	Present	Native	Not Introduced	Native		14624	
Eleusine indica	Present	Not Native, Naturalized	Introduced	Ruderal		14624	
Encyclia tampensis	Present	Native	Not Introduced	Native		14624	
Epipremnum pinnatum cv. Aureum	Present	Not Native, Naturalized	Introduced	Invasive		14624	
Eragrostis ciliaris	Present	Not Native, Naturalized	Introduced	Ruderal		14624	3621
Eragrostis elliottii	Present	Native	Not Introduced	Native		14624	
Erechtites hieraciifolia	Present	Native	Not Introduced	Native		14624	
Eremochloa ophiuroides	Present	Not Native, Naturalized	Introduced	Potentially Invasive		14624	
Eriobotrya japonica	Present	Not Native, Naturalized	Introduced	Invasive		15090	
Erithalis fruticosa	Present	Native	Not Introduced				0
Erythrina herbacea	Present	Native	Not Introduced	Native		14624	
Eugenia axillaris	Present	Native	Not Introduced	Native		14624	
Eugenia confusa	Present	Native	Not Introduced	Native		15090	
Eugenia uniflora	Present	Not Native, Naturalized	Introduced	Invasive		14624	
Eupatorium capillifolium	Present	Native	Not Introduced	Native		14624	
Eupatorium serotinum	Present	Native	Not Introduced	Native		14624	
Eustachys glauca	Present	Native	Not Introduced	Native		15090	
Eustachys petraea	Present	Native	Not Introduced	Native		14624	
Evolvulus sericeus	Present	Native	Not Introduced	Native		15090	
Exothea paniculata	Present	Native	Not Introduced	Native		14624	4001
Ficus altissima	Present	Not Native, Naturalized	Introduced	Invasive		15090	
Ficus aurea	Present	Native	Not Introduced	Native		14624	
Ficus citrifolia	Present	Native	Not Introduced	Native		14624	1320
Fimbristylis cymosa	Present	Not Native, Naturalized	Introduced	Invasive		14624	
Flacourtia indica	Present	Not Native, Naturalized	Introduced	Invasive		14624	
Flaveria linearis	Present	Native	Not Introduced	Native		15090	
Flueggea virosa	Present	Not Native, Naturalized				47213	
Galactia volubilis	Present	Native	Not Introduced	Native		14624	
Galium hispidulum	Present	Native	Not Introduced	Native		14624	
Guapira discolor	Present	Native	Not Introduced				0
Guettarda elliptica	Present	Native	Not Introduced	Native		14624	
Gymnanthes lucida	Present	Native	Not Introduced	Native		14624	
Hamelia patens	Present	Native	Not Introduced	Native		14624	
Hedyotis nigricans var. floridana	Present	Native	Not Introduced	Native		15090	
Heliotropium angiospermum	Present	Native	Not Introduced	Native		14624	
Heliotropium curassavicum	Present	Native	Not Introduced	Native		14624	
Hibiscus rosa-sinensis	Present	Not Native, Cultivated Only	Not Introduced	Cultivated Only	Cultivated	14624	
Hibiscus tiliaceus	Present	Not Native, Naturalized	Introduced	Invasive		15090	
Hydrilla verticillata	Present	Not Native, Naturalized	Introduced	Ruderal		14624	
Indigofera miniata var. florida	Present	Native	Not Introduced	Native		14624	
Indigofera spicata	Present	Not Native, Naturalized	Introduced	Ruderal		14624	
Ipomoea indica var. acuminata	Present	Native	Not Introduced	Native		14624	
Ipomoea pes-caprae subsp. brasiliensis	Present	Native	Not Introduced	Native		14624	
Ipomoea violacea	Present	Native	Not Introduced	Native		14624	
Iresine diffusa	Present	Native	Not Introduced	Native		14624	
Jacquemontia curtisii	Present	Native	Not Introduced	Native		15090	
Jacquinia macrocarpa	Present	Not Native, Naturalized	Introduced				0
Jasminum dichotomum	Present	Not Native, Naturalized	Introduced	Invasive		15090	
Jasminum fluminense	Present	Not Native, Naturalized	Introduced	Invasive		15090	
Jasminum multiflorum	Recorded as Present in Error					15090	

http://regionalconservation.org/ircs/database/plants/ByConsArea.asp?SiteID=855&SN=R... 10/12/2012

Jatropha curcas	Present	Not Native, Naturalized	Introduced	Potentially Invasive		14024	
Kalanchoe pinnata	Present	Not Native, Naturalized	Introduced	Invasive		14024	
Koanophyllon villosum	Present	Native	Not Introduced	Native		14024	
Krugiodendron ferreum	Present	Native	Not Introduced	Native		14024	
Laguncularia racemosa	Present	Native	Not Introduced	Native		14024	
Lantana involucrata	Present	Native	Not Introduced	Native		14024	
Lepidium virginicum	Present	Native	Not Introduced	Native		14024	
Lepidium virginicum	Present	Native	Not Introduced	Ruderal		14024	
Leucaena leucocephala	Present	Not Native, Naturalized	Introduced	Potentially Invasive		14024	
Linum carteri	Present	Native	Not Introduced	Native		15090	
Ludwigia grisebachii	Present	Not Native, Naturalized	Introduced	Invasive		15090	
Lycium carolinianum	Present	Native	Not Introduced	Native		14024	
Maytenus nemorosa	Present	Native	Not Introduced	Ruderal		14024	
Mangifera indica	Present	Not Native, Naturalized	Introduced	Potentially Invasive		14024	
Manilkara zapota	Present	Not Native, Naturalized	Introduced	Invasive		14024	
Melaleuca quinquenervia	Present	Not Native, Naturalized	Introduced	Invasive		14024	
Melanthera parvifolia	Present	Native	Not Introduced	Native		14024	
Melothria pendula	Present	Native	Not Introduced	Native		15090	
Mercurialis elliptica	Present	Not Native, Naturalized	Introduced	Potentially Invasive		14024	
Metopium toxiferum	Present	Native	Not Introduced	Native		14024	
Momordica charantia	Present	Not Native, Naturalized	Introduced	Ruderal		14024	
Morinda royoc	Present	Native	Not Introduced	Native		14024	
Morus rubra	Present	Native	Not Introduced	Native		14024	9998
Muntingia calabura	Present	Not Native, Naturalized	Introduced	Potentially Invasive		14024	
Myrsine guianensis	Present	Native	Not Introduced	Native		14024	
Nephrolepis biserrata	Doubtfully Present					15090	
Nephrolepis cordifolia	Present	Not Native, Naturalized	Introduced	Invasive		14024	
Nephrolepis exaltata	Present	Native	Not Introduced	Native		14024	
Nephrolepis multiflora	Present	Not Native, Naturalized	Introduced	Invasive		14024	
Nothocalais cuspidata	Present	Native	Not Introduced	Native		14024	
Nymphaea nouchali	Present	Not Native, Naturalized	Introduced	Invasive		14024	
Ocotea coriacea	Present	Native	Not Introduced	Native		15090	673
Oeceoclades maculata	Present	Not Native, Naturalized	Introduced	Invasive		14024	
Oplismenus hirtellus	Present	Native	Not Introduced	Native		14024	
Opuntia ficus-indica	Present	Not Native, Cultivated Only	Not Introduced	Cultivated Only	Cultivated	15090	
Pandanus tectorius	Present	Not Native, Naturalized	Introduced	Invasive		14024	
Panicum maximum	Present	Not Native, Naturalized	Introduced	Ruderal		14024	
Panicum virgatum	Present	Native	Not Introduced	Native		15090	
Parthenocissus quinquefolia	Present	Native	Not Introduced	Native		14024	
Paspalum blodgettii	Present	Native	Not Introduced	Native		14024	3625
Paspalum caespitosum	Present	Native	Not Introduced	Native		14024	
Paspalum conjugatum	Present	Native	Not Introduced	Ruderal		14024	
Paspalum monostachyum	Present	Native	Not Introduced	Native		14024	
Paspalum notatum	Present	Not Native, Naturalized	Introduced	Ruderal		14024	
Paspalum setaceum	Present	Native	Not Introduced	Native		14024	3622
Paspalum vaginatum	Present	Native	Not Introduced				0
Passiflora suberosa	Present	Native	Not Introduced	Native		14024	
Peltandra sagittifolia	Present	Native	Not Introduced	Native		14024	3997
Pentas quadricostata	Present	Native	Not Introduced	Ruderal		14024	
Pentas quadricostata	Present	Native	Not Introduced	Ruderal		14024	
Peperomia purpurea	Present	Not Native, Naturalized	Introduced	Ruderal		15090	
Persea borbonia	Present	Native	Not Introduced	Native		15090	
Petiveria alliacea	Present	Native	Not Introduced	Native		14024	
Phlebodium aureum	Present	Native	Not Introduced	Native		14024	
Phoenix reclinata	Present	Not Native, Naturalized	Introduced	Potentially Invasive		14024	
Phyla nodiflora	Present	Native	Not Introduced	Native		14024	
Phyllanthus amarus	Present	Native	Not Introduced	Native		15090	
Phyllanthus pentaphyllus var. floridanus	Present	Native	Not Introduced	Native		14024	
Physalis pubescens	Present	Native	Not Introduced	Native		14024	
Physalis walteri	Present	Native	Not Introduced	Native		14024	
Pinguicula ehlersiana	Present	Native	Not Introduced	Native		14024	
Piper aduncum	Present	Native	Not Introduced	Native		15090	
Piper amalago var. zenkeri	Present	Native	Not Introduced	Native		14024	
Piper aduncum	Present	Not Native, Naturalized	Introduced	Invasive	4000		4000
Piper auritum	Present	Not Native, Naturalized	Introduced	Invasive	4757		4757
Bonellia macrocarpa	Present	Native	Not Introduced	Native		14024	
Plumbago scandens	Present	Native	Not Introduced	Native		14024	
Pithecellobium keyense	Present	Native	Not Introduced	Native		14024	
Pithecellobium unguis-cati	Present	Not Native, Naturalized	Introduced	Invasive		14024	
Pittoconum pentandrum	Present	Not Native, Naturalized	Introduced	Invasive		15090	
Plagiolis polypodioides var. michauxiana	Present	Native	Not Introduced	Native		14024	
Plumbago zeylanica	Present	Native	Not Introduced	Native		14024	
Poinsettia cyathophora	Present	Native	Not Introduced	Native		14024	
Poinsettia heterophylla	Present	Native	Not Introduced	Ruderal		14024	
Poinsettia pinetorum	Present	Native	Not Introduced	Native		15090	
Polybothris subsessilis	Present	Not Native, Naturalized	Introduced	Invasive		82377	
Portulaca oleracea	Present	Native	Not Introduced	Native		15090	
Polygonum acuminatum	Present	Native	Not Introduced	Ruderal		14024	
Portulacaria pygmaea	Present	Native	Not Introduced	Native		15090	
Portulaca pilosa	Present	Native	Not Introduced	Native		15090	
Psidium guajava	Present	Native	Not Introduced	Native		14024	
Psidium cattleianum	Present	Not Native, Naturalized	Introduced	Invasive		15090	
Psidium guajava	Present	Native	Not Introduced	Native		14024	
Psychotria nervosa	Present	Native	Not Introduced	Native		14024	
Psychotria sulzneri	Present	Native	Not Introduced	Native		14024	
Pteridium aquilinum var. caudatum	Present	Native	Not Introduced	Native		14024	
Pteris bahamensis	Present	Native	Not Introduced	Native		15090	
Pteris vittata	Present	Not Native, Naturalized	Introduced	Invasive		14024	
Ptychosperma elegans	Present	Not Native, Naturalized	Introduced	Potentially Invasive		14024	
Quercus virginiana	Present	Native	Not Introduced	Native		14024	
Randia aculeata	Present	Native	Not Introduced	Native		14024	
Rhabdadenia biflora	Present	Native	Not Introduced	Native		14024	1020
Rhizophora mangle	Present	Native	Not Introduced	Native		14024	

Rhus copallinum	Present	Native	Not Introduced	Native	15090	
Rhynchelytrum repens	Present	Not Native, Naturalized	Introduced	Invasive	14624	
Rhynchosia minima	Present	Native	Not Introduced	Native	14624	
Rivina humilis	Present	Native	Not Introduced	Native	14624	
Roystonea regia	Present	Not Native, Naturalized	Introduced	Invasive	14624	
Sabal palmetto	Present	Native	Not Introduced	Native	14624	
Sansevieria hyacinthoides	Present	Not Native, Naturalized	Introduced	Invasive	14624	
Scaevola sericea	Present	Not Native, Naturalized	Introduced	Invasive	15090	
Schefflera actinophylla	Present	Not Native, Naturalized	Introduced	Invasive	15090	
Schinus terebinthifolius	Present	Not Native, Naturalized	Introduced	Invasive	14624	
Schizachyrium gracile	Present	Native	Not Introduced	Native	14624	
Schizachyrium rhizomatum	Present	Native	Not Introduced	Native	15090	
Schizachyrium sanguineum	Present	Native	Not Introduced	Native	14624	3603
Schoepfia chrysophylloides	Present	Native	Not Introduced	Native	14624	
Scleria lithosperma	Present	Native	Not Introduced	Native	14624	
Serenoa repens	Present	Native	Not Introduced	Native	14624	
Sesuvium portulacastrum	Present	Native	Not Introduced	Native	14624	
Setaria parviflora	Present	Native	Not Introduced	Native	14624	
Sida acuta	Present	Native	Not Introduced	Ruderal	14624	
Sida elliottii	Present	Native	Not Introduced	Native	14624	
Sideroxylon foetidissimum	Present	Native	Not Introduced	Native	14624	1318
Sideroxylon salicifolium	Present	Native	Not Introduced	Native	14624	
Simarouba glauca	Present	Native	Not Introduced	Native	14624	1304
Smilax auriculata	Present	Native	Not Introduced	Native	14624	
Smilax bona-nox	Present	Native	Not Introduced	Native	14624	
Smilax havanensis	Present	Native	Not Introduced	Native	14624	
Solanum americanum	Present	Native	Not Introduced	Ruderal	14624	
Solanum erianthum	Present	Native	Not Introduced	Native	14624	3999
Solidago gigantea	Present	Native	Not Introduced	Native	15090	
Spartina patens	Present	Native	Not Introduced	Native	15090	
Spartina spartinae	Present	Native	Not Introduced	Native	14624	
Spermacoce assurgens	Present	Native	Not Introduced	Ruderal	14624	
Spermacoce verticillata	Present	Not Native, Naturalized	Introduced	Ruderal	14624	
Sporobolus domingensis	Present	Native	Not Introduced	Native	14624	
Sporobolus indicus var. pyramidalis	Present	Not Native, Naturalized	Introduced	Ruderal	14624	3624
Sporobolus indicus	Present	Not Native, Naturalized	Introduced	Ruderal	14624	
Stenotaphrum secundatum	Present	Not Native, Naturalized	Introduced	Potentially Invasive	14624	
Stylisma villosa	Present	Native	Not Introduced	Native	14624	
Stylosanthes hamata	Present	Native	Not Introduced	Ruderal	14624	
Suaeda linearis	Present	Native	Not Introduced	Native	14624	
Suriana maritima	Present	Native	Not Introduced	Native	14624	
Swietenia mahagoni	Present	Not Native, Naturalized	Introduced	Invasive	14624	
Syagrus romanzoffiana	Present	Not Native, Naturalized	Introduced	Potentially Invasive	14624	
Syngonium podophyllum	Present	Not Native, Naturalized	Introduced	Invasive	14624	
Syzygium cumini	Present	Not Native, Naturalized	Introduced	Invasive	14624	
Syzygium jambos	Present	Not Native, Naturalized	Introduced	Potentially Invasive	15090	
Tecoma stans	Present	Not Native, Naturalized	Introduced	Potentially Invasive	14624	
Tephrosia florida	Present	Native	Not Introduced	Native	15090	
Terminalia catappa	Present	Not Native, Naturalized	Introduced	Potentially Invasive	14624	
Thelypteris dentata	Present	Not Native, Naturalized	Introduced	Invasive	14624	
Thelypteris kunthii	Present	Native	Not Introduced	Native	14624	
Thelypteris ovata	Present	Native	Not Introduced	Native	14624	
Thespesia populnea	Present	Not Native, Naturalized	Introduced	Invasive	14624	
Tillandsia balbisiana	Present	Native	Not Introduced	Native	14624	
Tillandsia fasciculata var. densispica	Present	Native	Not Introduced	Native	14624	
Tillandsia flexuosa	Present	Native	Not Introduced	Native	14624	
Tillandsia recurvata	Present	Native	Not Introduced	Native	14624	
Tillandsia setacea	Present	Native	Not Introduced	Native	15090	
Tillandsia usneoides	Present	Native	Not Introduced	Native	14624	
Tillandsia utriculata	Present	Native	Not Introduced	Native	14624	
Toxicodendron radicans	Present	Native	Not Introduced	Native	14624	
Tradescantia spathacea	Present	Not Native, Naturalized	Introduced	Potentially Invasive	14624	
Trema micranthum	Present	Native	Not Introduced	Native	14624	
Trichomanes punctatum subsp. floridanum	Presumed Extirpated	Presumed Extirpated	Not Introduced	Native	15619	15619
Trichostema dichotomum	Present	Native	Not Introduced	Native	14624	
Tridax procumbens	Present	Not Native, Naturalized	Introduced	Ruderal	14624	
Tripsacum dactyloides	Present	Native	Not Introduced	Native	14624	
Triumfetta semitriloba	Present	Not Native, Naturalized	Introduced	Invasive	14624	
Urochloa subquadripara	Present	Not Native, Naturalized	Introduced	Ruderal	14624	
Verbesina virginica	Present	Native	Not Introduced	Native	14624	
Vernonia cinerea	Present	Not Native, Naturalized	Introduced	Ruderal	14624	
Vigna luteola	Present	Native	Not Introduced	Native	14624	
Vitis cinerea var. floridana	Present	Native	Not Introduced	Native	14624	
Vitis rotundifolia	Present	Native	Not Introduced	Native	14624	
Vitis shuttleworthii	Present	Native	Not Introduced	Native	15090	
Vittaria lineata	Present	Native	Not Introduced	Native	15090	
Waltheria indica	Present	Native	Not Introduced	Native	14624	
Wedelia trilobata	Present	Not Native, Naturalized	Introduced	Potentially Invasive	14624	
Youngia japonica	Present	Not Native, Naturalized	Introduced	Ruderal	14624	
Zamia integrifolia	Present	Native	Not Introduced	Native	14624	
Zanthoxylum fagara	Present	Native	Not Introduced	Native	14624	1305
Zoysia tenuifolia	Present	Not Native, Naturalized	Introduced	Potentially Invasive	15090	

References for R. Hardy Matheson Preserve:

Avery, G.N. 1983. Botanical notes of George Avery, south Florida botanist 1922 - 1983. Fairchild Tropical Garden Archives.

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Fairchild Tropical Garden. 1990. Vascular plant inventory of Snapper Creek Preserve. Revised 12/31/1990. Miami: Fairchild Tropical Garden.

Fairchild Tropical Garden. 1991. Vascular plant inventory of Snapper Creek Preserve. Revised 8/14/91. Miami: Fairchild Tropical Garden.

Gann, G.D., & K.A. Bradley. 1995. Observations of vascular plants at R. Hardy Matheson Preserve, Dade County, Florida. 18 August.

1995. Institute for Regional Conservation. Miami, Florida.

Hammer, K. 1997. Observation of Flanges virosa at R. Hardy Matheson Preserve, Miami-Dade Co., FL. 27 Jan. 1997. The Institute for Regional Conservation, Miami, FL.

Vouchers for R. Hardy Matheson Preserve:

Bienvenido s.n., FTG
Bradley 1031, FTG
Bradley 1032, FTG
Bradley 1033, FTG
Bradley 1034, FTG
Bradley 1035, FTG
Bradley 1431, FTG
Bradley 1432, FTG
Bradley 1433, FTG
Bradley 1434, FTG
Bradley 1435, FTG
Bradley 518, FTG
Bradley 519, FTG
Bradley 520, FTG
Correll 40282, FTG
Correll 40283, FTG
Gann & Bradley 5, FTG
Gillis 7100, FTG
Gillis 7974, FTG
Gillis 7975, FTG
Read 1101, FTG
Tomlinson 18-XII-67B, FTG
Tomlinson 18-XII-67C, FTG
Tomlinson 18-XII-67F, FTG
Woodmansee 133, FTG
Woodmansee 134, FTG
Woodmansee 135, FTG

Gann, G.D., K.A. Bradley and S.W. Woodmansee. 2001-2012.
The Floristic Inventory of South Florida Database Online.
The Institute for Regional Conservation, Miami.

ATTACHMENT I: FLORIDA NATURAL AREAS INVENTORY STANDARD DATA REPORT

FLORIDA Natural Areas INVENTORY

1018 Thomasville Road
Suite 200-C
Tallahassee, FL 32303
850-224-8207
fax 850-681-9364
www.fnai.org

September 18, 2012

Dallas Hazelton
Miami-Dade County Parks, Recreation and Open Spaces
275 NW 2nd Street, 4th Floor
Miami, FL 33128

Dear Dallas,

Thank you for requesting information from the Florida Natural Areas Inventory (FNAI). We have compiled the following information for your project area.

Project: R. Hardy Matheson Preserve
Date Received: 09/17/2012
Location: Miami-Dade County

Based on the information available, this site appears to include pine rockland habitat, a natural community in decline that provides important habitat for several rare species within a small area. Additional consideration should be given to avoid and/or mitigate impacts to these natural resources, and to design land uses that are compatible with these resources.

Element Occurrences

A search of our maps and database indicates that we currently have several element occurrences mapped in the vicinity of the study area (see enclosed map and element occurrence table). Note that only element occurrences within 1.5 miles of the Preserve are shown on the enclosed map and element occurrence table. Please be advised that a lack of element occurrences in the FNAI database is not a sufficient indication of the absence of rare or endangered species on a site.

The element occurrences data layer includes occurrences of rare species and natural communities. The map legend indicates that some element occurrences occur in the general vicinity of the label point. This may be due to lack of precision of the source data, or an element that occurs over an extended area (such as a wide ranging species or large natural community). For animals and plants, element occurrences generally refer to more than a casual sighting; they usually indicate a viable population of the species. Note that some element occurrences represent historically documented observations which may no longer be extant. Extirpated element occurrences will be marked with an 'X' following the occurrence label on the enclosed map.

Likely and Potential Rare Species

In addition to documented occurrences, other rare species and natural communities may be identified on or near the site based on habitat models and species range models (see enclosed Biodiversity Matrix Report). These species should be taken into consideration in field surveys, land management, and impact avoidance and mitigation.

FNAI habitat models indicate areas, which based on land cover type, offer suitable habitat for one or more rare species that is known to occur in the vicinity. Habitat models have been developed for approximately 300 of the rarest species tracked by the Inventory, including all federally listed species.

Florida Resources and Environmental Analysis Center
Institute of Science and Public Affairs
The Florida State University

Tracking Florida's Biodiversity

FNAI species range models indicate areas that are within the known or predicted range of a species, based on climate variables, soils, vegetation, and/or slope. Species range models have been developed for approximately 340 species, including all federally listed species.

The FNAI Biodiversity Matrix Geodatabase compiles Documented, Likely, and Potential species and natural communities for each square mile Matrix Unit statewide.

The Inventory always recommends that professionals familiar with Florida's flora and fauna conduct a site-specific survey to determine the current presence or absence of rare, threatened, or endangered species.

Please visit www.fnai.org/trackinglist.cfm for county or statewide element occurrence distributions and links to more element information.

The database maintained by the Florida Natural Areas Inventory is the single most comprehensive source of information available on the locations of rare species and other significant ecological resources. However, the data are not always based on comprehensive or site-specific field surveys. Therefore this information should not be regarded as a final statement on the biological resources of the site being considered, nor should it be substituted for on-site surveys. Inventory data are designed for the purposes of conservation planning and scientific research, and are not intended for use as the primary criteria for regulatory decisions.

Information provided by this database may not be published without prior written notification to the Florida Natural Areas Inventory, and the Inventory must be credited as an information source in these publications. FNAI data may not be resold for profit.

This report is made available at no charge due to funding from the Florida Department of Environmental Protection, Division of State Lands.

Thank you for your use of FNAI services. If I can be of further assistance, please contact me at (850) 224-8207 or at mobrien@fnai.org.

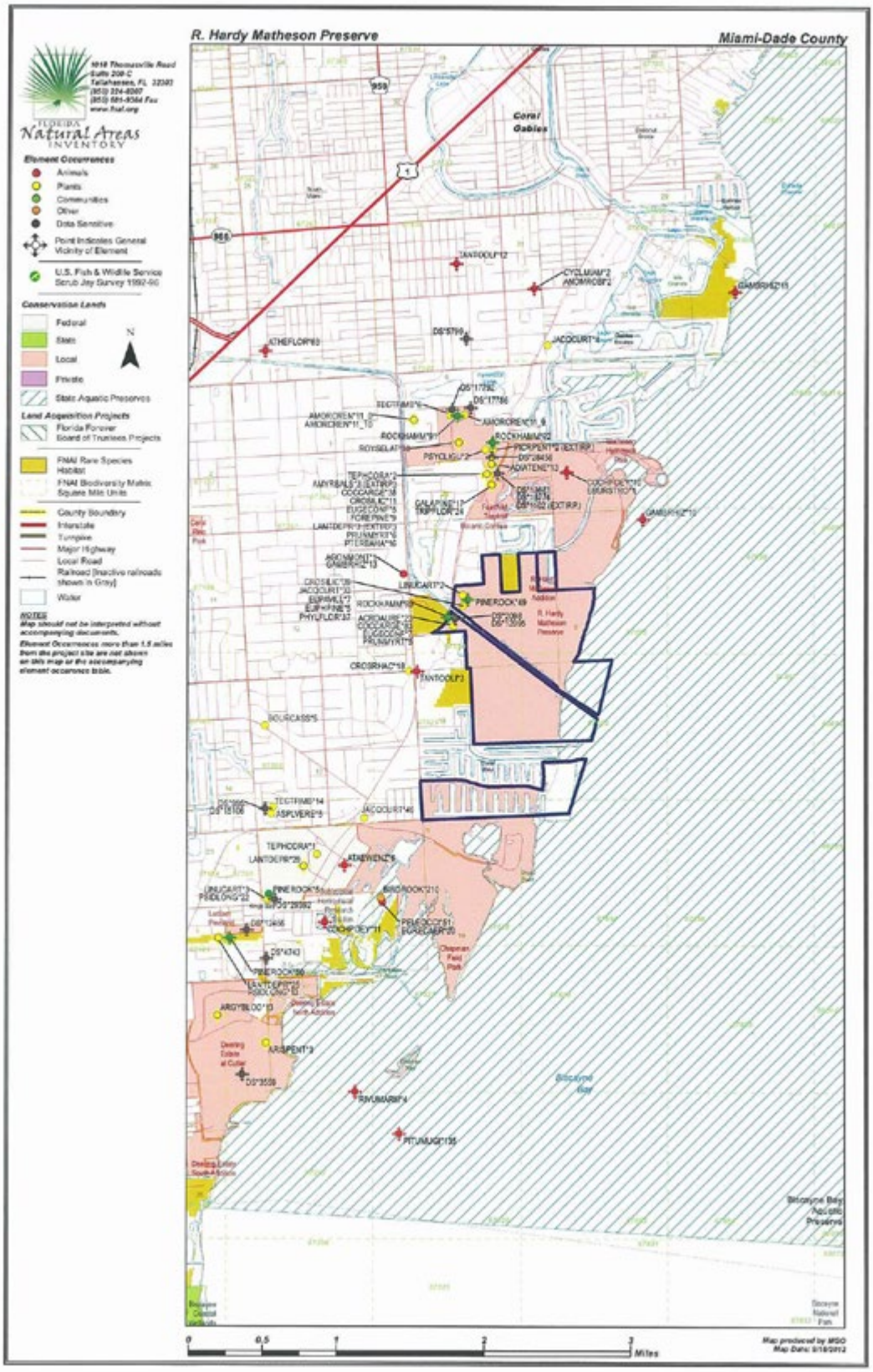
Sincerely,

Michael O'Brien

Michael O'Brien
GIS / Data Services

Encl

Tracking Florida's Biodiversity


R. Hardy Matheson Preserve
Miami-Dade County
Florida Natural Areas Inventory
1018 Thomasville Road
Suite 200-C
Tallahassee, FL 32303
(850) 224-8207
(850) 681-9364 Fax
www.fnai.org
Element Occurrences
Animals
Plants
Communities
Other
Data Sensitive
Point Indicates General Vicinity of Element
U.S. Fish & Wildlife Service Scrub Jay Survey 1992-93
Conservation Lands
Federal
State
Local
Private
State Aquatic Preserves
Land Acquisition Projects
Florida Forever Board of Trustees Projects
FNAI Rare Species Habitat
FNAI Biodiversity Matrix Square Mile Units
County Boundary
Interstate
Turnpike
Major Highway
Local Road
Railroad (Inactive railroads shown in Gray)
Water
NOTES
Map should not be interpreted without accompanying documents.
Element Occurrences more than 1.5 miles from the project site are not shown on this map or the accompanying element occurrence table.
N
Coral Gables
Biscayne Bay Aquatic Preserve
0
0.5
1
2
3
Miles
Map produced by MSO
Map Date: 5/18/2012

1018 Thomasville Road
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FLORIDA Natural Areas INVENTORY

Florida Natural Areas Inventory

DOCUMENTED ELEMENT OCCURRENCES ON OR NEAR
R. Hardy Matheson Preserve

Map Label	Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Listing	Observation Date	Description	EO Comments
ACROAURE*23	*Acrostichum aureum*	Golden Leather Fern	G5	S3	N	LT	1991-08-14	1991: rockland hammock (U92LIP12FLUS).	1991-08-14: present on site (U92LIP12FLUS).
ADIATENE*13	*Adiantum tenerum*	Brittle Maidenhair Fern	G5	S3	N	LE	1987-08-14	ROCKLAND HAMMOCK.	1987-08-14: A FEW PLANTS GROWING ON THE OOLITIC LIMESTONE IN A FAIRLY DRY SINK IN THE NW CORNER OF THE HAMMOCK NEAR A LARGE HOUSE (U91CRE01FLUS).
AGONMONT*1	*Agonostomus monticola*	Mountain Mullet	G5	S3	N	N	1983-04-26	1983-04-26: artificial stream and pool system fed by pumped ground water (A84LOF01FLUS).	1983-04-26: one collected (UF-040906). 1982-06-23: four collected (UF-033933). 1981-01-23: one specimen (UF-034916). 1977-1980: observed, but not collected, several times (A84LOF01FLUS).
AMORCREN*11_0	*Amorpha herbacea var. crenulata*	Crenulate Lead-plant	G4T1	S1	LE	LE	2006-05-02	This is a parent EO. Refer to individual sub-EOs for detailed information.	This is a parent EO for 3 sub-EOs. Refer to individual sub-EOs for detailed information.
AMORCREN*11_10	*Amorpha herbacea var. crenulata*	Crenulate Lead-plant	G4T1	S1	LE	LE	2006-04-28	2006-04-28: No habitat information provided (U08FTG01FLUS).	2006-04-28: 1 plant; Kristie Wendelberger noted that one of the owners wanted improvements on the property that could damage the plant (U08FTG01FLUS). 1992-07-03: Observed by Carol Lippincot (U08FTG01FLUS; PNDLIP01FLUS).
AMORCREN*11_9	*Amorpha herbacea var. crenulata*	Crenulate Lead-plant	G4T1	S1	LE	LE	2006-05-02	2006-05-02: Pine rockland, near edge of artificial pond (U08FTG01FLUS).	2006-05-02: 4 plants observed (U08FTG01FLUS).
AMYRBALS*3	*Amyris balsamifera*	Balsam Torchwood	G4	SX	N	N	1976	ROCKLAND HAMMOCK	1990'S searches by Roger Hammer, Keith Bradley, and others have not located other trees of this species in the park or elsewhere in Dade County (PNDHAM01). 1976: G. Avery observed species in Matheson Hammock Park (PNDHAM01). 1969-0-20: flowering (S69AVEU
ANOMROBI*2	*Anomala robinsoni*	Robinson's Anomala Scarab Beetle	G1?	S1?	N	N	1994-PRE	1994-Pre: No description given (B94DEY01FLUS).	1994-Pre: This species was collected (B94DEY01FLUS).
ARGYBLOD*13	*Argythamnia blodgettii*	Blodgett's Wild-mercury	G2	S2	C	LE	1991-08-14	GRASSY EDGE OF PINELANDS ALONG ROADWAY.	SHRUB ABOUT 1M TALL, FLOWER & FRUIT ON 27 MAY 1978, NOT REPORTED IN 1983 DURING FIELD SURVEY OF DEERING ESTATE. 1991: PRESENT ON SITE.
ARISPENT*3	*Aristolochia pentandra*	Marsh's Dutchman's Pipe	G4G5	S1	N	LE	1926-05-17	1926-05-17: Deering Hammock (S26SMAUFFLUS).	1926-05-17: Specimen taken (S26SMASFFLUS).

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ASPLVERE*5	*Asplenium verecundum*	Modest Spleenwort	G1	S1	N	LE	1999	1999: Distrubed rockland hammock. Plants occur on north side of lot. A. dentatum and A. x biscayneanum also occur here (PNDGAN03FLUS).	1999: 11-1000 plants (PNDGAN03FLUS).
ATAEWENZ*6	*Ataenius wenzelli*	An Ataenius Beetle	G3G5	S2S3	N	N	1961-04-10	1961-04-10: No description given (B73WOO01FLUS).	1961-04-10: One specimen collected by P. E. Briggs using a blacklight trap (B73WOO01FLUS).
ATHEFLOR*63	*Athene cunicularia floridana*	Florida Burrowing Owl	G4T3	S3	N	SSC	1990-02	Urban.	1990-02: 6 owls and 6 burrows reported (M.S. Robson, GFC record).
BIRDROOK*210	Bird Rookery		GNR	SNR	N	N	1988-03-16	SMALL ESTUARINE ISLAND IN BISCAYNE BAY; NEST IN MANGROVES.	MULTI-SPECIES ROOKERY, 3 SPECIES. 370 NESTING PAIRS 7/76; 11-100 BIRDS 3/16/88. LITTLE BLUE HERON (PRESENT 7/76); BROWN PELICAN (PRESENT 3/88); DOUBLE-CRESTED CORMORANT (350 NESTING PAIRS 7/76, ALSO PRESENT 3/88).
BOURCASS*5	*Bourreria cassinifolia*	Smooth Strongbark	G3?	S1	N	LE	1977-08	PINE ROCKLAND. BURNED OCCASIONALLY, ACCIDENTALLY. LIMESTONE EXPOSED OVER CA. 50%.	3 PLANTS, WIDELY SEPARATED, 60-70 CM HIGH.
COCCARGE*38	*Coccothrinax argentata*	Silver Palm	G4	S3	N	LT	1975-10	ROCKLAND HAMMOCK.	No EO data given
COCCARGE*83	*Coccothrinax argentata*	Silver Palm	G4	S3	N	LT	1991-08-14	ROCKLAND HAMMOCK.	1991: PRESENT ON SITE.
COCHPOEY*10	*Cochlodinella poeyana*	Truncate Urocoptid	G1G2	S1S2	N	N	1961-09-15	1961-09-15: No description given (WNDFLO01FLUS).	1961-09-15: This species was collected by F. G. Thompson. There are four other unmappable records for the vicinity of Coral Gables, with the oldest record being for 1928-04-16 (WNDFLO01FLUS).
COCHPOEY*11	*Cochlodinella poeyana*	Truncate Urocoptid	G1G2	S1S2	N	N	1961-09-14	1961-09-14: No description given (WNDFLO01FLUS).	1961-09-14: This species was collected by F. G. Thompson (WNDFLO01FLUS). 1941-11-30: This species was collected (WNDFLO01FLUS).
CROSILIC*11	*Crossopetalum ilicifolium*	Christmas Berry	G3	S3	N	LT	1975-10	ROCKLAND HAMMOCK.	No EO data given
CROSILIC*39	*Crossopetalum ilicifolium*	Christmas Berry	G3	S3	N	LT	1991-08-14	PINE ROCKLAND.	1991: PRESENT ON SITE.

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CROSRHAC*18	*Crossopetalum rhacoma*	Rhacoma	G5	S3	N	LT	1973-06-10	Rocky pineland.	Low shrubs; trunk none; branches radiate, ca. 1 m long, arching to 30-40 cm high; leaves broad elliptic, ternate on old wood, opposite on new growth; specimen flowering.
CYCLMIAM*2	*Cyclocephala miamiensis*	Miami Chafer Beetle	G1?	S1?	N	N	1994-PRE	1994-Pre: No description given (B94DEY01FLUS).	1994-Pre: This species was collected at this site (B94DEY01FLUS).
DALEFLOR*3	*Dalea carthagenensis var. floridana*	Florida Prairie Clover	G5T1	S1	C	LE	2008-01-01	2008-01-01: Pine rockland (U08FTG01FLUS).	2008-01-01: 4 plants, population failing due to lobate lac scale and fire suppression (U06FTG01FLUS). 2003-03-18: 30 individuals observed (U03FTG01FLUS).
DS*1102	*Data Sensitive Element*	Data Sensitive	G4G5T1	S1	C	LE	1991	Data Sensitive	Data Sensitive
DS*12095	*Data Sensitive Element*	Data Sensitive	G4	S3	N	LT	1991-08-14	Data Sensitive	Data Sensitive
DS*12466	*Data Sensitive Element*	Data Sensitive	G1	S1	LE	LE	1979-10-30	Data Sensitive	Data Sensitive
DS*13681	*Data Sensitive Element*	Data Sensitive	G4	S1	N	LE	1987-09-09	Data Sensitive	Data Sensitive
DS*15106	*Data Sensitive Element*	Data Sensitive	GNA	S1	N	N	1997-07-09	Data Sensitive	Data Sensitive
DS*17786	*Data Sensitive Element*	Data Sensitive	G5	S1S2	N	LE	2003-05-20	Data Sensitive	Data Sensitive
DS*17792	*Data Sensitive Element*	Data Sensitive	G4	S3	N	LT	1990-05-25	Data Sensitive	Data Sensitive
DS*18774	*Data Sensitive Element*	Data Sensitive	G5	S2	N	LE	1990-06-16	Data Sensitive	Data Sensitive
DS*2098	*Data Sensitive Element*	Data Sensitive	G5	S1S2	N	LE	1991-08-14	Data Sensitive	Data Sensitive
DS*26456	*Data Sensitive Element*	Data Sensitive	G2G4	S1	N	LE	2004-08-10	Data Sensitive	Data Sensitive
DS*29392	*Data Sensitive Element*	Data Sensitive	G3?	S1	N	LE	2005-01-13	Data Sensitive	Data Sensitive
DS*3559	Data Sensitive Element	Data Sensitive	G2	S2	N	N	1999	Data Sensitive	Data Sensitive
DS*4743	*Data Sensitive Element*	Data Sensitive	G2T1	S1	LE	LE	1980-06-21	Data Sensitive	Data Sensitive
DS*5799	*Data Sensitive Element*	Data Sensitive	G4T1	S1	LE	LE	1987-11	Data Sensitive	Data Sensitive
DS*985	*Data Sensitive Element*	Data Sensitive	G5	S1S2	N	LE	1997-07-09	Data Sensitive	Data Sensitive
EBURSTRO*1	*Eburia strohecker*	Strohecker's Ivory-Spotted Long-Horned Beetle	G1G2	S1S2	N	N	1994-PRE	1994-Pre: No description given (B94DEY01FLUS).	1994-Pre: This species was collected here (B94DEY01FLUS).

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EGRECAER*20	*Egretta caerulea*	Little Blue Heron	G5	S4	N	SSC	1988-03-16	SMALL ESTUARINE ISLAND IN BISCAYNE BAY; NEST IN MANGROVES.	1976-07-17: FLEDGED/FLYING YG, POP EST=20 NESTS. SPECIES ABSENT 3/16/88.
EUGECONF*5	*Eugenia confusa*	Tropical Ironwood	G4G5	S2S3	N	LE	1975-10	ROCKLAND HAMMOCK.	No EO data given
EUGECONF*7	*Eugenia confusa*	Tropical Ironwood	G4G5	S2S3	N	LE	1991-08-14	ROCKLAND HAMMOCK.	1991: PRESENT ON SITE.
EUPAVILL*7	*Eupatorium villosum*	Villose Fennel	G4G5	S2	N	LE	1996-02-10	Pine rockland*049.	Plants are common on the north side of Snapper Creek Canal in the pine rockland.
EUPHPINE*5	*Euphorbia pinetorum*	Rockland Painted-leaf	G2	S2	N	LE	1991-08-14	PINE ROCKLAND.	1991: PRESENT ON SITE.
FOREPINE*9	*Forestiera segregata var. pinetorum*	Florida Pinewood Privet	G4T2	S2	N	N	1975-10	ROCKLAND HAMMOCK	No EO data given
GALAPINE*17	*Galactia pinetorum*	Pineland Milkpea	G2Q	S2	N	N	1978-06-20	1978-06-20: Vine trailing-prostrate; flowers pink; specimen taken [flowering] (Correll).	No EO data given
GAMBRHIZ*10	*Gambusia rhizophorae*	Mangrove Gambusia	G3	S3	N	N	1948-01-20	MANGROVE SWAMP.	27 SPECIMENS COLLECTED (USNM 203223).
GAMBRHIZ*11	*Gambusia rhizophorae*	Mangrove Gambusia	G3	S3	N	N	1962-01-16	MANGROVE SWAMP.	58 SPECIMENS COLLECTED IN 1962; 1 IN 1958 (UF/FSU 9159).
GAMBRHIZ*13	*Gambusia rhizophorae*	Mangrove Gambusia	G3	S3	N	N	1981-01-23	NO DATA.	SPECIMEN COLLECTED IN 1981.
JACQCURT*33	*Jacquemontia curtissii*	Pineland Jacquemontia	G2	S2	N	LT	1991-08-14	PINE ROCKLAND.	1991: PRESENT ON SITE.
JACQCURT*4	*Jacquemontia curtissii*	Pineland Jacquemontia	G2	S2	N	LT	1964-11-22	RECENTLY CLEARED PINELAND.	FLOWERS WHITE TO PALE PINK; FREQUENT; TRAILING VINE; FRUITING SPECIMEN (#4359) COLLECTED BY D.B. WARD AND D. BURCH, 22 NOV 1964.
JACQCURT*46	*Jacquemontia curtissii*	Pineland Jacquemontia	G2	S2	N	LT	1969-06-06	No general description given	Flowers very pale pink, prostrate flowering and fruiting specimen collected (Gillis).
LANTDEPR*25	*Lantana depressa var. depressa*	Florida Lantana	G2T1	S1	N	LE	1999	2005-02-17: Area surrounded by development according to the 1999 DOQQ (PNDJEN04FLUS). 1999: Common in pine rockland, both in county owned parcel and beneath powerline easement owned by Florida Power and Light. (PNDBRA04FLUS).	1993: Common in pine rockland, both in county owned parcel, and beneath powerline easement owned by Florida Power and Light. 101-1000 plants (PNDBRA04FLUS).

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LANTDEPR*29	*Lantana depressa var. depressa*	Florida Lantana	G2T1	S1	N	LE	1996	1995: Found in fragments of pine rockland throughout property, but most abundant in pine rockland at southwest corner of property (PNDBRA04FLUS).	1995: 101-1000 plants. Found in fragments of pine rockland throughout property, but most abundant in pine rockland at southwest corner of property (PNDBRA04FLUS).
LANTDEPR*3	*Lantana depressa var. depressa*	Florida Lantana	G2T1	S1	N	LE	1991	ROCKLAND HAMMOCK.	1999: THIS SPECIES WAS NOT SEEN DESPITE EXTENSIVE SURVYS BY KEITH BRADLEY OF THE INSTITUTE FOR REGIONAL CONSERVATION (PNDIRC01FLUS).
LINUCART*2	*Linum carteri var. carteri*	Carter's Small-flowered Flax	G2T1	S1	C	LE	1991-08-14	DEGRADED PINE ROCKLAND.	SOME FLOWERING PLANTS NOTED ON 1991-02-31. GROWING WITH CROTON GLANDULOSUS, PHYLLANTUS PENTAPHYLLUS VAR.FLORIDANUS, SMILAX AURICULATA, CROTON LINEARIS, TRICHOSTEMA SP., ARISTIDA SP., AND POLYPREMUM PROCUMBENS. PLANTS GROWING ON EXPOSED BARE ROCK OUTCROPS
LINUCART*3	*Linum carteri var. carteri*	Carter's Small-flowered Flax	G2T1	S1	C	LE	2001	DISTURBED PINE ROCKLAND COMMUNITY BUT STILL CONTAINING GOOD SPECIES DIVERSITY AND COMPOSITION.	2001: Present on site (B02GAN01FLUS). 1990-04: OVER 1,000 PLANTS NOTED PARTICULARLY ALONG FIREBREAKS; PLANTS IN FLOWER AND IN FRUIT. PROBABLY LARGEST KNOWN EXTANT POPULATION.
PELEOCCI*51	*Pelecanus occidentalis*	Brown Pelican	G4	S3	N	SSC	1988-03-16	SMALL ESTUARINE ISLAND IN BISCAYNE BAY; NEST IN MANGROVES.	SPECIES ABSENT 7/76; PRESENT 3/16/88 BUT NO POPULATION DATA GIVEN.
PHYLFLOR*37	*Phyllanthus pentaphyllus var. floridanus*	Florida Five-petaled Leaf-flower	G4T2	S2	N	N	1991-08-14	PINE ROCKLAND.	1991: PRESENT ON SITE.
PICRPENT*2	*Picramnia pentandra*	Bitter Bush	G4G5	S1	N	LE	1991	Tropical hammock.	Scattered population. Not seen since 1991.
PINEROCK*49	Pine rockland		G1	S1	N	N	1999	DADE COUNTY-MIAMI AREA PINE ROCKLAND.	1999: Update to last obs date was based on interpretation of aerial photography (previous value was 1991-02-13) (U05FNA02FLUS). 8 ENDEMIC PLANTS RESTRICTED TO PINE ROCKLANDS OF SOUTH FLORIDA. SITE BURNED 15 YEARS AGO, GOOD PINE REPRODUCTION, GRADES INTO

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PINEROCK*5	Pine rockland		G1	S1	N	N	1999	BURNED OCCASIONALLY, ACCIDENTLY. LIMESTONE EXPOSED, 50%. PINES UP TO 30 CM DBH. MANY YOUNG PINES.	OVERSTORY OF PINUS ELLIOTTII VAR DENSA: UNDERSTORY OF SERENOA REPENS, LANTANA INVOLUCRATA. LOW PLANTS OF METOPIUM TOXIFERUM, BYRSOUIMA LUCIDA, PSIDIUM LONGIPES, B79LOO01 GIVES LONG PLANT LIST W/ DENSITY, FREQUENCY, & PRESENCE DATA BY SPP.
PINEROCK*50	Pine rockland		G1	S1	N	N	1999	PINE ROCKLAND BORDERING FLORIDA POWER & LIGHT EASEMENT FOR HIGH VOLTAGE TRANSMISSION LINES.	1999: Update to last obs date was based on interpretation of aerial photography (previous value was 1991-02-31) (U05FNA02FLUS). PINUS ELLIOTTII VAR. DENSA UP TO 40 FT. TALL WITH GOOD REPRODUCTION. COCCOTHRINAX ARGENTATA, SERENOA REPENS, AND METOPIUM TOXI
PITUMUGI*135	*Pituophis melanoleucus mugitus*	Florida Pine Snake	G4T3	S3	N	SSC	1980-03	DISTURBED PINELAND WITH SCHINUS AND CASUARINA.	SPEC. COLL. EARY MARCH 1980 BY TODD STEINER (UF-45970).
PRUNMYRT*5	*Prunus myrtifolia*	West Indian Cherry	G4	S2	N	LT	1991-08-14	ROCKLAND HAMMOCK.	1991: PRESENT ON SITE.
PRUNMYRT*6	*Prunus myrtifolia*	West Indian Cherry	G4	S2	N	LT	1991	ROCKLAND HAMMOCK.	No EO data given
PSIDLONG*13	*Psidium longipes*	Mangrove Berry	G4	S2	N	LT	1993	1993: present in pine rockland (PNDBRA04FLUS).	1993: 101 - 1000 plants present (PNDBRA04FLUS).
PSIDLONG*22	*Psidium longipes*	Mangrove Berry	G4	S2	N	LT	1996	1996: Uncommon in pine rockland, primarily in the southwest corner of the property (PNDBRA04FLUS).	1996: 101 - 1000 plants present (PNDBRA04FLUS).
PSYCLIGU*2	*Psychotria ligustrifolia*	Bahama Wild Coffee	G4	S1	N	LE	1995	1995: A colony of only a few plants in rockland hammock, along the edge of nature trail. Near north side of hammock. With Capsicum annuum var. glabriusculum (PNDBRA04FLUS).	1995: 2-10 plants (PNDBRA04FLUS).
PTERBAHA*16	*Pteris bahamensis*	Bahama Brake	G4	S3	N	LT	1990-06-16	ROCKLAND HAMMOCK.	[ON A 1987-08-14 AND A 1990-06-16 LIST OF PLANTS SEEN BY A. CRESSLER AT MATHESON HAMMOCK.]
RIVUMARM*4	*Rivulus marmoratus*	Mangrove Rivulus	G3	S3	SC	SSC	1966-06-24	No general description given	One specimen in Florida Museum of Naturla History (UF-100028).

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ROCKHAMM*91	Rockland hammock		G2	S2	N	N	1999	No general description given	1999: Update to last obs date was based on interpretation of aerial photography (previous value was 1975) (U05FNA02FLUS).
ROCKHAMM*92	Rockland hammock		G2	S2	N	N	1999	No general description given	1999: Update to last obs date was based on interpretation of aerial photography (previous value was 1975) (U05FNA02FLUS).
ROCKHAMM*93	Rockland hammock		G2	S2	N	N	1999	SEE U91CRE01FL.	1999: Update to last obs date was based on interpretation of aerial photography (previous value was 1975) (U05FNA02FLUS).
ROYSELAT*10	*Roystonea elata*	Florida Royal Palm	G2G3	S2	N	LE	1984	ROCKLAND HAMMOCK. COASTAL TROPICAL HARDWOOD HAMMOCK	1984: none given (U92LIP08FLUS).
TANTOOLI*12	*Tantilla oolitica*	Rim Rock Crowned Snake	G1G2	S1S2	N	ST	1945-03	2011: Coral Gables is highly developed but still includes various patches that might support this species.	For now, based on old museum specimens with vague data (following), but not impossible that species could still survive somewhre in Coral Gables. 1945-03: KU specimen collected by G. Knowles (A11HIN01FLUS). 1941-03-26: CMNH specimen (# 20077) collected
TANTOOLI*3	*Tantilla oolitica*	Rim Rock Crowned Snake	G1G2	S1S2	N	ST	1969-04-12	Residential subdivisions fully built out. Grid of neighborhood roads, but houses still maintain yards.	1969-04-12: T. Krakauer recovered specimen (UF-48848) that reportedly had been killed by Mastigoproctus.
TECTFIMB*14	*Tectaria fimbriata*	Least Halberd Fern	G4	S2	N	LE	1988-01-26	[Rockland Hammock.] 1988-01-26: There is a rather large development of ca. 25 yrs. old in the hammock; some nice areas in [private] yards; [sinks also present](Cressler).	1988-01-26: A few plants of Tectaria lobata grow on the walls of a few of the small site [sink?] holes (Cressler).
TECTFIMB*6	*Tectaria fimbriata*	Least Halberd Fern	G4	S2	N	LE	1990-05-25	TRANSITIONAL TROPICAL HARDWOOD AREA WITH MOSTLY OAKS (QUERCUS VIRGINIANA) ON GOOD KARST DEVELOPMENT. 13 SPECIES OF FERNS.	SMALL PLANTS OF THIS SPECIES OBSERVED IN ONLY ONE SMALL AREA OF HAMMOCK.

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TEPHCORA*1	*Tephrosia angustissima var. corallicola*	Rockland Hoary-pea	G1T1	S1	N	LE	1996-04-10	Mowed area with full sun.	1996: About 200 plants occur in plot W-2-3 in a grassy field at the station. The plants are low growing with woody bases. They are mowed periodically. No plants occur in the adjacent fire suppressed pine rockland fragment. 1978: Plants prostrate, thick r
TEPHCORA*2	*Tephrosia angustissima var. corallicola*	Rockland Hoary-pea	G1T1	S1	N	LE	1968-09-15	Pineland.	Corolla rose-purple at 5:00 pm, wings longer than keel, woody at base.
TRIPFLOR*24	*Tripsacum floridanum*	Florida Gama Grass	G2	S2	N	LT	1979-06-21	79-06-21: Growing in oak/pine woodland (Austin)	79-06-21: Flowering specimen collected (Austin).

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Biodiversity Matrix Report

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Matrix Unit ID: 67528					
Documented					
Bird Rookery		GNR	SNR	N	N
Egretta caerulea	Little Blue Heron	G5	S4	N	SSC
Pelecanus occidentalis	Brown Pelican	G4	S3	N	SSC
Likely					
Ctenogobius stigmaturus	Spottail Goby	G2	S2	N	N
Mycteria americana	Wood Stork	G4	S2	LE	FE
Trichechus manatus	Manatee	G2	S2	LE	FE
Potential					
Anomala robinsoni	Robinson's Anomala Scarab Beetle	G1?	S1?	N	N
Ardea herodias occidentalis	Great White Heron	G5T2	S2	N	N
Argythamnia blodgettii	Blodgett's Wild-mercury	G2	S2	C	LE
Ataenius wenzelii	An Ataenius Beetle	G3G5	S2S3	N	N
Caretta caretta	Loggerhead	G3	S3	LT	FT
Chamaesyce deltoidea ssp. adhaerens	Hairy Deltoid Spurge	G2T1	S1	LE	LE
Chamaesyce deltoidea ssp. deltoidea	Deltoid Spurge	G2T1	S1	LE	LE
Chamaesyce garberi	Garber's Spurge	G1	S1	LT	LE
Chamaesyce porteriana	Porter's Broad-leaved Spurge	G2	S2	N	LE
Chelonia mydas	Green Turtle	G3	S2	LE	FE
Cochlodinella poeyana	Truncate Urocoptid	G1G2	S1S2	N	N
Conradina grandiflora	Large-flowered Rosemary	G3	S3	N	LT
Crocodylus acutus	American Crocodile	G2	S2	LT	FT
Crossopetalum ilicifolium	Christmas Berry	G3	S3	N	LT
Cyclocephala miamiensis	Miami Chafer Beetle	G1?	S1?	N	N
Dalea carthagenensis var. floridana	Florida Prairie Clover	G5T1	S1	C	LE
Drymarchon couperi	Eastern Indigo Snake	G3	S3	LT	FT
Elytraria caroliniensis var. angustifolia	Narrow-leaved Carolina Scalystem	G4T2	S2	N	N
Encyclia cochleata var. triandra	Clamshell Orchid	G4G5T2	S2	N	LE
Eretmochelys imbricata	Hawksbill	G3	S1	LE	FE
Eumops floridanus	Florida bonneted bat	G1	S1	C	ST
Euphorbia pinetorum	Rockland Painted-leaf	G2	S2	N	LE
Forestiera segregata var. pinetorum	Florida Pinewood Privet	G4T2	S2	N	N
Galactia pinetorum	Pineland Milkpea	G2Q	S2	N	N
Galeandra bicarinata	Two-keeled Helmet Orchid	G1	S1	N	LE
Gambusia rhizophorae	Mangrove Gambusia	G3	S3	N	N
Glandularia maritima	Coastal Vervain	G3	S3	N	LE
Gopherus polyphemus	Gopher Tortoise	G3	S3	C	ST
Govenia floridana	Sheathing Govenia	G1Q	S1	N	LE
Guaiacum sanctum	Lignum-vitae	G2	S1	N	LE
Halophila johnsonii	Johnson's Seagrass	G2	S2	LT	N
Jacquemontia curtissii	Pineland Jacquemontia	G2	S2	N	LT
Patagioenas leucocephala	White-crowned Pigeon	G3	S3	N	ST
Phyllanthus pentaphyllus var. floridanus	Florida Five-petaled Leaf-flower	G4T2	S2	N	N
Rallus longirostris scottii	Florida Clapper Rail	G5T3?	S3?	N	N
Rana capito	Gopher Frog	G3	S3	N	SSC
Rivulus marmoratus	Mangrove Rivulus	G3	S3	SC	SSC

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FLORIDA Natural Areas INVENTORY

Florida Natural Areas Inventory

Biodiversity Matrix Report

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Roystonea elata	Florida Royal Palm	G2G3	S2	N	LE
Sachsia polycephala	Bahama Sachsia	G2	S2	N	LT
Selaginella eatonii	Eaton's Spike Moss	G2G3	S2	N	LE
Setophaga discolor paludicola	Florida Prairie Warbler	G5T3	S3	N	N
Swietenia mahagoni	West Indies Mahogany	G3G4	S3	N	LT
Tantilla oolitica	Rim Rock Crowned Snake	G1G2	S1S2	N	ST
Tephrosia angustissima var. corallicola	Rockland Hoary-pea	G1T1	S1	N	LE
Tragia saxicola	Pineland Noseburn	G2	S2	N	LT
Trichomanes punctatum ssp. floridanum	Florida Filmy Fern	G4G5T1	S1	C	LE
Matrix Unit ID: 67529					
Documented-Historic					
Crossopetalum rhacoma	Rhacoma	G5	S3	N	LT
Likely					
Ctenogobius stigmaturus	Spottail Goby	G2	S2	N	N
Mycteria americana	Wood Stork	G4	S2	LE	FE
Pine rockland		G1	S1	N	N
Tantilla oolitica	Rim Rock Crowned Snake	G1G2	S1S2	N	ST
Trichechus manatus	Manatee	G2	S2	LE	FE
Potential					
Anomala robinsoni	Robinson's Anomala Scarab Beetle	G1?	S1?	N	N
Ardea herodias occidentalis	Great White Heron	G5T2	S2	N	N
Athene cunicularia floridana	Florida Burrowing Owl	G4T3	S3	N	SSC
Chamaesyce deltoidea ssp. adhaerens	Hairy Deltoid Spurge	G2T1	S1	LE	LE
Chamaesyce deltoidea ssp. deltoidea	Deltoid Spurge	G2T1	S1	LE	LE
Chamaesyce porteriana	Porter's Broad-leaved Spurge	G2	S2	N	LE
Cochlodinella poeyana	Truncate Urocoptid	G1G2	S1S2	N	N
Conradina grandiflora	Large-flowered Rosemary	G3	S3	N	LT
Crocodylus acutus	American Crocodile	G2	S2	LT	FT
Cyclocephala miamiensis	Miami Chafer Beetle	G1?	S1?	N	N
Dalea carthagenensis var. floridana	Florida Prairie Clover	G5T1	S1	C	LE
Drymarchon couperi	Eastern Indigo Snake	G3	S3	LT	FT
Elytraria caroliniensis var. angustifolia	Narrow-leaved Carolina Scalystem	G4T2	S2	N	N
Encyclia cochleata var. triandra	Clamshell Orchid	G4G5T2	S2	N	LE
Eretmochelys imbricata	Hawksbill	G3	S1	LE	FE
Eumops floridanus	Florida bonneted bat	G1	S1	C	ST
Forestiera segregata var. pinetorum	Florida Pinewood Privet	G4T2	S2	N	N
Galactia pinetorum	Pineland Milkpea	G2Q	S2	N	N
Gambusia rhizophorae	Mangrove Gambusia	G3	S3	N	N
Glandularia maritima	Coastal Vervain	G3	S3	N	LE
Gopherus polyphemus	Gopher Tortoise	G3	S3	C	ST
Halophila johnsonii	Johnson's Seagrass	G2	S2	LT	N
Jacquemontia curtissii	Pineland Jacquemontia	G2	S2	N	LT
Patagioenas leucocephala	White-crowned Pigeon	G3	S3	N	ST
Phyllanthus pentaphyllus var. floridanus	Florida Five-petaled Leaf-flower	G4T2	S2	N	N
Rallus longirostris scottii	Florida Clapper Rail	G5T3?	S3?	N	N
Rana capito	Gopher Frog	G3	S3	N	SSC

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Rivulus marmoratus	Mangrove Rivulus	G3	S3	SC	SSC
Roystonea elata	Florida Royal Palm	G2G3	S2	N	LE
Selaginella eatonii	Eaton's Spike Moss	G2G3	S2	N	LE
Setophaga discolor paludicola	Florida Prairie Warbler	G5T3	S3	N	N
Swietenia mahagoni	West Indies Mahogany	G3G4	S3	N	LT
Tephrosia angustissima var. corallicola	Rockland Hoary-pea	G1T1	S1	N	LE
Tragia saxicola	Pineland Noseburn	G2	S2	N	LT
Trichomanes punctatum ssp. floridanum	Florida Filmy Fern	G4G5T1	S1	C	LE
Matrix Unit ID: 67530					
Documented					
Acrostichum aureum	Golden Leather Fern	G5	S3	N	LT
Asplenium dentatum	American Toothed Spleenwort	G5	S1S2	N	LE
Coccothrinax argentata	Silver Palm	G4	S3	N	LT
Crossopetalum ilicifolium	Christmas Berry	G3	S3	N	LT
Dalea carthagenensis var. floridana	Florida Prairie Clover	G5T1	S1	C	LE
Eugenia confusa	Tropical Ironwood	G4G5	S2S3	N	LE
Eupatorium villosum	Villose Fennel	G4G5	S2	N	LE
Euphorbia pinetorum	Rockland Painted-leaf	G2	S2	N	LE
Jacquemontia curtissii	Pineland Jacquemontia	G2	S2	N	LT
Linum carteri var. carteri	Carter's Small-flowered Flax	G2T1	S1	C	LE
Phyllanthus pentaphyllus var. floridanus	Florida Five-petaled Leaf-flower	G4T2	S2	N	N
Pine rockland		G1	S1	N	N
Prunus myrtifolia	West Indian Cherry	G4	S2	N	LT
Rockland hammock		G2	S2	N	N
Documented-Historic					
Agonostomus monticola	Mountain Mullet	G5	S3	N	N
Gambusia rhizophorae	Mangrove Gambusia	G3	S3	N	N
Likely					
Amorpha herbacea var. crenulata	Crenulate Lead-plant	G4T1	S1	LE	LE
Ctenitis sloanei	Florida Tree Fern	G5	S2	N	LE
Ctenogobius stigmaturus	Spottail Goby	G2	S2	N	N
Galactia pinetorum	Pineland Milkpea	G2Q	S2	N	N
Lantana depressa var. depressa	Florida Lantana	G2T1	S1	N	LE
Mesic flatwoods		G4	S4	N	N
Mycteria americana	Wood Stork	G4	S2	LE	FE
Tantilla oolitica	Rim Rock Crowned Snake	G1G2	S1S2	N	ST
Trichomanes punctatum ssp. floridanum	Florida Filmy Fern	G4G5T1	S1	C	LE
Potential					
Amyris balsamifera	Balsam Torchwood	G4	SX	N	N
Anomala robinsoni	Robinson's Anomala Scarab Beetle	G1?	S1?	N	N
Ardea herodias occidentalis	Great White Heron	G5T2	S2	N	N
Argythamnia blodgettii	Blodgett's Wild-mercury	G2	S2	C	LE
Asplenium serratum	American Bird's Nest Fern	G4	S1	N	LE
Asplenium verecundum	Modest Spleenwort	G1	S1	N	LE
Athene cunicularia floridana	Florida Burrowing Owl	G4T3	S3	N	SSC

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Basiphyllaea corallicola	Rockland Orchid	G1G3	S1	N	LE
Bourreria cassinifolia	Smooth Strongbark	G3?	S1	N	LE
Chamaesyce deltoidea ssp. adhaerens	Hairy Deltoid Spurge	G2T1	S1	LE	LE
Chamaesyce deltoidea ssp. deltoidea	Deltoid Spurge	G2T1	S1	LE	LE
Chamaesyce garberi	Garber's Spurge	G1	S1	LT	LE
Chamaesyce porteriana	Porter's Broad-leaved Spurge	G2	S2	N	LE
Cochlodinella poeyana	Truncate Urocoptid	G1G2	S1S2	N	N
Conradina grandiflora	Large-flowered Rosemary	G3	S3	N	LT
Crocodylus acutus	American Crocodile	G2	S2	LT	FT
Cyclocephala miamiensis	Miami Chafer Beetle	G1?	S1?	N	N
Drymarchon couperi	Eastern Indigo Snake	G3	S3	LT	FT
Elytraria caroliniensis var. angustifolia	Narrow-leaved Carolina Scalystem	G4T2	S2	N	N
Encyclia cochleata var. triandra	Clamshell Orchid	G4G5T2	S2	N	LE
Eretmochelys imbricata	Hawksbill	G3	S1	LE	FE
Eumops floridanus	Florida bonneted bat	G1	S1	C	ST
Forestiera segregata var. pinetorum	Florida Pinewood Privet	G4T2	S2	N	N
Galeandra bicarinata	Two-keeled Helmet Orchid	G1	S1	N	LE
Glandularia maritima	Coastal Vervain	G3	S3	N	LE
Gopherus polyphemus	Gopher Tortoise	G3	S3	C	ST
Govenia floridana	Sheathing Govenia	G1Q	S1	N	LE
Guaiacum sanctum	Lignum-vitae	G2	S1	N	LE
Halophila johnsonii	Johnson's Seagrass	G2	S2	LT	N
Linum carteri var. smallii	Small's Flax	G2T2	S2	N	LE
Patagioenas leucocephala	White-crowned Pigeon	G3	S3	N	ST
Pteris bahamensis	Bahama Brake	G4	S3	N	LT
Pteroglossaspis ecristata	Giant Orchid	G2G3	S2	N	LT
Rallus longirostris scottii	Florida Clapper Rail	G5T3?	S3?	N	N
Rivulus marmoratus	Mangrove Rivulus	G3	S3	SC	SSC
Roystonea elata	Florida Royal Palm	G2G3	S2	N	LE
Sachsia polycephala	Bahama Sachsia	G2	S2	N	LT
Selaginella eatonii	Eaton's Spike Moss	G2G3	S2	N	LE
Setophaga discolor paludicola	Florida Prairie Warbler	G5T3	S3	N	N
Swietenia mahagoni	West Indies Mahogany	G3G4	S3	N	LT
Tephrosia angustissima var. corallicola	Rockland Hoary-pea	G1T1	S1	N	LE
Tragia saxicola	Pineland Noseburn	G2	S2	N	LT
Trichechus manatus	Manatee	G2	S2	LE	FE
Tripsacum floridanum	Florida Gama Grass	G2	S2	N	LT
Zephyranthes simpsonii	Redmargin Zephyrlily	G2G3	S2S3	N	LT
Matrix Unit ID: 67694					
Likely					
Ctenogobius stigmaturus	Spottail Goby	G2	S2	N	N
Mycteria americana	Wood Stork	G4	S2	LE	FE
Trichechus manatus	Manatee	G2	S2	LE	FE
Potential					
Anomala robinsoni	Robinson's Anomala Scarab Beetle	G1?	S1?	N	N
Ardea herodias occidentalis	Great White Heron	G5T2	S2	N	N
Caretta caretta	Loggerhead	G3	S3	LT	FT

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Florida Natural Areas Inventory

Biodiversity Matrix Report

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Chamaesyce deltoidea ssp. adhaerens	Hairy Deltoid Spurge	G2T1	S1	LE	LE
Chamaesyce deltoidea ssp. deltoidea	Deltoid Spurge	G2T1	S1	LE	LE
Chamaesyce garberi	Garber's Spurge	G1	S1	LT	LE
Chamaesyce porteriana	Porter's Broad-leaved Spurge	G2	S2	N	LE
Chelonia mydas	Green Turtle	G3	S2	LE	FE
Cochlodinella poeyana	Truncate Urocoptid	G1G2	S1S2	N	N
Conradina grandiflora	Large-flowered Rosemary	G3	S3	N	LT
Crocodylus acutus	American Crocodile	G2	S2	LT	FT
Cyclocephala miamiensis	Miami Chafer Beetle	G1?	S1?	N	N
Dalea carthagenensis var. floridana	Florida Prairie Clover	G5T1	S1	C	LE
Drymarchon couperi	Eastern Indigo Snake	G3	S3	LT	FT
Elytraria caroliniensis var. angustifolia	Narrow-leaved Carolina Scalystem	G4T2	S2	N	N
Encyclia cochleata var. triandra	Clamshell Orchid	G4G5T2	S2	N	LE
Eretmochelys imbricata	Hawksbill	G3	S1	LE	FE
Eumops floridanus	Florida bonneted bat	G1	S1	C	ST
Forestiera segregata var. pinetorum	Florida Pinewood Privet	G4T2	S2	N	N
Galactia pinetorum	Pineland Milkpea	G2Q	S2	N	N
Gambusia rhizophorae	Mangrove Gambusia	G3	S3	N	N
Glandularia maritima	Coastal Vervain	G3	S3	N	LE
Gopherus polyphemus	Gopher Tortoise	G3	S3	C	ST
Halophila johnsonii	Johnson's Seagrass	G2	S2	LT	N
Jacquemontia curtissii	Pineland Jacquemontia	G2	S2	N	LT
Patagioenas leucocephala	White-crowned Pigeon	G3	S3	N	ST
Phyllanthus pentaphyllus var. floridanus	Florida Five-petaled Leaf-flower	G4T2	S2	N	N
Rallus longirostris scottii	Florida Clapper Rail	G5T3?	S3?	N	N
Rivulus marmoratus	Mangrove Rivulus	G3	S3	SC	SSC
Roystonea elata	Florida Royal Palm	G2G3	S2	N	LE
Selaginella eatonii	Eaton's Spike Moss	G2G3	S2	N	LE
Setophaga discolor paludicola	Florida Prairie Warbler	G5T3	S3	N	N
Swietenia mahagoni	West Indies Mahogany	G3G4	S3	N	LT
Tragia saxicola	Pineland Noseburn	G2	S2	N	LT
Trichomanes punctatum ssp. floridanum	Florida Filmy Fern	G4G5T1	S1	C	LE
Matrix Unit ID: 67695					
Likely					
Ctenogobius stigmaturus	Spottail Goby	G2	S2	N	N
Mycteria americana	Wood Stork	G4	S2	LE	FE
Trichechus manatus	Manatee	G2	S2	LE	FE
Potential					
Anomala robinsoni	Robinson's Anomala Scarab Beetle	G1?	S1?	N	N
Ardea herodias occidentalis	Great White Heron	G5T2	S2	N	N
Caretta caretta	Loggerhead	G3	S3	LT	FT
Chamaesyce deltoidea ssp. adhaerens	Hairy Deltoid Spurge	G2T1	S1	LE	LE
Chamaesyce deltoidea ssp. deltoidea	Deltoid Spurge	G2T1	S1	LE	LE
Chelonia mydas	Green Turtle	G3	S2	LE	FE
Cochlodinella poeyana	Truncate Urocoptid	G1G2	S1S2	N	N
Conradina grandiflora	Large-flowered Rosemary	G3	S3	N	LT
Crocodylus acutus	American Crocodile	G2	S2	LT	FT

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Cyclocephala miamiensis	Miami Chafer Beetle	G1?	S1?	N	N
Dalea carthagenensis var. floridana	Florida Prairie Clover	G5T1	S1	C	LE
Drymarchon couperi	Eastern Indigo Snake	G3	S3	LT	FT
Elytraria caroliniensis var. angustifolia	Narrow-leaved Carolina Scalystem	G4T2	S2	N	N
Encyclia cochleata var. triandra	Clamshell Orchid	G4G5T2	S2	N	LE
Eretmochelys imbricata	Hawksbill	G3	S1	LE	FE
Eumops floridanus	Florida bonneted bat	G1	S1	C	ST
Forestiera segregata var. pinetorum	Florida Pinewood Privet	G4T2	S2	N	N
Galactia pinetorum	Pineland Milkpea	G2Q	S2	N	N
Gambusia rhizophorae	Mangrove Gambusia	G3	S3	N	N
Glandularia maritima	Coastal Vervain	G3	S3	N	LE
Gopherus polyphemus	Gopher Tortoise	G3	S3	C	ST
Halophila johnsonii	Johnson's Seagrass	G2	S2	LT	N
Jacquemontia curtissii	Pineland Jacquemontia	G2	S2	N	LT
Patagioenas leucocephala	White-crowned Pigeon	G3	S3	N	ST
Phyllanthus pentaphyllus var. floridanus	Florida Five-petaled Leaf-flower	G4T2	S2	N	N
Rallus longirostris scottii	Florida Clapper Rail	G5T3?	S3?	N	N
Rivulus marmoratus	Mangrove Rivulus	G3	S3	SC	SSC
Roystonea elata	Florida Royal Palm	G2G3	S2	N	LE
Selaginella eatonii	Eaton's Spike Moss	G2G3	S2	N	LE
Setophaga discolor paludicola	Florida Prairie Warbler	G5T3	S3	N	N
Swietenia mahagoni	West Indies Mahogany	G3G4	S3	N	LT
Tragia saxicola	Pineland Noseburn	G2	S2	N	LT
Trichomanes punctatum ssp. floridanum	Florida Filmy Fern	G4G5T1	S1	C	LE
Matrix Unit ID: 67696					
Documented					
Eburia strohecker	Strohecker's Ivory-Spotted Long-Horn	G1G2	S1S2	N	N
Documented-Historic					
Cochlodinella poeyana	Truncate Urocoptid	G1G2	S1S2	N	N
Likely					
Amorpha herbacea var. crenulata	Crenulate Lead-plant	G4T1	S1	LE	LE
Ctenitis sloanei	Florida Tree Fern	G5	S2	N	LE
Ctenogobius stigmaturus	Spottail Goby	G2	S2	N	N
Galactia pinetorum	Pineland Milkpea	G2Q	S2	N	N
Lantana depressa var. depressa	Florida Lantana	G2T1	S1	N	LE
Mycteria americana	Wood Stork	G4	S2	LE	FE
Prunus myrtifolia	West Indian Cherry	G4	S2	N	LT
Pteris bahamensis	Bahama Brake	G4	S3	N	LT
Trichechus manatus	Manatee	G2	S2	LE	FE
Trichomanes punctatum ssp. floridanum	Florida Filmy Fern	G4G5T1	S1	C	LE
Potential					
Amyris balsamifera	Balsam Torchwood	G4	SX	N	N
Anomala robinsoni	Robinson's Anomala Scarab Beetle	G1?	S1?	N	N
Ardea herodias occidentalis	Great White Heron	G5T2	S2	N	N
Asplenium serratum	American Bird's Nest Fern	G4	S1	N	LE

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Caretta caretta	Loggerhead	G3	S3	LT	FT
Chamaesyce deltoidea ssp. adhaerens	Hairy Deltoid Spurge	G2T1	S1	LE	LE
Chamaesyce deltoidea ssp. deltoidea	Deltoid Spurge	G2T1	S1	LE	LE
Chamaesyce garberi	Garber's Spurge	G1	S1	LT	LE
Chamaesyce porteriana	Porter's Broad-leaved Spurge	G2	S2	N	LE
Chelonia mydas	Green Turtle	G3	S2	LE	FE
Coccothrinax argentata	Silver Palm	G4	S3	N	LT
Conradina grandiflora	Large-flowered Rosemary	G3	S3	N	LT
Crocodylus acutus	American Crocodile	G2	S2	LT	FT
Crossopetalum ilicifolium	Christmas Berry	G3	S3	N	LT
Cyclocephala miamiensis	Miami Chafer Beetle	G1?	S1?	N	N
Dalea carthagenensis var. floridana	Florida Prairie Clover	G5T1	S1	C	LE
Drymarchon couperi	Eastern Indigo Snake	G3	S3	LT	FT
Elytraria caroliniensis var. angustifolia	Narrow-leaved Carolina Scalystem	G4T2	S2	N	N
Encyclia cochleata var. triandra	Clamshell Orchid	G4G5T2	S2	N	LE
Eretmochelys imbricata	Hawksbill	G3	S1	LE	FE
Eugenia confusa	Tropical Ironwood	G4G5	S2S3	N	LE
Eumops floridanus	Florida bonneted bat	G1	S1	C	ST
Forestiera segregata var. pinetorum	Florida Pinewood Privet	G4T2	S2	N	N
Gambusia rhizophorae	Mangrove Gambusia	G3	S3	N	N
Glandularia maritima	Coastal Vervain	G3	S3	N	LE
Gopherus polyphemus	Gopher Tortoise	G3	S3	C	ST
Halophila johnsonii	Johnson's Seagrass	G2	S2	LT	N
Jacquemontia curtissii	Pineland Jacquemontia	G2	S2	N	LT
Patagioenas leucocephala	White-crowned Pigeon	G3	S3	N	ST
Phyllanthus pentaphyllus var. floridanus	Florida Five-petaled Leaf-flower	G4T2	S2	N	N
Polygala smallii	Tiny Polygala	G1	S1	LE	LE
Rallus longirostris scottii	Florida Clapper Rail	G5T3?	S3?	N	N
Rivulus marmoratus	Mangrove Rivulus	G3	S3	SC	SSC
Roystonea elata	Florida Royal Palm	G2G3	S2	N	LE
Selaginella eatonii	Eaton's Spike Moss	G2G3	S2	N	LE
Setophaga discolor paludicola	Florida Prairie Warbler	G5T3	S3	N	N
Swietenia mahagoni	West Indies Mahogany	G3G4	S3	N	LT
Tantilla oolitica	Rim Rock Crowned Snake	G1G2	S1S2	N	ST
Tephrosia angustissima var. corallicola	Rockland Hoary-pea	G1T1	S1	N	LE
Tragia saxicola	Pineland Noseburn	G2	S2	N	LT
Tripsacum floridanum	Florida Gama Grass	G2	S2	N	LT

Definitions: *Documented - Rare species and natural communities documented on or near this site.*
Documented-Historic - Rare species and natural communities documented, but not observed/reported within the last twenty years.
Likely - Rare species and natural communities likely to occur on this site based on suitable habitat and/or known occurrences in the vicinity.
Potential - This site lies within the known or predicted range of the species listed.

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Elements and Element Occurrences

An **element** is 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 an area of land and/or water in which a species or natural community is, or was, present. An EO should have practical conservation value for the Element as evidenced by potential continued (or historical) presence and/or regular recurrence at a given location.

Element Ranking and Legal Status

Using a ranking system developed by NatureServe and the Natural Heritage Program Network, the Florida Natural Areas Inventory assigns two ranks for 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 (EOs), estimated abundance (number of individuals for species; area for natural communities), geographic range, estimated number of adequately protected EOs, relative threat of destruction, and ecological fragility.

FNAI GLOBAL ELEMENT RANK

G1 = Critically imperiled globally because of extreme rarity (5 or fewer occurrences or less than 1000 individuals) or because of extreme vulnerability to extinction due to some natural or man-made factor.
G2 = Imperiled globally because of rarity (6 to 20 occurrences or less than 3000 individuals) or because of vulnerability to extinction due to some natural or man-made factor.
G3 = Either very rare and local throughout its range (21-100 occurrences or less than 10,000 individuals) or found locally in a restricted range or vulnerable to extinction from other factors.
G4 = Apparently secure globally (may be rare in parts of range).
G5 = Demonstrably secure globally.
GH = Of historical occurrence throughout its range, may be rediscovered (e.g., ivory-billed woodpecker).
GX = Believed to be extinct throughout range.
GXC = Extirpated from the wild but still known from captivity or cultivation.
G#? = Tentative rank (e.g., G2?).
G#G# = Range of rank; insufficient data to assign specific global rank (e.g., G2G3).
G#T# = Rank of a taxonomic subgroup such as a subspecies or variety; the G portion of the rank refers to the entire species and the T portion refers to the specific subgroup; numbers have same definition as above (e.g., G3T1).
G#Q = Rank of questionable species - ranked as species but questionable whether it is species or subspecies; numbers have same definition as above (e.g., G2Q).
G#T#Q = Same as above, but validity as subspecies or variety is questioned.
GU = Unrankable; due to a lack of information no rank or range can be assigned (e.g., GUT2).
GNA = Ranking is not applicable because the element is not a suitable target for conservation (e.g. a hybrid species).
GNR = Element not yet ranked (temporary).
GNRTNR = Neither the element nor the taxonomic subgroup has yet been ranked.

FNAI STATE ELEMENT RANK

S1 = Critically imperiled in Florida because of extreme rarity (5 or fewer occurrences or less than 1000 individuals) or because of extreme vulnerability to extinction due to some natural or man-made factor.
S2 = Imperiled in Florida because of rarity (6 to 20 occurrences or less than 3000 individuals) or because of vulnerability to extinction due to some natural or man-made factor.
S3 = Either very rare and local in Florida (21-100 occurrences or less than 10,000 individuals) or found locally in a restricted range or vulnerable to extinction from other factors.
S4 = Apparently secure in Florida (may be rare in parts of range).
S5 = Demonstrably secure in Florida.
SH = Of historical occurrence in Florida, possibly extirpated, but may be rediscovered (e.g., ivory-billed woodpecker).
SX = Believed to be extirpated throughout Florida.
SU = Unrankable; due to a lack of information no rank or range can be assigned.
SNA = State ranking is not applicable because the element is not a suitable target for conservation (e.g. a hybrid species).
SNR = Element not yet ranked (temporary).

FEDERAL LEGAL STATUS

Legal status information provided by FNAI for information only. For official definitions and lists of protected species, consult the relevant federal agency.

Definitions derived from U.S. Endangered Species Act of 1973, Sec. 3. Note that the federal status given by FNAI refers only to Florida populations and that federal status may differ elsewhere.

C = Candidate species for which federal listing agencies have sufficient information on biological vulnerability and threats to support proposing to list the species as Endangered or Threatened.
LE = Endangered: species in danger of extinction throughout all or a significant portion of its range.
LE, LT = Species currently listed endangered in a portion of its range but only listed as threatened in other areas
LE, PDL = Species currently listed endangered but has been proposed for delisting.
LE, PT = Species currently listed endangered but has been proposed for listing as threatened.
LE, XN = Species currently listed endangered but tracked population is a non-essential experimental population.
LT = Threatened: species likely to become Endangered within the foreseeable future throughout all or a significant portion of its range.
SAT = Treated as threatened due to similarity of appearance to a species which is federally listed such that enforcement personnel have difficulty in attempting to differentiate between the listed and unlisted species.
SC = Not currently listed, but considered a "species of concern" to USFWS.

STATE LEGAL STATUS

Provided by FNAI for information only. For official definitions and lists of protected species, consult the relevant state agency.

Animals: Definitions derived from "Florida's Endangered Species and Species of Special Concern, Official Lists" published by Florida Fish and Wildlife Conservation Commission, 1 August 1997, and subsequent updates.

FE = Listed as Endangered Species at the Federal level by the U. S. Fish and Wildlife Service
FT = Listed as Threatened Species at the Federal level by the U. S. Fish and Wildlife Service
F(XN) = Federal listed as an experimental population in Florida
FT(S/A) = Federal Threatened due to similarity of appearance
ST = State population listed as Threatened by the FFWCC. Defined as a species, subspecies, or isolated population which is acutely vulnerable to environmental alteration, declining in number at a rapid rate, or whose range or habitat is decreasing in area at a rapid rate and as a consequence is destined or very likely to become an endangered species within the foreseeable future. (ST* for Ursus americanus floridanus (Florida black bear) indicates that this status does not apply in Baker and Columbia counties and in the Apalachicola National Forest. ST* for Neovison vison pop.1 (Southern mink, South Florida population) indicates that this status applies to the Everglades population only.)
SSC = Listed as Species of Special Concern by the FFWCC. Defined as a population which warrants special protection, recognition, or consideration because it has an inherent significant vulnerability to habitat modification, environmental alteration, human disturbance, or substantial human exploitation which, in the foreseeable future, may result in its becoming a threatened species. (SSC* indicates that a species has SSC status only in selected portions of its range in Florida. SSC* for Pandion haliaetus (Osprey) indicates that this status applies in Monroe county only.)
N = Not currently listed, nor currently being considered for listing.

Plants: Definitions derived from Sections 581.011 and 581.185(2), Florida Statutes, and the Preservation of Native Flora of Florida Act, 5B-40.001. FNAI does not track all state-regulated plant species; for a complete list of state-regulated plant species, call Florida Division of Plant Industry, 352-372-3505 or see: http://www.doacs.state.fl.us/pi/.

LE = Endangered: species of plants native to Florida 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; includes all species determined to be endangered or threatened pursuant to the U.S. Endangered Species Act.
LT = Threatened: 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 number as to cause them to be Endangered.
N = Not currently listed, nor currently being considered for listing.

Element Occurrence Ranking

FNAI ranks of quality of the element occurrence in terms of its viability (EORANK). Viability is estimated using a combination of factors that contribute to continued survival of the element at the location. Among these are the size of the EO, general condition of the EO at the site, and the conditions of the landscape surrounding the EO (e.g. an immediate threat to an EO by local development pressure could lower an EO rank).

A = Excellent estimated viability
A? = Possibly excellent estimated viability
AB = Excellent or good estimated viability
AC = Excellent, good, or fair estimated viability
B = Good estimated viability
B? = Possibly good estimated viability
BC = Good or fair estimated viability
BD = Good, fair, or poor estimated viability
C = Fair estimated viability
C? = Possibly fair estimated viability
CD = Fair or poor estimated viability
D = Poor estimated viability
D? = Possibly poor estimated viability
E = Verified extant (viability not assessed)
F = Failed to find
H = Historical
NR = Not ranked, a placeholder when an EO is not (yet) ranked.
U = Unrankable
X = Extirpated

*For additional detail on the above ranks see: http://www.natureserve.org/explorer/eorankguide.htm

FNAI also uses the following EO ranks:

H? = Possibly historical
F? = Possibly failed to find
X? = Possibly extirpated

The following offers further explanation of the H and X ranks as they are used by FNAI:

The rank of H is used when there is a lack of recent field information verifying the continued existence of an EO, such as (a) when an EO is based only on historical collections data; or (b) when an EO was ranked A, B, C, D, or E at one time and is later, without field survey work, considered to be possibly extirpated due to general habitat loss or degradation of the environment in the area. This definition of the H rank is dependent on an interpretation of what constitutes "recent" field information. Generally, if there is no known survey of an EO within the last 20 to 40 years, it should be assigned an H rank. While these time frames represent suggested maximum limits, the actual time period for historical EOs may vary according to the biology of the element and the specific landscape context of each occurrence (including anthropogenic alteration of the environment). Thus, an H rank may be assigned to an EO before the maximum time frames have lapsed. Occurrences that have not been surveyed for periods exceeding these time frames should not be ranked A, B, C, or D. The higher maximum limit for plants and communities (i.e., ranging from 20 to 40 years) is based upon the assumption that occurrences of these elements generally have the potential to persist at a given location for longer periods of time. This greater potential is a reflection of plant biology and community dynamics. However, landscape factors must also be considered. Thus, areas with more anthropogenic impacts on the environment (e.g., development) will be at the lower end of the range, and less-impacted areas will be at the higher end.

The rank of X is assigned to EOs for which there is documented destruction of habitat or environment, or persuasive evidence of eradication based on adequate survey (i.e., thorough or repeated survey efforts by one or more experienced observers at times and under conditions appropriate for the Element at that location).

ON SALE NOW

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Biodiversity, Landscapes, Stewardship, and Opportunities

The Florida Natural Areas Inventory is pleased to announce the publication of the ***Atlas of Florida's Natural Heritage: Biodiversity, Landscapes, Stewardship, and Opportunities***. This high-quality, full-color *Atlas* is sure to become a standard reference for anyone involved in the conservation, management, study, or enjoyment of Florida's rich natural resources. We hope the *Atlas* will inspire, educate, and raise awareness of and interest in biodiversity and conservation issues.

Institute of Science and Public Affairs

FLORIDA Natural Areas INVENTORY

AUDIENCE:

The ***Atlas of Florida's Natural Heritage: Biodiversity, Landscapes, Stewardship, and Opportunities*** was envisioned as a resource that would appeal to a wide-ranging audience. Through its use of colorful maps, graphics, and photography, Florida's Natural Heritage and appeal is dramatically highlighted. It is intended to appeal to a wide audience. Hopefully, it will increase awareness of the resources we take for granted, and the challenges we face in preserving them.

It is for those who are informed, interested, and/or influential in environmental issues, but may lack specific information and expertise. These may include planners, policymakers, and environmental/conservation advocates from the local to state level. It is also for environmental/conservation/natural resource managers. While the atlas may not provide "new information" to this audience, it will serve as a useful reference that brings many of the elements of biodiversity together in one publication. The final audience are the citizens of Florida and those who may visit our state.

We want the atlas to inspire, educate, and raise awareness of and the interest in biodiversity and conservation issues. Florida's biodiversity is not only important to maintain our quality of life, but it is a primary reason why so many people visit our state.

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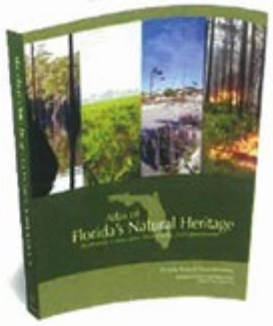

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ATTACHMENT J: FIELD TRIP FACTOIDS

R. Hardy Matheson Preserve (Formerly ITT/Snapper Creek Preserve)

Acreage
556 Total [4 Pine + 16 Hammock + 536 Coastal]

Florida Endangered species

1	Asplenium dentatum	Native
2	Cyperus floridanus	Native
3	Dalea carthagenensis var. floridana	Native
4	Eugenia confusa	Native
5	Linum carteri	Native
6	Pavonia paludicola	Native
7	Poinsettia pinetorum	Native
8	Polystachya concreta	Native
9	Roystonea regia	Not Native, Naturalized
10	Scleria lithosperma	Native
11	Tillandsia fasciculata var. densispica	Native
12	Tillandsia utriculata	Native
13	Trichomanes punctatum subsp. floridanum	Extirpated or Extinct

Historical Background for R. Hardy Matheson Preserve (Formerly ITT/Snapper Creek Preserve)

Excerpts From: Line, R. 1991. Snapper Creek Preserve Natural Areas Protection Plan. Internal report produced by Miami-Dade County Park & Recreation Department, The Nature Conservancy, and Fairchild Tropical Garden.

A. General Description

Snapper Creek Canal flows through the middle of Snapper Creek Preserve. Built in 1912-13, Snapper Creek Canal was one of the first drainage canals constructed in South Florida. Dredging of this canal drastically altered the water table in the area, depleting the freshwater springs which once attracted settlers to the site. A large spoil berm from excavation of the canal is piled along the length of the north side of the canal. A man-made peninsula created by this berm juts into Biscayne Bay. This peninsula and the north bank of the canal are popular fishing spots. Construction of two bridges over Snapper Creek Canal during the last fifty years has severely altered this area.

The original roadbed of the old Ingraham Highway, which once extended from the Miami River southwest to Cape Sable, runs through the property on both sides of the canal. The roadbed is still discernible from where it forks off of the present Old Cutler Road and curves towards Snapper Creek Canal. At the canal, the original bridge is long gone, and the old roadway is again visible through the hammock on the south side of the canal, although it is densely covered with Brazilian pepper (Schinus terebinthifolius). This roadbed has historical significance and should be maintained as an access road for management of the site.

The Preserve contains a Tequesta Indian midden part of which was disturbed by construction of Ingraham Highway and Snapper Creek Canal.

B. Public Acquisition

Originally part of Charles Deering's estate, the Snapper Creek property was sold in 1969 for $7.2 million to South Florida Development Corporation, a subsidiary of the International Telephone and Telegraph Corporation (ITT). ITT's development plans for the property included two hotel towers and a golf course. Because of the archeological and biological value of the parcel, many environmental groups worked to include Snapper Creek on the acquisition list of the State of Florida's Conservation and Recreational Lands (CARL) program.

In early 1982 the State of Florida purchased the Snapper Creek parcel from ITT for $6.1 million. This was the first time that CARL funds were used to acquire property in Dade county. Responsibility for the management of Snapper Creek Preserve was transferred to Metro-Dade Parks in 1982, although the State still holds title to the property.

Prior to state acquisition of the property, Fairchild Tropical Garden and the Montgomery Foundation had requested that the hammock and mangrove areas be deeded to them to be preserved and used for scientific and educational purposes. After the state bought the site, Fairchild Garden and the Montgomery Foundation applied to Metro-Dade Parks requesting this use in exchange for management of the hammock. However, due to liability concerns, this proposal was never executed.

In 1986, a 180 acre disjunct addition, called the Snapper Creek Addition, was added to Snapper Creek Preserve. This parcel was purchased from the Gables-By-The-Sea development using money from the State of Florida's Environmentally Endangered Lands Fund. The Addition is located east of S.W. 57 Ave, south of Bella Vista Ave. and north of Chapman Field Park. This property includes remnant salt marsh predominated by black rush, mangrove forest and submerged

land in Biscayne Bay. Resource management plans for the Addition will be included in the Natural Area Protection Plan for Chapman Field Park.

C. Recreational Program Development

The approved management plan for Snapper Creek Preserve submitted by Metro-Dade Parks, emphasized protection of the archeological sites and the preservation and restoration of ecological communities (See Appendix II B, Management Agreement). Plans for the park included passive recreation such as hiking, fishing, picnicking, canoeing, and guided hammock tours. These activities were to be centralized in the upland areas on the north side of Snapper Creek Canal. All the mangrove areas were to remain untouched. Metro-Dade Parks estimated that it would cost $400,000.00 to prepare the park for public use.

In 1985 a lease agreement was reached between the State and Metro-Dade Parks, and a final management plan was approved in 1988. Between 1985 and 1988, Metro-Dade Parks and South Florida Water Management District initiated restoration work at Snapper Creek Preserve. On the north side of the canal, Australian pine (Casuarina equisetifolia) and Brazilian pepper were removed along the spoil bank to provide a path to the bay. Culverts were installed on the north side of the canal to maintain tidal flushing into the mangroves and to provide a pedestrian/vehicle path to the bay. Several of these culverts have since collapsed or have become clogged, inhibiting tidal flushing.

To control unauthorized access, a gate was installed at the entrance to the property. In 1988, Dade County Public Works Department installed a substantial barrier along Old Cutler Road on the north side of the canal to prevent unauthorized vehicular entry into the property.

D. Archeological Sites or Significance

Snapper Creek Preserve contains the remains of a prehistoric Indian village dating to 500 B.C.. This midden, believed to have been occupied by Tequesta Indians, includes a village and possibly a cemetery. Unearthed artifacts include tools made from bones, pieces of broken pottery, and axheads made out of conch shells.

During the 17th and 18th centuries, settlers built their camps here near the numerous large sinkholes that bubbled with freshwater. Early 20th century settlers planted mangos, sapodillas and other dooryard trees, some of which still remain. This property was a popular picnic location because of the freshwater springs, until construction of the Snapper Creek Canal in the early 1900's dried up water flow.

Despite the illegal digging of artifacts and the effects of dredging the canal, Snapper Creek Preserve is still considered a significant archeological site and may be eligible to be designated as a National Historic Site.

ATTACHMENT K: CARTAGENA PRAIRIE-CLOVER MONITORING REPORT

From:
Possley, J., J. Maschinski, S. Wright, L. Krueger, D. Powell, C. Cooper and J. Moore. 2012. Year 9 report: Biological monitoring for plant conservation in Miami-Dade County natural areas. Miami-Dade County Resolution #R-808-07.

Dalea carthagenensis var. *floridana* (Florida prairie clover)

By Jennifer Possley, Sam Wright, Lisa Krueger, Julie Moore, and Joyce Maschinski

The sub-shrub *Dalea carthagenensis* var. *floridana* is listed as endangered by FDACS and critically imperiled by IRC. It is a candidate for the USFWS endangered species list, and it is endemic to South Florida. Miami-Dade County natural areas that contain *D. carthagenensis* var. *floridana* (hereafter, "*Dalea*") include Crandon Park, The Deering Estate, and R. Hardy Matheson Preserve. We have counted *Dalea* at R. Hardy Matheson Preserve once or twice annually since fall 2003. We conduct quick counts of individuals, dividing them into the categories of "woody" and "seedling."

Dalea at R. Hardy Matheson Preserve (Wild & Planted)

From 2003 to 2008, the number of *Dalea* at R. Hardy Matheson Preserve declined dramatically—from 31 to one. We attributed this decline to fire suppression and the accompanying increase in shade and competition. Since the population appeared to be headed for extirpation, we collected seed and grew plants at Fairchild's nursery, collecting and storing thousands of seeds at the National Center for Genetic Resources Preservation. In August 2010, after NAM crews raked a small area where the *Dalea* most recently grew, the number of seedlings in this population skyrocketed from zero to 330. The population size has normalized a bit since then, but numbers remain higher than they initially were. In December 2011, we counted 92 wild *Dalea* (45 seedlings; 45 woody) at R. Hardy Matheson Preserve (**Fig. 6**).

To augment the declining wild population, we conducted an experimental seed augmentation of *D. carthagenensis* var. *floridana* at RHM in 2009. We introduced a total of 6000 seeds. During our last monitoring period of July 2011, there were 113 surviving established plants, many of which had old infructesences from the winter. We are currently working on a manuscript on "hard-seededness" in plants, where this augmentation is featured as a case study.

1

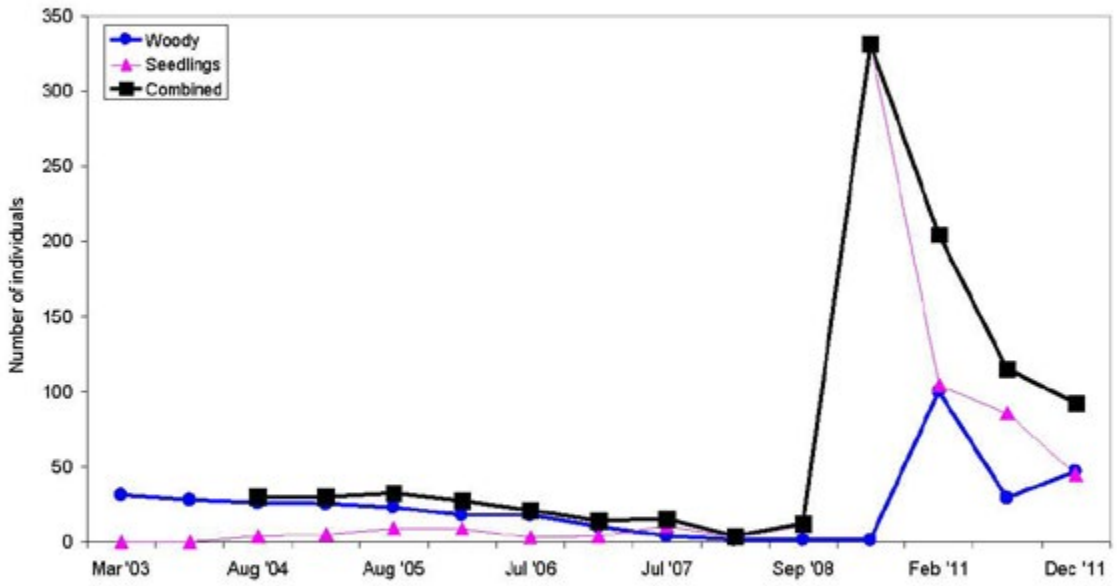

Figure 6. Census data for *Dalea* at R. Hardy Matheson Preserve.

ATTACHMENT L: MIAMI-DADE COUNTY NATURAL AREAS MANAGEMENT PLAN

MIAMI-DADE COUNTY

NATURAL AREAS MANAGEMENT PLAN

Miami-Dade County Natural Areas Management Working Group

Department of Environmental Resources Management (DERM)
Technical Report Number 2004-1

MIAMI-DADE COUNTY
NATURAL AREAS MANAGEMENT PLAN

Miami-Dade County Natural Areas Management Working Group

Department of Environmental Resources Management (DERM),
Technical Report Number 2004-1

September 2004

Cite as: Miami-Dade County Natural Areas Management Working Group. 2004. Miami-Dade County Habitat Management Plan. Department of Environmental Resources Management (DERM) Technical Report No. 2004-1.

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Contents

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Formal reviews were conducted by land managers from neighboring agencies, including Roger Clark, Land Stewardship Manager for Lee County Parks and Recreation; Carol Morgenstern, Natural Areas Manager for Broward County Parks and Recreation; Frank Griffiths, Environmental Program Supervisor for Palm Beach County Environmental Resource Management, and members of the Pine Rockland Working Group.

Agency abbreviations:

DERM = Department of Environmental Resources Management, Miami-Dade County
EEL = Environmentally Endangered Lands program, Miami-Dade County (part of the Department of Environmental Resources Management)
FTBG = Fairchild Tropical Botanic Garden
IRC = The Institute for Regional Conservation
NAM = Natural Areas Management, Miami-Dade County (part of the Park and Recreation Department)

Introduction

The Miami-Dade County Natural Areas Management Working Group created the Miami-Dade County Natural Areas Management Plan in 2003 and 2004 to guide management and restoration practices in Miami-Dade County over the next decades.

We have created this document with the intention that it will be used in Miami-Dade County, but it has some applicability throughout southern Florida. Land management agencies, such as other county and local governments can use this document in planning management activities in natural areas. It is also a useful tool for private landowners who manage natural areas.

These guidelines are intended to be general enough for application to a wide range of habitats. In the section entitled "All Natural Areas," general goals, objectives and actions that apply to all of the subsequent habitat types are described. Specific goals, objectives and actions unique to a particular habitat follow in the separate habitat sections (described below). Actions listed in this plan will not always apply in the same way to all sites. Therefore, site managers should develop and implement actions recommended in this plan on a per-site basis.

In most cases, we used nomenclature for habitat (community) types described by the Florida Natural Areas Inventory (FNAI and FDNR 1990), with short descriptions taken from the 1999 tracking list (Marois 1999). Those habitats marked with asterisks are not recognized by FNAI. Habitats addressed here include:

- **Pine Rockland** - Flatland with exposed limestone substrate; mesic-xeric; subtropical; frequent fire; south Florida slash pine, palms and/or hardwoods, and mixed grasses and herbs.
- **Rockland Hammock** - Flatland with limestone substrate; mesic; subtropical; rare or no fire; mixed tropical hardwoods, often with live oak.
- **Scrubby Flatwoods** - Flatland with sand substrate; xeric-mesic; subtropical or temperate; occasional fire; longleaf pine or slash pine with scrub oaks and wiregrass understory.
- **Coastal Uplands** - Substrate and vegetation influenced primarily by such coastal (maritime) processes as erosion, deposition, salt spray, and storms.
    - **Beach Dune** - Active coastal dune with sand substrate; xeric; temperate or subtropical; occasional or rare fire; sea oats and/or mixed salt-spray tolerant grasses and herbs.
    - **Coastal Berm** - Old bar or storm debris with sand/shell substrate; xeric-mesic; subtropical or temperate; rare or no fire; buttonwood, mangroves, and/or mixed halophytic herbs and/or shrubs and trees.
    - **Coastal Strand** - Stabilized coastal dune with sand substrate; xeric; subtropical or temperate; occasional or rare fire; dense saw palmetto and/or seagrape and/or mixed stunted shrubs, yucca, and cacti.
    - **Maritime Hammock** - Stabilized coastal dune with sand substrate; xeric-mesic; subtropical or temperate; rare or no fire; mixed tropical hardwoods and/or live oak.

- **Wetlands** - Includes communities from palustrine, lacustrine, and marine/estuarine subgroupings described by FNAI (FNAI and FDNR 1990).
    - **Bayhead*** - Wetland with peat substrate; usually saturated and occasionally inundated; subtropical; rare or no fire; bays and/or dahoon holly, cocoplum, wax myrtle, and other hardwoods (description from IRC 2001).
    - **Dome Swamp** - Rounded depression in sand/limestone substrate with peat accumulating toward center; seasonally inundated, still water; subtropical or temperate; occasional or rare fire; pond cypress, and/or blackgum, and bays, often tallest in center.
    - **Marl Prairie** - Flatland with marl over limestone substrate; seasonally inundated; tropical; frequent to no fire; sawgrass, spikerush, and/or mixed grasses, sometimes with dwarf cypress (but see Historic Transverse Glades, below).
    - **Swale** - Broad, shallow channel with sand/peat substrate; seasonally inundated, flowing water; subtropical or temperate; frequent or occasional fire; sawgrass, maidencane, pickerelweed, and/or mixed emergents.
    - **Tidal Marsh** - Expansive intertidal or supratidal area occupied primarily by rooted, emergent vascular macrophytes (e.g., cord grass, needlerush, saw grass, saltwort, saltgrass and glasswort); may include various epiphytes and epifauna.
    - **Tidal Swamp** - Expansive intertidal and supratidal area occupied primarily by woody vascular macrophytes (e.g., black mangrove, buttonwood, red mangrove, and white mangrove); may include various epiphytes and epifauna.
    - **Freshwater Tidal Swamp** - Rivermouth wetland, organic soil with extensive root mat; inundated with freshwater in response to tidal cycles; rare or no fire; cypress, bays, cabbage palm, gums and/or cedars.

- **Historic Transverse Glades*** - We deviated from the FNAI classification of "Marl Prairie;" opting instead for the term "Historic Transverse Glades" as a subset of south Florida Marl Prairies that intersect uplands in Miami-Dade County. In doing so, we underscore that this community is extremely rare, and that hydrologic alterations have eliminated any undisturbed transverse glades outside of Everglades National Park -- a fact that restoration efforts must acknowledge.

- **Ecotones*** - We have added a separate section for ecotones, because their management creates unique problems, which we have tried to address.

As progress is made toward restoring and managing the seven habitat types, these plans will undoubtedly need to be modified. Therefore, this working document will be periodically revised.

All Natural Areas

GOAL 1: Restore and maintain habitat structure and function to maximize native biotic diversity and preserve natural resource values.

OBJECTIVES AND RECOMMENDED ACTIONS:

ALL.1.1. Control and/or extirpate populations of invasive plants and exotic and nuisance animals.

- Eliminate, to the extent possible, invasive pest plants and exotic animals from natural areas, including outlying populations.
- Ensure that control measures are not deleterious to native species.
- Continue to review and update invasive species management techniques.
- Conduct routine surveys to detect new infestations and new species.
- Evaluate effectiveness of different treatment techniques and treatment intervals on invasive plants.
- Identify disproportionately large populations of native wildlife and eliminate human activities such as feeding that increase populations.
- Manage refuse in parks and neighboring areas so that it is not available for consumption by wildlife.

ALL.1.2. Maintain or restore the viability of rare and endemic species consistent with the preservation and restoration of the habitat.

- Prioritize and monitor existing rare plant and animal species.
- Maintain GIS records of all known rare plant locations and distribute to land managers to make crews aware of plants to protect.
- Conduct management activities such as invasive plant removal, fence construction, etc., away from rare plants when possible. When such actions cannot be prevented, consider alternatives to minimize the impacts to rare species.
- Reintroduce populations of extirpated species, and augment existing populations where appropriate.
- For federally listed species, use USFWS Recovery Plans as guides.

ALL 1.3. Assess the role of fire in natural areas and the use of prescribed fire for maintenance and restoration.

- Execute a Memorandum of Understanding with Everglades National Park for assistance with prescribed burning.

ALL.1.4. Protect habitats from point and non-point source pollution.

- Coordinate with Miami-Dade County Public Works, Mosquito Control District to reduce or eliminate spraying for mosquitoes on and adjacent to natural areas.

- Reduce or eliminate drifting pesticide spray and dust from agricultural and commercial operations.
- Buffer natural areas from adjacent pollution sources by retaining existing vegetation or planting native vegetation that is appropriate to the habitat.
- Prevent dumping of pollutants such as automotive oil, paint and pesticide containers, home chemicals, roofing and construction materials, landscape debris, automobile parts, trash, and contaminated stormwater.
- Encourage the use of non-toxic bullets in areas that allow hunting.

ALL.1.5. Increase size, connectivity, and diversity of natural areas.

- Complete acquisitions in Miami-Dade County under the Environmentally Endangered Lands Program.
- Remove roads that fragment natural areas, except as they are needed for firebreaks or maintenance access.
- Recreate natural areas where they have been destroyed by human activities.
- Restore to the most practical natural habitat those areas that have suffered such extreme degradation that re-creation of the original plant community is either impossible or impractical.
- Use disturbed areas to create additional habitats adjacent to or within intact natural areas.
- Promote site-appropriate native landscaping in developed areas around a site to increase habitat area.

ALL.1.6. Restore historic hydrological conditions by rehydrating areas with quality water, thereby increasing availability of water for species requiring more mesic or hydric conditions.

- Identify preserves that will be appropriate for hydrologic restoration.
- Pursue collaborations with researchers to address hydrological questions.
- Pump water in, dike, install wells, etc., to approximate historic, predrainage hydrology.
- Work with water agencies to maintain the water table as high as possible, and water quality as high as possible.
- Monitor soil moisture before and after hydrologic restoration.
- Reconnect natural areas with water sources where possible as an alternative to full-scale hydrologic restoration.

ALL.1.7. Develop plans to respond to disasters such as hurricanes, tornadoes, catastrophic fires, major pest outbreaks, etc.

- For natural disasters, coordinate with the Emergency Operations Center's command team through the assigned County staff members.
- For catastrophic fires, coordinate with the pre-determined incident command team (F-DOF, M-D Fire Rescue, ENP, Parks, DERM, etc.)
- For major pest outbreaks, coordinate with other concerned agencies and research facilities such as UF-IFAS.
- Develop disaster-response site plans and keep them in multiple, easily accessible locations. Plans should include maps (vegetation types, rare species, property surveys),

site inventories, emergency signage, and contact information for project managers.
- Prioritize recovery tasks on a per-site basis, including clearing of fire breaks, identifying and treating populations of invasive plants that are likely to spread quickly, and identifying areas where wildfire risk is heightened.
- Continue to monitor updates of the Miami-Dade County Emergency Operations Center disaster response plans to ensure that staging areas for recovery efforts are not located in environmentally sensitive sites.

ALL.1.8. Review and update knowledge about restoration and management.
- Review pertinent literature on historic information, recent scientific studies, and natural history.
- Use current techniques to gather new information on canopy cover, seed bank, pollen, appropriate times to treat invasive plants, plant/animal interactions (dispersal, pollination), etc.
- Coordinate restoration and management with site-specific management objectives.

GOAL 2: Increase public awareness and provide appropriate and compatible public access while protecting natural areas from adverse human impacts.

OBJECTIVES AND RECOMMENDED ACTIONS:

ALL.2.1. Increase public awareness and engender public support for protecting and preserving natural areas.
- Continue and expand efforts to educate the public through means such as Adopt-a-Natural Area Program, the Environmentally Endangered Lands Program, and the Natural Areas Management website.
- Create, display, and distribute promotional and educational materials about Miami-Dade County's natural areas, their plant and animal residents, and their invaluable community benefits.
- Update educational materials and websites periodically.
- Provide information to the communications department that will increase support for natural areas management and inspire public action.
- Promote incorporation of natural areas information into the curriculum of Miami-Dade Public Schools by providing links to science standards.
- Recommend new, compatible public education programs to focus on the natural history of natural areas.
- Coordinate natural areas management with public education and Eco-Tourism programs to encourage interaction, cross-training, and joint meetings.
- Publish promotional information about natural areas in the media.

ALL.2.2. Develop and implement public use plans for all natural areas.
- Identify site-specific opportunities for compatible public use and access.

- Determine public use capacity for individual parks or sites within parks.
- Develop a specific master site plan for each natural area.
- Develop a public use compatibility permit system.
- Develop standards for the type of facilities and materials to be used when developing public use facilities in preserves. Examples include composting toilets, use of recycled lumber for boardwalks, energy saving materials, water conserving fixtures, use of firewise construction and materials, and permeable asphalt.

ALL.2.3. Protect natural areas from inappropriate public use such as dumping, release of invasive plant and animal species (including feral and domesticated pets), poaching of native plant and animal species, off-road vehicles (ORVs), campfires, paintball games, and other unauthorized uses.

- Establish signs to identify environmentally protected areas, designate areas for public access, and to discourage inappropriate public use.
- Provide public access through a clearly identified trail system, where appropriate.
- Institute appropriate access control measures such as fences and gates, where appropriate; monitor and repair as needed.
- Ensure that existing rules and regulations concerning the protection of natural resources are enforced. Project managers are responsible for identifying situations where illegal public use is occurring.
- Continue coordinating with Miami-Dade Police Department's Environmental Crimes Unit to monitor natural areas.

GOAL 3: Increase effectiveness of natural areas management by periodically reviewing and revising/updating management plans, monitoring results, evaluating techniques, and training staff.

OBJECTIVES AND RECOMMENDED ACTIONS:

ALL.3.1. Develop and periodically revise site and habitat management plans.

- Develop management plans, fire management plans and monitoring plans for all natural areas.
- Establish a protocol and schedule for reviewing and updating site, habitat, and fire management plans.
- Review and update management plans every 5 years, at minimum.

ALL.3.2. Maintain a long-term biological monitoring program.

- Make regular site visits according to the monitoring plans.
- Develop a standard form for use in conducting site visits and recording observations.
- Biologists should regularly visit sites where crews are working to discuss management techniques, priorities, plant identification, rare species protection, etc.
- Conduct rare species surveys prior to implementation of management activities.
- Collect appropriate baseline data useful in detecting habitat changes over time.

including species inventories, vegetation mapping, etc.
- Develop appropriate monitoring protocols for individual projects.
- Monitor results of general management practices to detect positive response or off-target damage.
- Prioritize rare/indicator species and monitor at least annually by mapping, counting, sampling, conducting demographic studies, or a combination of these methods.
- Analyze monitoring data and summarize results in an annual report.
- Use results to evaluate and refine management methods.
- Encourage relationships with outside researchers for monitoring pests, insects, reptiles, amphibians, fishes, birds, and mammals, as an indicator of pollution and general ecosystem health.

ALL.3.3. Maximize efficiency and cost effectiveness of management activities on County natural areas.
- Establish quantifiable target objectives for management activities (e.g., set thresholds for invasive plant cover, target species priorities, and optimal timing of treatment).
- Develop scope-of-work and budgets for projects.
- Organize management actions to coordinate personnel, maximize biological effectiveness, account for seasonal/ecological factors, and meet budget and schedule requirements.
- Keep accurate records of management actions, labor, materials, equipment use, and costs.
- Monitor biological conditions and compare with target objectives, budgets, and schedules.
- Analyze and summarize the cost and ecological effectiveness of management activities.
- Utilize past records when planning new projects.

ALL.3.4. Improve effectiveness of natural areas management through staff training.
- Provide training and appropriate identification materials to staff for rare native plant and animal species, invasive plants, and exotic animals.
- Provide a mechanism for documenting and reporting on new populations of species of interest.
- Encourage staff participation in technical training, workshops, and conferences.
- Encourage certification or licensure of staff involved with prescribed burning (FDOF), arboriculture (ISA), and natural areas weed control (FDACS, Pesticide certification section).
- Require exotic plant control contractors to be licensed in the natural areas weed category by FDACS.
- Ensure that institutional knowledge is maintained through documentation and dissemination of key information.

ALL.3.5. Ensure that long-term interagency coordination is maintained, and encourage the sharing of maps, data, and literature (see **Appendix** for relevant agencies).

- Execute appropriate interagency agreements to solidify essential natural areas restoration components such as fire management, reforestation, invasive plant and animal control, and research.
- Maintain communication network with land managing agencies in adjacent counties.
- Publish technical information about natural areas management in journals.
- Give presentations at relevant conferences.
- Encourage staff participation in professional societies and interagency committees.

GOAL 4: Develop best management practices for habitats consistent with other stated goals.

OBJECTIVES AND RECOMMENDED ACTIONS:

ALL.4.1. Minimize habitat loss and damage from development and/or maintenance of trails, buildings, sewer lines, etc.

- Ensure that the construction of sewer lines, buildings, and roads minimizes impacts to natural areas, and that impacts are mitigated.
- Establish procedures for maintaining trails and firebreaks in natural areas that minimize impact.

ALL.4.2. Protect the integrity of natural areas in the layout, design, and management of development projects adjacent to natural areas.

- Minimize potential impacts at the interface between natural areas and developed landscapes, such as creeping sod grasses, polluted runoff, alterations in drainage and elevation, creation of fire hazards, dispersal of invasive plant propagules, litter and trash dumping.
- Revise zoning codes to protect natural areas from adverse impacts from development.
- Ensure that management practices on public property account for the protection of natural areas.
- Designate management zones around existing natural areas to identify potential management concerns, such as smoke dispersion, wild and domestic animals, invasive plants, dumping, and inappropriate use.
- Notify developers during the planning process when planned developments are in a management zone to ensure that management activities can continue once the area is developed.
- Develop procedures to address concerns within management zones in existing developed areas.

ALL.4.3. Ensure that restoration and monitoring practices in natural areas minimize deleterious off-target effects to native plant and animal species.

- Use herbicide application methods such as spot-treatment whenever possible to reduce non-target impacts.
- Limit herbicide application to known, identifiable targets.

- Select herbicides that are safe, effective, have minimal impacts to non-target species, have minimal soil persistence, and degrade rapidly.
- Provide maps of rare species locations to project managers and crew supervisors.
- Combine rare species monitoring with invasive species control to minimize impact on rare species.
- Conserve rare species microhabitats when conducting restoration activities in natural areas.
- Plan timing of restoration activities to avoid impact on rare species during critical life history phases.
- Develop procedures for staff use of ORVs to minimize impact to sensitive areas.

ALL.4.4. Avoid or remove invasive species propagules to prevent new infestations and the spread of existing invasive species.

- Inform outside agencies of protocols to prevent the spread of invasive species and require that outside agencies working in natural areas adhere to them.
- Coordinate with the Florida Department of Transportation, FPL, Public Works, SFWMD, etc., to eliminate dumping and maintain easements free of invasive plants.
- Minimize soil disturbance in natural areas when conducting restoration activities.
- Before ground-disturbing activities begin, inventory and prioritize treatment of invasive species.
- Expand invasive plant control activities to include areas outside of natural areas, including nature centers, administrative grounds, and parking lots.
- Plan staging areas and access routes to avoid heavy infestation areas, and begin invasive species control in lightly infested areas prior to heavily infested areas.
- Remove mud, dirt, and plant parts from equipment before moving it into a project area.
- Avoid driving and walking through sites infested with invasive species, most notably *Lygodium microphyllum* (Old World climbing fern, small-leaf climbing fern). If these activities must occur, then staff should wear appropriate work clothing.
- Keep equipment used on sites contaminated with *L. microphyllum* and other species with highly mobile propagules separate from "clean" equipment.
- Consider developing a wash station area at sites infested with *L. microphyllum.*
- Crews need to inspect, remove, and properly dispose of invasive plant seed and plant parts found on their clothing and equipment, after being trained to recognize the priority species in the area.
- Proper disposal of invasive species propagules should be assessed to prevent contamination.

ALL.4.5. Prevent the introduction and spread of invasive plants caused by moving infested mulch, sand, gravel, borrow, and fill material.

- Inspect and document in the first year after project completion the areas where materials are used to ensure that any invasive plants transported to the site are promptly detected and controlled.
- Maintain stockpiled material in an invasive plant-free condition, in a configuration conducive to mowing and maintenance.

ALL.4.6. Where project disturbance creates bare ground, develop restoration protocols for the appropriate plant community.

- Monitor and document all ground-disturbing operations for invasive plants. Incorporate disturbed areas into ongoing restoration.
- Develop guidelines and protocols for the establishment of native plants and influx of native plant propagules in areas to be restored.
- Treat disturbed soil in a manner that facilitates the establishment of the appropriate plant community.
- Use local native material where appropriate and feasible.

ALL.4.7. Protect geologic, pre-historic, archaeological, and historic sites within all management areas.

- Obtain a certificate of appropriateness when performing substrate disturbance, including digging.
- Maintain GIS records of all known geologic, pre-historic, archaeological, and historic sites, and distribute to land managers and crew leaders to ensure protection of these sites.
- Direct work crews to not disturb archaeological material.
- Evaluate public impact to geologic, pre-historic, archaeological, and historic sites, and modify public use, if appropriate.

Pine Rockland

GOAL 1: Restore and maintain pine rockland structure and function to maximize native biotic diversity and preserve natural resource values.

OBJECTIVES AND RECOMMENDED ACTIONS:

PR.1.1. Establish the appropriate fire regime for pine rocklands, using prescribed fire in conjunction with other appropriate techniques.

- Conduct prescribed burning to approximate natural fire regimes, as closely as possible.
- Utilize site preparation and firing techniques that are safe and will reduce negative impacts to the public, staff, and property.
- Conduct pre- and post-burn monitoring to assess fire effects.
- Establish and utilize a procedure to evaluate the prescribed burn (e.g. fire behavior, smoke dispersion, safety, public response) and assess whether objectives set in the prescription were met.

PR.1.2. Establish or restore the appropriate canopy and understory structure in pine rocklands.

- Maintain a supply of genetically appropriate pine seed for use in restoration following a catastrophic event (e.g. hurricane, pest outbreak).
- Collect seed using methods that minimize damage to trees and pine rockland habitat.
- Use restoration strategies that will achieve uneven-aged forest structure with varying densities and age distributions of pine trees.
- When necessary, modify the understory (e.g., saw palmetto, native hardwoods, vines, etc.) to restore historic structure, to expand potential habitat for herbs and forbs, and/or to improve smoke management.

GOAL 2: Develop best management practices for pine rocklands consistent with other stated goals.

OBJECTIVES AND RECOMMENDED ACTIONS:

PR.2.1. Ensure that restoration and monitoring practices in pine rocklands minimize deleterious off-target effects to native plant and animal species.

- Schedule and conduct prescribed burns to avoid negative long-term impact on rare species during critical life history phases.
- Divide sites into multiple burn units to minimize impacts to native animals.
- Consider relocating rare species such as epiphytes and *Liguus* tree snails when critical populations may be harmed by fire.
- Prior to burns, reduce fuel through hardwood thinning and spot-treatment with

herbicides, followed by removal of such material from the site, to reduce fire intensity and smoke, and minimize mortality of rare species.

PR.2.2. Minimize habitat loss and damage from development of trails, buildings, sewer lines, etc.

- Ensure that construction of trails minimizes impacts to pine rocklands and that trails double as fire breaks.
- Manage trails and fire breaks as habitat for low, herbaceous species.

PR.2.3. Protect the integrity of natural areas in the layout, design, and implementation of development projects adjacent to pine rocklands.

- Ensure that projects account for fire management needs of pine rockland sites.
- Encourage the use of local native plant material in sites adjacent to natural areas. Use species beneficial to pine rocklands such as *Pinus elliottii* var. *densa* (seed source), appropriate wildlife attractors, ecotonal species, etc.

Rockland Hammock

GOAL 1: Restore and maintain rockland hammock structure and function to maximize native biotic diversity and preserve natural resource values.

OBJECTIVES AND RECOMMENDED ACTIONS:

RH.1.1. Maintain hammocks free of critical invasive plant species to facilitate recovery from natural catastrophic events.

- Identify, categorize, and prioritize the critical invasive species that impact rockland hammocks.
- Cooperate with neighboring landowners to reduce critical invasive plants adjacent to rockland hammocks.
- Reduce critical invasive plants from hammock edges.
- Reduce disturbance at hammock edges.
- Reduce influx of propagules from invasive plants.

RH.1.2. Establish and restore the appropriate canopy, edge, and understory structure in rockland hammocks.

- Investigate vegetation management techniques that will mimic natural hammock ecotones and act to increase humidity, reduce wind, and provide habitat for edge and gap species.
- Facilitate the regeneration of appropriate native species in hammock gaps where natural revegetation is short-circuited by exotic vine invasion.
- Conduct staged removals of invasive plants in order to maintain shade and protect rare plant species that would be negatively affected by high intensity light (e.g., ferns).
- In areas dominated by invasive species with few or no native plants, conduct staged removals of invasive plants to reduce a flush of invasive species recruitment.

GOAL 2: Develop best management practices for rockland hammocks consistent with other stated goals.

OBJECTIVES AND RECOMMENDED ACTIONS

RH.2.1. Ensure that restoration and monitoring practices in rockland hammocks minimize deleterious off-target effects to native plant and animal species.

- Minimize use of herbicides containing triclopyr (e.g. Garlon) in the proximity of native *Ficus* species, as they may be severely impacted or killed.
- Avoid piling vegetative debris on top of native rockland hammock vegetation or in sinkholes when conducting invasive species control.

- Consider relocating rare species such as epiphytes, ferns, and *Liguus* tree snails when critical populations may be harmed by restoration activities.
- In areas where many species of plants grow together and overlap (e.g., vines), crews should take extra precautions to only treat known, identifiable targets.
- Restrict herbicide use within vicinity of sinkholes.
- Minimize trampling rare plants, surface roots, and rock formations when conducting restoration activities in rockland hammocks.

Pg. 15 - Rockland Hammocks

Historic Transverse Glade

GOAL 1: Restore and maintain to the extent practicable transverse glade structure and function to maximize native biotic diversity and preserve natural resource values.

OBJECTIVES AND RECOMMENDED ACTIONS:

HTG.1.1. Establish the appropriate fire regime for historic transverse glades, using prescribed fire in conjunction with other appropriate techniques.

- Conduct prescribed burning to approximate natural fire regimes.
- Utilize site preparation and firing techniques that are safe and will reduce negative impacts to public, staff, and property.
- Conduct pre- and post-burn monitoring to assess fire effects.
- Establish and utilize a procedure to evaluate the prescribed burn (e.g. fire behavior, smoke dispersion, safety, public response) and assess whether objectives set in the prescription were met.
- Due to the extreme rarity of historic transverse glades, do not establish new firebreaks within them.

HTG.1.2. Rehydrate historic transverse glades to restore historic hydrology, increasing availability of water for species requiring more mesic or hydric conditions.

- Increase quality water availability.
- Implement physical improvements to increase water availability such as weir installation, canal plugging, and pumping.

HTG.1.3. Establish or restore the appropriate vegetative structure and composition in historic transverse glades.

- Use restoration strategies that limit the development of canopy.
- When necessary, modify the understory (native pines, hardwoods, vines, etc.) to restore historical structure, to expand potential habitat for herbs and forbs, and/or to improve smoke management.
- Identify relict plant species that are specific to the transverse glade habitat.
- Consider conducting experimental outplantings of transverse glade plant species into restored marl prairies.
- Survey for rare transverse glade plant species in areas of appropriate habitat.
- Consider reintroducing extirpated transverse glade plant species.

GOAL 2: Develop best management practices for historic transverse glades consistent with other stated goals.

OBJECTIVES AND RECOMMENDED ACTIONS:

HTG.2.1. Ensure that restoration and monitoring practices in historic transverse glades minimize deleterious off-target effects on native plant and animal species.

- Schedule and conduct prescribed burns to avoid negative long-term impact on rare species during critical life history phases.
- Manage transverse glade sites as multiple burn units through the use of wetlines and other non-invasive methods.
- Avoid establishing crew trails that can change local water flow and hydrology.
- Avoid transfer of exotic organisms in water inputs.

HTG.2.2. Prevent habitat loss and damage to historic transverse glades from development.

- Utilize existing roads and footpaths to develop low-impact interpretive opportunities.
- Due to their rarity, development within historic transverse glade areas should be minimized.

HTG.2.3. Protect the integrity of historic transverse glades in the layout, design, and implementation of adjacent development projects.

- Ensure that projects account for hydrological and fire management needs of historic transverse glades.

Pg. 17 - Historic Transverse Glade

Scrubby Flatwoods

GOAL 1: Restore and maintain scrubby flatwoods structure and function to maximize native biotic diversity and preserve natural resource values.

OBJECTIVES AND RECOMMENDED ACTIONS:

SF.1.1. Establish the appropriate fire regime for scrubby flatwoods, using prescribed fire in conjunction with other appropriate techniques.

- Conduct prescribed burning to approximate natural fire regimes.
- Utilize site preparation and firing techniques that are safe and will reduce negative impacts to the public, staff, and property.
- Conduct pre- and post-burn monitoring to assess fire effects.
- Establish and utilize a procedure to evaluate the prescribed burn (e.g. fire behavior, smoke dispersion, safety, public response) and assess whether the objectives set in the prescription were met.

SF.1.2. Establish or restore the appropriate canopy and understory structure in scrubby flatwoods.

- Use restoration strategies that will achieve uneven-aged canopy structure with varying densities and age distributions of trees.
- When necessary, modify understory (native hardwoods, vines, etc.) to restore historical structure, to expand potential habitat for herbs and forbs, and/or to improve smoke management.

GOAL 2: Develop best management practices for scrubby flatwoods consistent with other stated goals.

OBJECTIVES AND RECOMMENDED ACTIONS:

SF.2.1. Ensure that restoration and monitoring practices in scrubby flatwoods minimize deleterious off-target effects to native plant and animal species.

- Schedule and conduct prescribed burns to avoid negative long-term impact on rare species during critical life history phases.
- Divide sites into multiple burn units and conduct experimental prescribed fires to determine the plant community response.
- Consider relocating rare species such as bromeliads when critical populations may be harmed by fire or pest outbreak.
- Reduce and remove fuel through hardwood thinning and spot-treatment with herbicides prior to burns to reduce fire intensity and smoke, and minimize mortality of rare species.

SF.2.2. Minimize habitat loss and damage from development of trails, buildings, sewer lines, etc.

- Ensure that construction of trails minimizes impacts to scrubby flatwoods and that trails double as fire control lines.
- Manage trails and fire breaks as habitat for low, herbaceous species.

SF.2.3. Protect the integrity of natural areas in the layout, design, and implementation of development projects adjacent to scrubby flatwoods.

- Due to the fact that scrubby flatwoods burn with high intensity, ensure that development projects account for fire management needs of scrubby flatwood sites.
- Encourage the use of local native plant material in sites adjacent to natural areas, using species beneficial to scrubby flatwoods.
- Discourage the use of flammable plant material in landscaping adjacent to scrubby flatwoods.

Pg. 19 - Scrubby Flatwoods

Coastal Uplands

(Includes: Beach Dune, Coastal Berm, Coastal Strand and Maritime Hammock)

GOAL 1: Restore and maintain coastal uplands structure and function to maximize native biotic diversity and preserve natural resource values.

OBJECTIVES AND RECOMMENDED ACTIONS:

CU.1.1. Establish the appropriate fire regime for fire-dependent coastal upland communities such as coastal strand and dune, using prescribed fire in conjunction with other appropriate techniques.

- Conduct prescribed burning to approximate natural fire regimes.
- Utilize site preparation and firing techniques that are safe and will reduce negative impacts to the public, staff, and property.
- Conduct pre- and post-burn monitoring to assess fire effects.
- Establish and utilize a procedure to evaluate the prescribed burn (e.g. fire behavior, smoke dispersion, safety, public response) and assess whether objectives set in the prescription were met.

CU.1.2. Establish or restore the appropriate canopy, understory structure, and topography in coastal uplands, or re-establish after disturbance from storms, etc.

- For coastal strand sites, use restoration strategies that will achieve a diverse landscape with patches of open sand, *Serenoa repens* (saw palmetto), and scattered hardwood shrubs.
- Manage coastal strand sites to restore historical topography and ecosystem structure, and to expand potential habitat for herbs and forbs. When necessary, remove native species that are not consistent with the historic vegetation structure.
- Restore the appropriate canopy, understory structure, and topography in coastal uplands after storms, when determined necessary.
- Evaluate the impacts of wrack-line deposition on plant species and remove portions, if necessary.

GOAL 2: Develop best management practices for coastal uplands consistent with other stated goals.

OBJECTIVES AND RECOMMENDED ACTIONS:

CU.2.1. Ensure that restoration and monitoring practices in coastal uplands minimize deleterious off-target effects to native plant and animal species.

- When removing invasive plants, minimize piling of plant debris to reduce

concentrations of nutrients in low-nutrient system, coastal strand and dune.

- Conduct experimental prescribed burns to determine the role of fire in the life history of rare plants in coastal uplands.
- Consider relocating rare species when critical populations may be harmed by fire.
- Conduct experimental removal of trees and shrubs to promote the growth of fire-adapted plants.

CU.2.2. Minimize habitat loss and damage from development of trails, buildings, sewer lines, etc.

- Ensure that construction of trails minimizes impacts to coastal uplands and that trails double as fire breaks.
- Manage trails and fire breaks as habitat for low, herbaceous species.

CU.2.3. Protect the integrity of natural areas in the layout, design, and implementation of development projects adjacent to coastal uplands.

- Ensure that projects account for fire management needs of coastal uplands.
- Encourage the use of local native plant material in sites adjacent to natural areas. Use species beneficial to coastal systems, avoiding species such as *Lantana camara* (shrubverbena, lantana), *Calophyllum inophyllum* (beautyleaf), *Washingtonia robusta* (Washington fan palm), and *Scaevola sericea* (beach naupaka).

Wetlands

(Includes: Bayhead, Dome Swamp, Marl Prairie, Swale, Tidal Marsh, Tidal Swamp, and Freshwater Tidal Swamp)

GOAL 1: Restore and maintain freshwater wetlands structure and function to maximize native biotic diversity and preserve natural resource values.

OBJECTIVES AND RECOMMENDED ACTIONS:

W.1.1. Encourage restoration of historic hydrology to freshwater wetlands and adjacent estuaries.

- Integrate freshwater wetlands into regional wetland restoration plans.
- Participate in the Comprehensive Everglades Restoration Plan (CERP) process and other regional water management restoration projects to maximize the restoration of historic hydrology in freshwater and coastal wetlands.
- Remove hydrologic barriers such as roads, fill pads, and mosquito ditch spoil.
- Consider filling or plugging canals that drain water from the system.

W.1.2. Restore or improve water quality in wetlands.

- Implement local authority and work with federal and state agencies to: (1) reduce nutrient inputs from agricultural fields into regional canals that serve as water sources for freshwater wetlands, and (2) provide appropriate salinity regime for coastal wetlands.
- Establish buffer zones around wetlands to minimize nutrient and pollutant inputs from adjacent land uses.

W.1.4. Establish the appropriate fire regime for freshwater wetlands, using prescribed fire in conjunction with other appropriate techniques.

- Conduct prescribed burning to approximate natural fire regimes.
- Utilize site preparation and firing techniques that are safe and will reduce negative impacts to public, staff, and property.
- Conduct pre- and post-burn monitoring to assess fire effects.
- Establish and utilize a procedure to evaluate the prescribed burn (e.g. fire behavior, smoke dispersion, safety, public response) and assess whether objectives set in the prescription were met.
- Prevent soil fires in tree islands during drought periods.

W.1.5. Work with owners of private inholdings to reduce impacts on freshwater wetlands

- Encourage and assist with control of populations of invasive plants on private inholdings.
- Discourage and control the release of domestic animals from private inholdings.

- Develop legal mechanisms to include inholdings in the larger prescribed burn unit.
- Discourage inappropriate use of freshwater wetlands such as ORV use, target shooting, and unregulated hunting.

W.1.6. Reduce populations of exotic fish.

- Reduce depth of canals in order to eliminate thermal refugia for tropical exotic fishes.

GOAL 2: Develop best management practices for freshwater wetlands consistent with other stated goals.

OBJECTIVES AND RECOMMENDED ACTIONS:

W.2.1. Ensure that restoration and monitoring practices in freshwater wetlands minimize deleterious off-target effects to native plant and animal species.

- Schedule and conduct prescribed burns in appropriate habitats (i.e., not tree islands) to avoid negative long-term impacts on rare species during critical life history phases.
- Divide sites into multiple burn units to minimize impacts to native animals.
- Consider relocating or protecting rare species when critical populations may be harmed by fire.
- Evaluate possible off-target effects of herbicides when developing management strategies.
- Determine acceptable off-target damage from aerial herbicide applications.

W.2.2. Minimize habitat loss and damage from development of trails, buildings, sewer lines, etc.

- Ensure that construction of trails minimizes impacts to freshwater wetlands and that trails double as fire breaks.

W.2.3. Protect the integrity of natural areas in the layout, design, and implementation of development projects adjacent to freshwater wetlands.

- Ensure that projects account for fire management and hydrological needs of freshwater wetlands.
- Encourage the use of local native plant material in sites adjacent to natural areas. Use species beneficial to freshwater wetlands, avoiding species such as *Melaleuca viminalis* (weeping bottlebrush).
- Monitor adjacent tree farms and nursery operations for prohibited species.

Ecotones

GOAL 1: Restore and maintain ecotone structure and function to maximize native biotic diversity and preserve natural resource values.

OBJECTIVES AND RECOMMENDED ACTIONS:

E.1.1. Maintain or restore historic ecotones in preserves containing multiple ecosystems.

- Eliminate firebreaks between habitats, or where this is not possible, continue burns across firebreaks to recreate historic ecotones.
- Use prescribed fire where possible to restore and maintain ecotones.
- When necessary, reduce hardwoods and remove invasive plants from fire-suppressed pine rocklands to recreate ecotones.
- Reintroduce rare ecotonal plant species to restored ecotones.

GOAL 2: Develop best management practices for ecotones consistent with other stated goals.

OBJECTIVES AND RECOMMENDED ACTIONS:

E.2.1. Ensure that restoration and monitoring practices in ecotones minimize deleterious off-target effects to native plant and animal species.

- Consider relocating rare species such as epiphytes and *Liguus* tree snails when critical populations may be harmed by ecotone restoration.
- Avoid piling storm and other debris along ecotones to protect organisms such as bromeliads and terrestrial orchids.

APPENDIX

*Table 1. MIAMI-DADE NATURAL AREAS MANAGEMENT COOPERATING AGENCIES*BY TOPIC*

Fire management	M-D DERM, M-D Parks, M-D Fire Rescue, M-D Risk Management, ENP, FDOF, TNC (training)
Exotic Plants	M-D DERM, M-D Parks, BNP, FPL, FDACS (Pest. Cert.), USFWS, DEP (BIPM), FLEPPC (list committees, etc.), TNC (community outreach), FNGLA, IRC
Exotic Animals	UF-IFAS, FFWCC
Monitoring/Research/ Rare Species Mgmt	IRC, USFWS, FTBG, FFWCC, FDACS (DPI), FNAI, UM, FIU, M-D Public Works Mosquito Control (to reduce spraying in natural areas), DEP
Reforestation/Planting	FDOF (grows seedling pines), M-D DERM (collects pine seed), M-D Parks (landscaping), relevant nurseries
Hydrology	SFWMD, ACOE
Public Use	M-D Parks, FNPS, TAS, DEP (G&T), MPO (bicycles), community support orgs., homeowners assns., civic assns., environmental education community
Protection	M-D Police Dept (including Environmental Crimes Unit, Agriculture Patrol Unit and Police Services (homeless), M-D Solid Waste Management, FFWCC, SFWMD (hammocks only), DEP, M-D DERM, USFWS
Emergency Response	M-D Emer. Mgt., incident command team (F-DOF, M-D Fire Rescue, ENP, Parks, DERM, etc.), UF-IFAS (pest outbreaks)

*Other agencies may be added to this preliminary list

Table 2. ***COOPERATING AGENCY CONTACT INFORMATION***

Abbreviation	Agency	Telephone	Website
ACOE	US Army Corps of Engineers, Jacksonville	904-232-2241	www.usace.army.mil
BNP	Biscayne National Park, Headquarters	305-230-1144	www.nps.gov/bisc
DEP ➢ BIPM ➢ G&T	Florida Department of Environmental Protection ➢ Bureau of Invasive Plant Management ➢ Office of Greenways and Trails	 850-487-2600 850-245-2052	 www.dep.state.fl.us/lands/invaspec www.dep.state.fl.us/gwt
ENP	Everglades National Park, Beard Research Center	305-242-7700	www.nps.gov/ever
FDACS ➢ DPI ➢ Pest. Cert.	Florida Dept. Agriculture and Consumer Services ➢ DPI = Division of Plant Industry ➢ Pest. Cert. = Pesticide Certification	 352-372-3505 850-488-3314	 doacs.state.fl.us/pi doacs.state.fl.us/onestop/aes/pestapp.html
FDOF	Florida Division of Forestry	305-257-0875	www.fl-dof.com
FFWCC	Florida Fish and Wildlife Conservation Commission (South Regional Office)	305-956-2500	myfwc.com
FIU	Florida International University, Dept. of Biology	305-348-2201	www.fiu.edu/%7Ebiology
FLEPPC	Florida Exotic Pest Plant Council		www.fleppc.org
FNAI	Florida Natural Areas Inventory	850-224-8207	www.fnai.org
FNGLA	Florida Nursery Growers and Landscape Association	800-375-3642	www.fngla.org
FNPS	Florida Native Plant Society		www.fnps.org
FPL	Florida Power and Light	305-442-0388	www.fpl.com
FTBG	Fairchild Tropical Botanic Garden, Research	305-667-1651 ex. 3410	www.fairchildgarden.org

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Table 2. ***COOPERATING AGENCY CONTACT INFORMATION (CONTINUED)***

Abbreviation	Agency	Telephone	Website
IRC	The Institute for Regional Conservation	305-247-6547	www.regionalconservation.org
ISA	International Society for Arboriculture	888-ISA-TREE	www.isa-arbor.com/home.asp
MPO	Miami-Dade Metropolitan Planning Org.	305-375-4507	www.co.miami-dade.fl.us/mpo/home.htm
M-D	Miami-Dade County		
➢ DERM	➢ DERM	305-372-6641	www.miamidade.gov/derm
➢ Emer Mgt	➢ Office of Emergency Management	305-468-5900	www.miamidade.gov/oem
➢ FireRescue	➢ Fire Rescue	786-331-5000	www.miamidade.gov/mdfr
➢ Parks	➢ Park and Recreation Department	305-755-7800	www.miamidade.gov/parks
➢ Police Dept	➢ Police Department	305-4POLICE	www.mdpd.com
	♦ Agriculture Patrol Unit	305-383-6800	www.mdpd.com/sta08apuinfo.htm
	♦ Environmental Crimes Unit	305-477-1616	www.miamidade.gov/derm/code_report_eviron_comp.asp
	♦ Police Services	305-471-2625	www.mdpd.com/adp.htm
➢ Pub Works	➢ Public Works (Mosquito Control)	305-592-1186	www.miamidade.gov/pubworks/mosquitoes/mhome.asp
➢ Risk Mgmt	➢ Risk Management Division	305-375-4400	www.miamidade.gov/gsa/depart_risk.asp
➢ SolidWaste	➢ Solid Waste Management	305-514-6666	www.miamidade.gov/dswm
SFWMD	South Florida Water Management District	561-686-8800	www.sfwmd.gov
TAS	Tropical Audubon Society	305-667-7337	www.tropicalaudubon.org
TNC	The Nature Conservancy (S. FL outreach)	954-564-6144	nature.org
UF-IFAS	University of Florida, Inst. Food & Agric. Sci., Dept. Wildlife Ecology & Conservation	352-846-0643	www.wec.ufl.edu/index2.html
UM	University of Miami, Dept. of Biology	305-284-3973	fig.cox.miami.edu
USFWS	United States Fish and Wildlife Service, Vero Beach office	561-562-3909	www.fws.gov

Table 3. *LIST OF HABITATS IN EACH NATURAL AREA (N=96)*

Site Name	Habitat(s)
A.D. Barnes	Pine Rockland, Rockland Hammock
Arch Creek	Wetlands, Rockland Hammock
Arch Creek Addition*	Rockland Hammock
Big & Little George*	Rockland Hammock
Bill Sadowski	Rockland Hammock, Pine Rockland
Black Creek Forest*	Pine Rockland, Rockland Hammock
Black Point	Wetlands, Coastal Uplands
Biscayne Wetlands	Wetlands, Coastal Uplands
Boystown*	Pine Rockland
C - 111*	Wetlands
Camp Greynolds	Coastal Uplands, Rockland Hammock, Wetlands
Camp Owaissa Bauer	Pine Rockland, Rockland Hammock
Castellow Hammock	Rockland Hammock, Pine Rockland
Castellow Hammock #28*	Rockland Hammock
Chapman Field	Wetlands
Deering Estate at Cutler	Rockland Hammock, Pine Rockland, Wetlands
Colonial Drive	Pine Rockland
Coral Pine	Pine Rockland
Coral Reef	Pine Rockland
County Line Scrub*	Scrubby Flatwoods
Crandon	Coastal Uplands, Wetlands
Deering North Addition*	Coastal Uplands, Wetlands
Deering South Addition*	Rockland Hammock, Pine Rockland, Coastal Uplands
Dolphin Center	Scrubby Flatwoods
Dolphin Center Addition*	Scrubby Flatwoods
Eachus Pineland*	Pine Rockland
East East Greynolds	Wetlands, Rockland Hammock, Coastal Uplands
East Greynolds Addition	Wetlands, Rockland Hammock
East Greynolds	Wetlands, Rockland Hammock, Coastal Uplands
Fairchild Trop. Bot. Garden	Wetlands
Florida City Pineland*	Pine Rockland
Fuchs Hammock	Rockland Hammock, Pine Rockland
Fuchs Hammock Addition*	Pine Rockland, Rockland Hammock
Gold Coast Railroad	Pine Rockland
Goulds Pineland*	Pine Rockland
Greynolds	Wetlands, Pine Rockland, Rockland Hamm., Coastal Uplands
Harden Hammock*	Rockland Hammock
Hattie Bauer Hammock*	Rockland Hammock
Haulover	Wetlands, Coastal Uplands
Highland Oaks	Wetlands
Holiday Hammock*	Rockland Hammock
Homestead Bayfront	Wetlands
Ingram Pineland *	Pine Rockland

Site Name	Habitat(s)
Kendall Indian Hammocks	Rockland Hammock
Kendallwood	Rockland Hammock
Larry & Penny Thompson	Pine Rockland, Historic Transverse Glade
Lincoln City #2	Pine Rockland
Loveland Hammock*	Rockland Hammock
Lucille Hammock*	Rockland Hammock
Ludlam Pineland Tract*	Pine Rockland
M.E. Thompson Campground	Historic Transverse Glade
Mangrove Preserve	Wetlands
Martinez	Historic Transverse Glade
Matheson Hammock	Rockland Hammock, Wetlands, Historic Transverse Glade
Medsouth Park	Pine Rockland
Meissner Hammock*	Rockland Hammock
Metro Zoo	Pine Rockland
Model Lands*	Wetlands
Navy Wells #39*	Pine Rockland
Navy Wells #42*	Pine Rockland
Navy Wells Preserve	Pine Rockland
Ned Glenn Pineland*	Pine Rockland
Nixon Smiley Preserve	Pine Rockland
Oak Grove	Rockland Hammock
Oleta River Corridor Tract C*	Wetlands
Oleta River Corridor Terama*	Wetlands
Owaissa Bauer Addition*	Rockland Hammock, Pine Rockland
Palm Drive (CARL)*	Pine Rockland
Pelican Harbor	Wetlands
Pine Island	Pine Rockland
Pine Shore	Pine Rockland
Quail Roost*	Pine Rockland
R. Hardy Matheson	Wetlands, Pine Rockland, Rockland Hamm., Coastal Uplands
Rock Pit	Pine Rockland
Rock Pit #34	Pine Rockland
Rock Pit #39	Pine Rockland
Rockdale*	Pine Rockland
Rolling Oaks	Pine Rockland, Rockland Hammock
Ron Ehman	Pine Rockland
Ross Hammock*	Rockland Hammock
Royal Oaks	Rockland Hammock
Seminole Wayside	Pine Rockland
Silver Palm Groves*	Pine Rockland
Silver Palm Hammock	Rockland Hammock, Pine Rockland
South Dade Wetlands*†	Wetlands
Sunkist	Pine Rockland
Sunny Palms*	Pine Rockland
Tamiami #8*	Pine Rockland
Tamiami Complex Addition*	Pine Rockland

Site Name	Habitat(s)
Trail Glades Range	Wetlands
Tree Island Park*	Wetlands
Trinity Pineland*	Pine Rockland
Tropical Park	Pine Rockland
Vizcaya Museum	Wetlands, Rockland Hammock
West Biscayne Pineland	Pine Rockland
Whispering Pines	Rockland Hammock, Pine Rockland

* Includes acquired EEL Property
† Includes property owned by South Florida Water Management District

MISSION STATEMENTS

NAM Mission Statement: To restore, protect, and manage Miami-Dade County's naturally occurring plant communities through resource management, inter-governmental environmental liaison, and community outreach including environmental education and volunteer programming to preserve these areas for present and future generations of South Floridians.

EEL Purpose: To manage environmentally endangered lands with the primary objective of maintaining and preserving their natural resource values by employing management techniques that are most appropriate for each native community so that our natural heritage may be preserved for future generations.

DEFINITIONS

Goal - A desired future condition, at least 50-100 years from now.

Objective - A shorter-term, smaller-scale benchmark needed to reach the goal.

Action - The means to reach a specific objective.

LITERATURE CITED

Florida Natural Areas Inventory (FNAI) and Florida Department of Natural Resources (FDNR). 1990. Guide to the natural communities of Florida. Florida Natural Areas Inventory, Tallahassee, FL.

The Institute for Regional Conservation (IRC). 2001-2004. Floristic Inventory of South Florida Database. Available online at http://www.regionalconservation.org. Accessed January 2004.

Marois, K.C. 1999. Florida Natural Areas Inventory tracking list of rare, threatened and endangered plants and animals and natural communities of Florida. Florida Natural Areas Inventory, Tallahassee, FL.

ATTACHMENT M: ARTHROPOD CONTROL PLAN

ADAM H. PUTNAM
COMMISSIONER

Florida Department of Agriculture and Consumer Services
Division of Agricultural Environmental Services

ARTHROPOD MANAGEMENT PLAN - PUBLIC LANDS

Section 388.4111, F.S.
Telephone: (850) 617-7997

For use in documenting an Arthropod Control Pan for lands designated by the State of Florida or any political subdivision thereof as being environmentally sensitive and biologically highly productive therein. Fill this form out if control work is necessary or planned.

Name of Designated Land: **R. Hardy Matheson Preserve**

Is Control Work Necessary: ☐ Yes ☒ No

Location: **Theoretical Address 11399 Old Cutler Road, Coral Gables, FL 33156**

Land Management Agency: **Miami-Dade County Parks, Recreation and Open Spaces Department**

Are Arthropod Surveillance Activities Necessary? ☒ Yes ☐ No
If "Yes", please explain:

Which Surveillance Techniques Are Proposed?
Please Check All That Apply:

☒ Landing Rate Counts	☒ Light Traps	☐ Sentinel Chickens
☒ Citizen Complaints	☒ Larval Dips	☐ Other

If "Other", please explain:

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Page 1 of 4

Arthropod Species for Which Control is Proposed:

MOSQUITOES

Proposed Larval Control:

Proposed larval monitoring procedure:

Are post treatment counts being obtained: ☐Yes ☑ No

Biological Control of Larvae:

Might predacious fish be stocked: ☐ Yes ☑ No

Other biological controls that might be used:

Material to be used for Larvacilding Applications:

(Please Check All That Apply :)

☐ Bti

☐ Bs

☐ Methoprene

☐ Non-Petroleum Surface Film

☐ Other, please specify:

Please specify the following for each larvacide:

Chemical or Common name:

☐ Ground ☐ Aerial

Rate of application:

Method of application:

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Proposed Adult Mosquito Control:

Aerial adulticiding	☐Yes	☒ No
Ground adulticiding	☐ Yes	☒ No

Please specify the following for each adulticide:

Chemical or common name:

Rate of application:

Method of application:

Proposed Modifications for Public Health Emergency Control: **Arthropod control agency may request special exception to this plan during a threat to public or animal health declared by State Health Officer or Commissioner of Agriculture.**

Proposed Notification Procedure for Control Activities:

Records:

Are records being kept in accordance with Chapter 388, F.S.:

☒ Yes ☐No

Records Location: 8901 NW 58 Street

How long are records maintained:

INDEFINITELY

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Vegetation Modification:

What trimming or altering of vegetation to conduct surveillance or treatment is proposed? None

Proposed Land Modifications:

Is any land modification, i.e., rotary ditching, proposed: No

Include proposed operational schedules for water fluctuations: None

List any periodic restrictions, as applicable, for example peak fish spawning times.

Proposed Modification of Aquatic Vegetation: None.

Land Manager Comments: R. Hardy Matheson Preserve is a natural area preserve. Any arthropod control methods used within or adjacent to the site should not impact other species besides the target mosquitoes.

Arthropod Control Agency Comments:

10-9-12
Signature of Lands Manager or Representative Date

10.10.12
Signature of Mosquito Control Director / Manager Date

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ATTACHMENT N: LAND MANAGEMENT REVIEW TEAM REPORT

Land Management Review of the R. Hardy Matheson Preserve, Dade County (Lease No. 3549): April 15, 1998

Prepared by Division of State Lands Staff

Robert Clark, Program Administrator
William Howell, OMC Manager
Amy Knight, Planner

Revised ***May 19, 1998***

Management Review Team Members

Agency Represented	Team member appointed	Team member in attendance
DEP/DRP	Mr. Hank Smith	Mr. Hank Smith
DEP Southeast District	Mr. Herb Zebuth	Mr. Herb Zebuth
DACS/DOF	Mr. Jim Rath	Mr. Jim Rath
GFC	Mr. Frank Smith	Mr. Frank Smith
Soil and Water Conservation District	Mr. Noble Hendrix (Dade Co.)	Mr. Noble Hendrix
County Commission	Ms. Emilie Young (Dade Co.)	Ms. Emilie Young
Conservation Organization	Mr. Don Chinquina (Tropical Audubon)	Mr. Jeff Myers
Private Land Manager	Name to be provided by Soil and Water	none

Process for Implementing Regional Management Review Teams

Legislative Intent and Guidance:
Section 8 of CS/CS/HBs 1119 & 1577 (§259.036, F. S.) was enacted to determine whether conservation, preservation, and recreation lands owned by the state Board of Trustees of the Internal Improvement Trust Fund are being managed for the purposes for which they were acquired and in accordance with adopted land-management plans. It establishes land management review teams to evaluate the extent to which the existing management plan provides sufficient protection to threatened or endangered species, unique or important natural or physical features, geological or hydrological functions, or archaeological features, and to evaluate the extent to which the land is being managed for the purposes for which it was acquired and the degree to which actual management practices, including public access, are in compliance with the adopted management plan. If a land-management plan has not been adopted, the review shall consider the extent to which the land is being managed for the purposes for which it was acquired and the degree to which actual management practices are in compliance with the management policy statement and management prospectus for that property. If the land management review team determines that reviewed lands are not being managed for the purposes for which they were acquired or in compliance with the adopted land management plan, management policy statement, or management prospectus, or if the managing agency fails to address the review findings in the updated management plan, the Department shall provide the review findings to the Board, and the managing agency must report to the Board its reasons for managing the lands as it has. No later than the second board meeting in October of each year, the Department shall report the annual review findings of its land management review team.

1

Review Site

The management review of the R. Hardy Matheson considered approximately 820 acres in Dade County that are managed by Dade County. The team evaluated the extent to which current management actions are sufficient, whether the land is being managed for the purpose for which it was acquired, and whether actual management practices, including public access, are in compliance with the management plan. The management plan was submitted for approval to LAMAC on October 7, 1994.

Review Team Analysis

The management review checklist was analyzed as follows: The checklist consisted of two parts: a plan review section that answered whether or not the management plan sufficiently addressed protection/ restoration/ management needs for a series of items; and a field review section that scored to what extent sufficient management actions were being taken for a series of items. For each item in each section the scores for all team members (one score per agency) were averaged. Some items received high scores (> 2.5) in the field review, which indicates that exceptional management actions are being taken. These items are identified in the checklist results as "Exceptional" and are indicated with a plus (+) in the corresponding checklist (Attachment 1). Items for which the average score was low (< 0.5 for plan review; < 1.5 for field review) are identified as "Inadequate" in the checklist results, and indicated with a minus (-) in the corresponding checklist (Attachment 1).

Review Team Findings

Checklist results

Exceptional management actions		
I.A.1	Pine rockland	Management of the pine rockland community is exceptional.

Inadequate items		
I.B.1.b	American crocodile	Protection and preservation of American crocodiles should be addressed in the plan.

Response: *The use of the site by American crocodiles is referenced in the Natural Resources: Imperiled Species section of the plan. The protection of the hydrology and water quality in the North Addition lake to maintain habitat for American crocodiles is referenced in the Natural Resource Management: Imperiled Species Management section of the plan.*

I.C.1.a	Splenwort fern	Protection and preservation of the splenwort fern should be addressed in the plan.

Response: *The slender spleenwort fern (referenced above as splenwort fern) is referenced in the Natural Resources: Imperiled Species section of the plan. The protection of sinkholes from pedestrian use in the rockland hammock areas south of the Canal to maintain habitat for this species is referenced in the Natural Resource Management: Imperiled Species Management section of the plan.*

I.C.1.b	Mangrove mallow, etc.	Protection and preservation of mangrove mallow and other listed plant species should be addressed in the plan.

Response: *The mangrove mallow and other listed plant species occurring on the site along with associated habitats in which they occur are referenced in the Natural Resources: Imperiled Species section of the plan. The protection measures for the mangrove forest and other habitats in which listed plant species occur are referenced in the Natural Resource Management: Imperiled Species Management section of the plan.*

III.A.2.	Prescribed fire: quality	The quality of prescribed burns should be addressed in the plan.

Response: *The Miami-Dade County Natural Areas Management Plan, which is included in the plan as an attachment and referenced in the Natural Resource Management: Fire Management section, provides guidelines for the quality and frequency of prescribed fire for habitats occurring on the site.*

III.A.2.	Prescribed fire: frequency	The frequency of prescribed burns should be addressed in the plan.

Response: *The Miami-Dade County Natural Areas Management Plan, which is included in the plan as an attachment and referenced in the Natural Resource Management: Fire Management section, provides guidelines for the quality and frequency of prescribed fire for habitats occurring on the site.*

III.D.1.b	Non-native animals: control	The control of non-native animals should be addressed in the plan.

Response: *The plan references control of non-native animals in the Natural Resource Management: Exotic Species Management section of the plan.*

III.D.1.b	Non-native animals: monitoring	A monitoring program for non-native animals should be addressed in the plan.

Response: jjjj

III.E.1.a	Canals/ditches	Hydro-alternations caused by canals or ditches should be addressed in the plan.

Response: jjjj

III.E.1.b	Soil erosion/disturbance	Soil disturbances should be addressed in the plan.

Response: jjjj

III.E.1.c	Roads/culverts	Disturbances to hydrology caused by roads should be addressed in the plan.

Response: jjjj

III.E.2.a	Ground water quality	Monitoring of ground water quality should be addressed in the plan.

Response: jjjj

III.E.2.b	Ground water quantity	Monitoring of ground water quantity should be addressed in the plan.

Response: jjjj

III.E.3.a	Surface water quality	Monitoring of surface water quality should be addressed in the plan.

Response: jjjj

III.E.3.b	Surface water quantity	Monitoring of surface water quantity should be addressed in the plan.

Response: jjjj

III.G.2	Storm water/effluent	Storm water runoff into the property should be addressed in the plan.

Response: jjjj

III.H.1.a	Waste removal	Waste removal facilities should be addressed in the plan.

Response: jjjj

III.H.1.b	Sanitary facilities	The adequacy of public sanitary facilities should be addressed in the plan.

Response: jjjj

III.3.a	Buildings	The adequacy of existing buildings and the need for additional buildings should be addressed in the plan.

Response: jjjj

III.H.4	Staff	Staffing needs should be addressed in the plan.

Response: jjjj

Recommendations to the managing agency

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

1. The team supports the state joining Dade County in acquiring property identified on location map 6 in the plan.

The management plan must include responses to the checklist items and the recommendations that are identified above. The checklist items should be addressed in relation to the category(ies) in which they received a low score, e.g. whether the plan sufficiently addressed protection/ restoration/ management needs, or whether sufficient management actions were being taken.

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

After completing the checklist, team members were asked to answer "yes" or "no" to this question and given the opportunity to provide general comments. All team members agreed that R. Hardy Matheson Preserve is being managed for the purpose for which it was acquired.

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

After completing the checklist, team members were asked to answer "yes" or "no" to this question and given the opportunity to provide general comments. All team members agreed that actual management practices, including public access, were in compliance with the management plan for this site. Individual team member comments are compiled in Attachment 2.

Attachment 2

The following are compilations of comments from individual review team members and are given here for information purposes only.

Review Team Comments

"Canoeing is not acceptable. Mountain biking- now- in management plan; however, this use may not be a feasible use. Keep as natural as possible. Limit uses- not necessarily all!"

"Pine rockland plant communities should be prescribed burned agian on a regular rotation- probably 2 - 3 years. Dade county should contract with qualified professionals to complete plant and wildlife surveys. Do not remove asphalt from Old Cutler Road- it serves as an excellent hiking/nature trail. A parking lot in a disturbed area is needed. An interpretive nature trail should be considered. Need to put more emphasis on exotic plant removal/or control."

"Excellent restoration of hammock south of canal. Site master plan should be developed."

ATTACHMENT O: CITY OF CORAL GABLES COMPLIANCE LETTER

The City of Coral Gables

Planning and Zoning Division
427 Biltmore Way, 2nd Floor
Coral Gables, Florida 33134

September 18, 2012

VIA EMAIL AND US MAIL

Mr. Dallas Hazelton
Preserve Manager – R. Hardy Matheson Preserve
Natural Areas Management Division
Miami-Dade County Parks, Recreation and Open Spaces Department
22200 SW 137th Avenue
Miami, Florida 33170

Re: R. Hardy Matheson Preserve Letter of Compliance

Dear Mr. Hazelton:

The R. Hardy Matheson Preserve as shown on the attached aerial map is located within the City of Coral Gables. All of the subject property except for the North Addition to the R. Hardy Matheson Preserve is zoned (P) Preservation District which allows for parks, conservation areas and public recreation facilities in accordance with the provisions of Zoning Code Section 4-205, "Preservation (P) District". The North Addition to the R. Hardy Matheson Preserve is zoned (SFR) Single-Family Residential District. Under the existing SFR zoning designation the subject property may be kept in its current undeveloped state, but cannot be developed or used except as permitted in Zoning Code Section 4-101, "Single-Family Residential (SFR) District". It is recommended that an application for change of zoning be submitted to rezone the North Addition to the R. Hardy Matheson Preserve to (P) Preservation District which is the correct zoning designation for the property's intended conservation use.

The Future Land Use Map designation for all of the R. Hardy Matheson Preserve except for the North Addition to the R. Hardy Matheson Preserve is "Conservation Areas", which is consistent with the property's use as an environmentally sensitive conservation parcel as permitted by Policy FLU-1.1.6 of the City's Comprehensive Plan. The Future Land Use Map designation for the North Addition to the R. Hardy Matheson Preserve is "Single-Family Low Density". Under the existing future land use designation the subject property can only be used for residential single-family use in accordance with Comprehensive Plan Policy FLU-1.1.2 and the applicable provisions in the Zoning Code. The Natural Resources Element of the City's Comprehensive Plan supports and encourages the designation of environmentally sensitive conservation lands within the City. It is therefore recommended that an application for change of land use be submitted to re-designate the North Addition to the R. Hardy Matheson Preserve to "Conservation Areas" which is consistent with the remainder of the R. Hardy Matheson Preserve parcel.

P.O. Box 141549 Coral Gables, Florida 33114-1549 • Phone: (305) 460-5211 • Fax: (305) 460-5327 • Email: planning@coralgables.com

For your reference, the applicable City Future Land Use and Zoning Maps and Comprehensive Plan Policies have been provided as an attachment to this letter. If you have any questions, please do not hesitate to contact me.

Sincerely,

Walter Carlson
Assistant City Planner

(via email)
cc: Eric Riel, Jr., City Planner

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Red Road
Old Cutler Road
R. Hardy Matheson
RHM North Addition
R. Hardy Matheson
0 500 Feet
Natural Areas Management
Parks, Recreation and Open Spaces
Miami-Dade County
DTH 091412

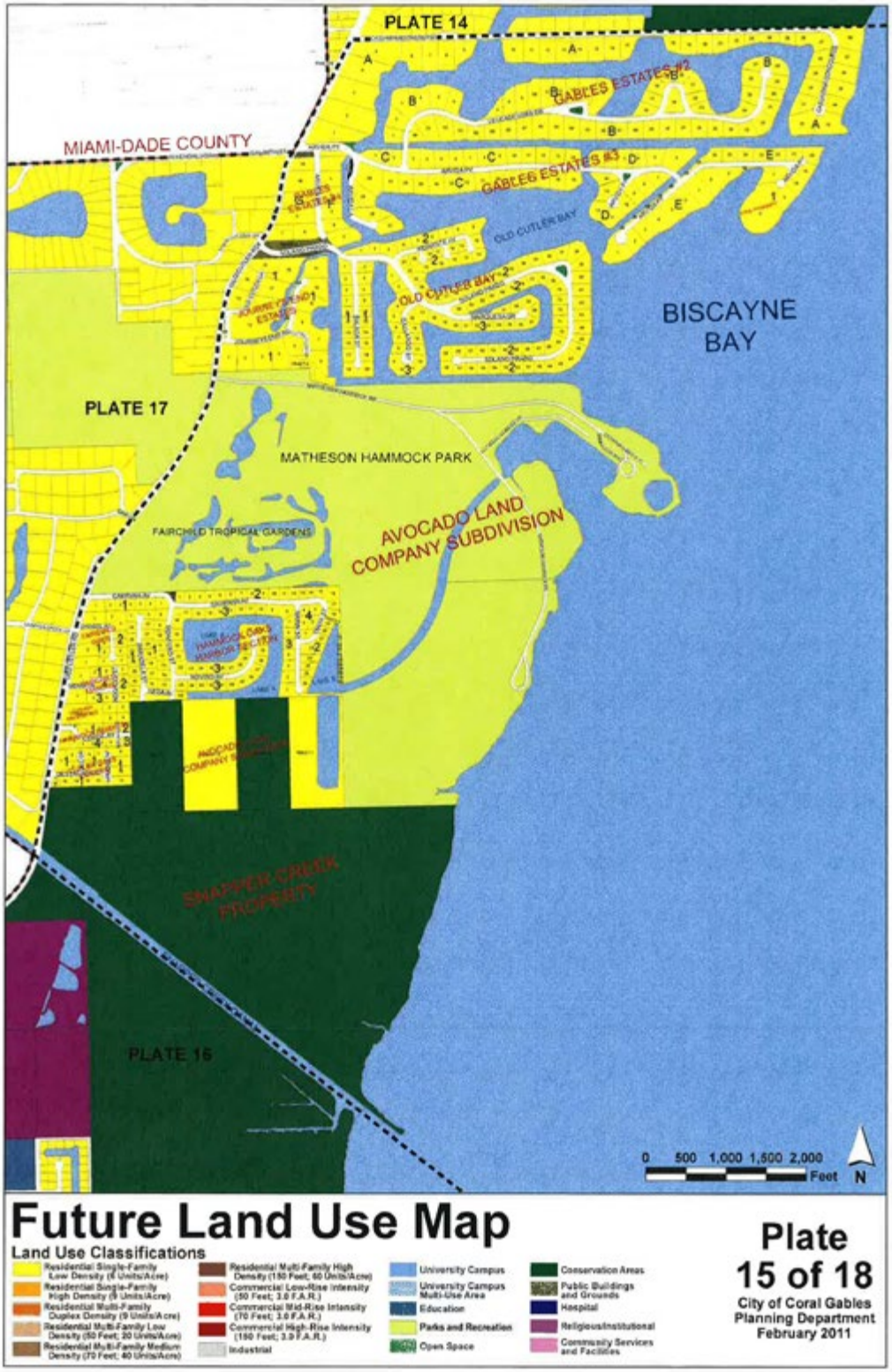
PLATE 14
MIAMI-DADE COUNTY
GABLES ESTATES #2
GABLES ESTATES #3
OLD CUTLER BAY
BISCAYNE BAY
PLATE 17
MATHESON HAMMOCK PARK
FAIRCHILD TROPICAL GARDENS
AVOCADO LAND COMPANY SUBDIVISION
SNAPPER CREEK PROPERTY
PLATE 16
0 500 1,000 1,500 2,000
Feet
N
Future Land Use Map
Land Use Classifications
Residential Single-Family Low Density (4 Units/Acre)
Residential Single-Family High Density (9 Units/Acre)
Residential Multi-Family Duplex Density (9 Units/Acre)
Residential Multi-Family Low Density (50 Feet; 20 Units/Acre)
Residential Multi-Family Medium Density (75 Feet; 40 Units/Acre)
Residential Multi-Family High Density (150 Feet; 60 Units/Acre)
Commercial Low-Rise Intensity (50 Feet; 3.0 F.A.R.)
Commercial Mid-Rise Intensity (70 Feet; 3.0 F.A.R.)
Commercial High-Rise Intensity (150 Feet; 3.0 F.A.R.)
Industrial
University Campus
University Campus Multi-Use Area
Education
Parks and Recreation
Open Space
Conservation Areas
Public Buildings and Grounds
Hospital
Religious/Institutional
Community Services and Facilities
Plate 15 of 18
City of Coral Gables Planning Department February 2011


PLATE 14
MIAMI-DADE COUNTY
GABLES ESTATES #2
GABLES ESTATES #3
OLD CUTLER BAY
BISCAYNE BAY
PLATE 17
MATHESON HAMMOCK PARK
AVOCADO LAND COMPANY SUBDIVISION
SNAPPER CREEK PROPERTY
PLATE 16
0 500 1,000 1,500 2,000 Feet
N
Zoning Map
Zoning Districts
(SFR) Single-Family Residential District
(MF1) Multi-Family 1 Duplex District
(MF2) Multi-Family 2 District
(MFSA) Multi-Family Special Area District
(UCD) University Campus District
(S) Special Use District
(P) Preservation District
(CL) Commercial Limited District
(C) Commercial District
(I) Industrial District
Plate
15 of 18
City of Coral Gables
Planning Department
February 2011

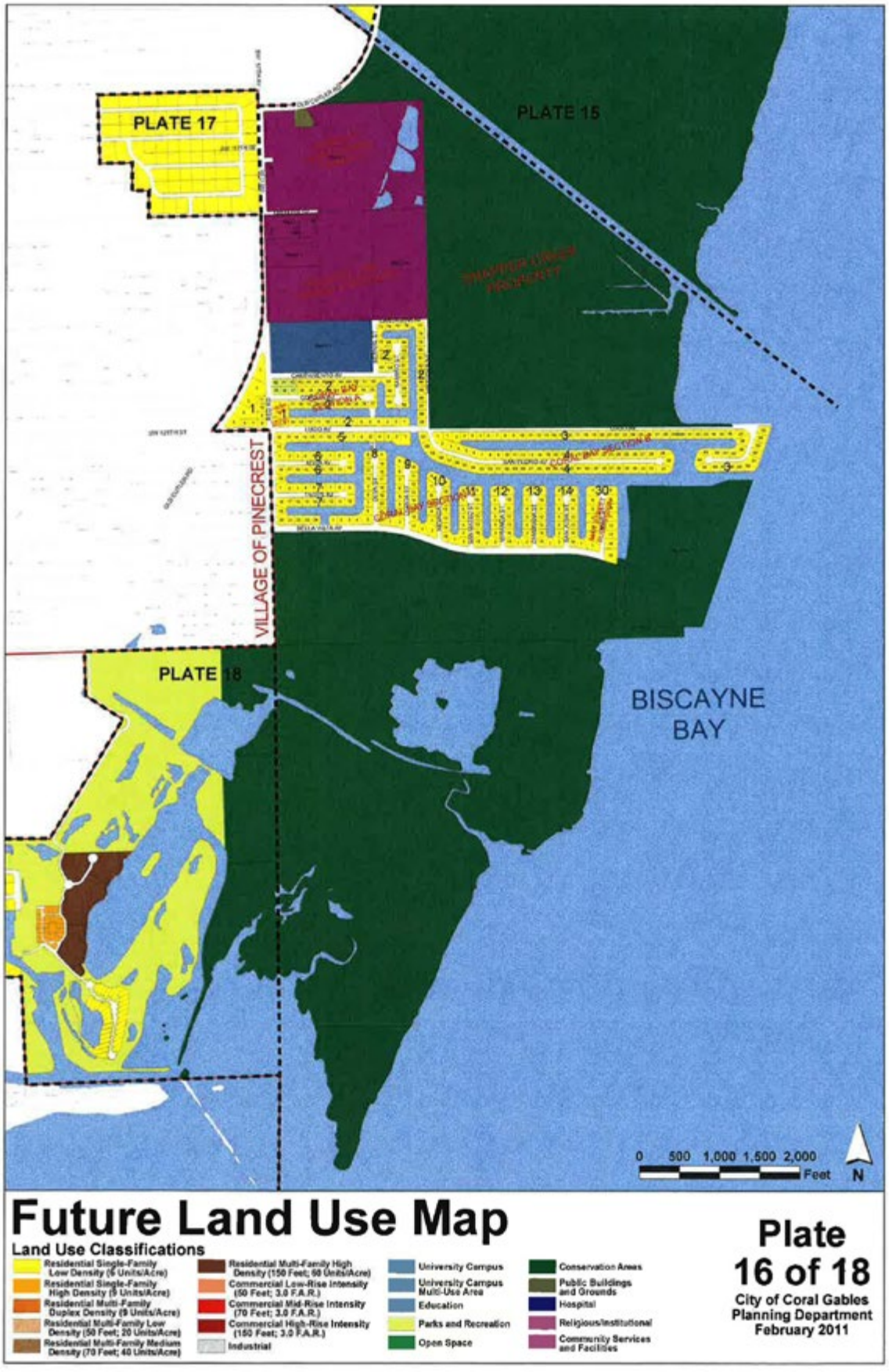
PLATE 17
PLATE 15
VILLAGE OF PINECREST
PLATE 18
BISCAYNE BAY
0 500 1,000 1,500 2,000
Feet
N
Future Land Use Map
Land Use Classifications
Residential Single-Family Low Density (6 Units/Acre)
Residential Single-Family High Density (9 Units/Acre)
Residential Multi-Family Duplex Density (9 Units/Acre)
Residential Multi-Family Low Density (50 Feet; 20 Units/Acre)
Residential Multi-Family Medium Density (70 Feet; 40 Units/Acre)
Residential Multi-Family High Density (150 Feet; 60 Units/Acre)
Commercial Low-Rise Intensity (50 Feet; 3.0 F.A.R.)
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Commercial High-Rise Intensity (150 Feet; 3.0 F.A.R.)
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Hospital
Religious/Institutional
Community Services and Facilities
Plate 16 of 18
City of Coral Gables Planning Department February 2011

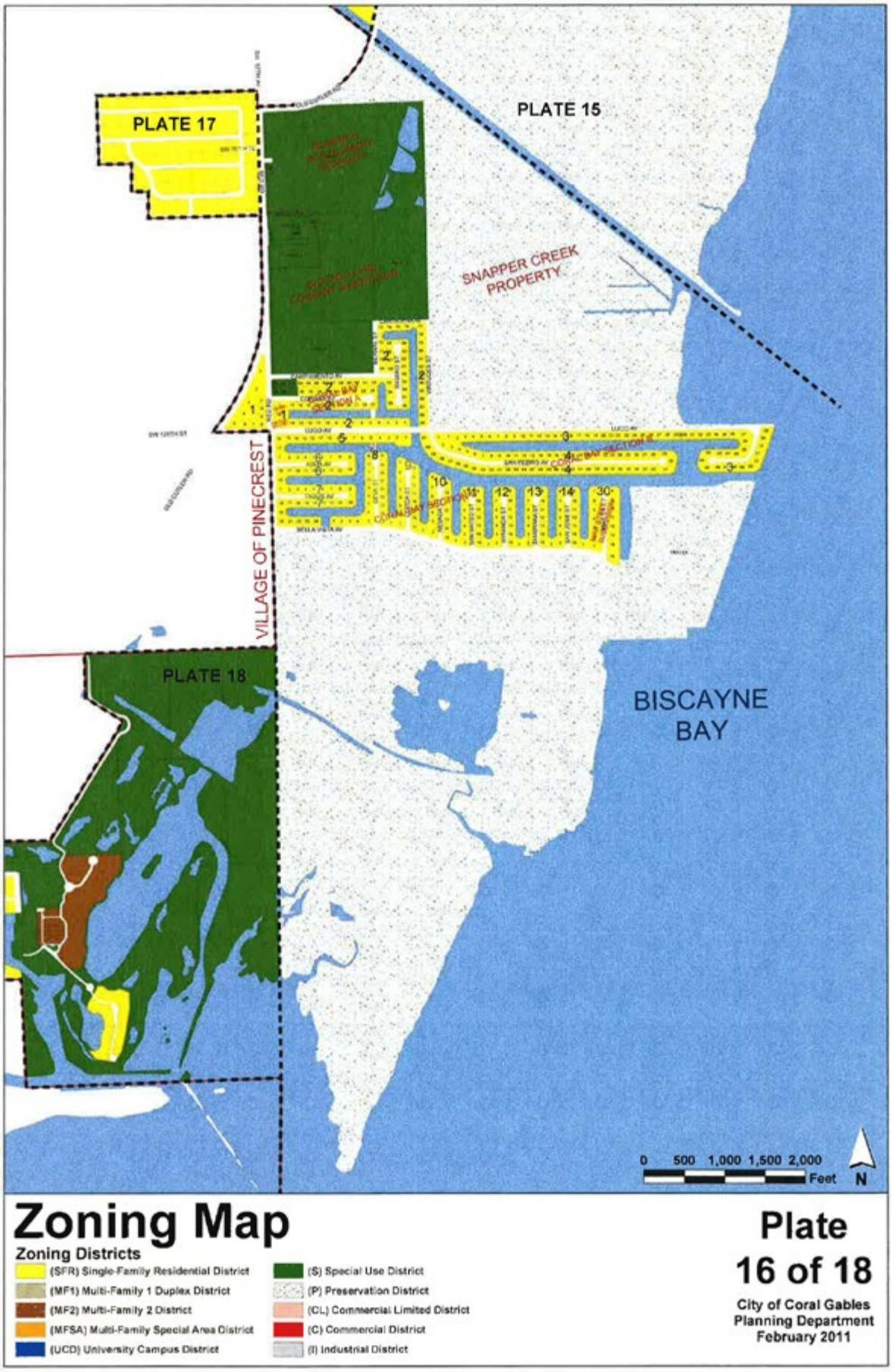
PLATE 17
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(I) Industrial District
Plate
16 of 18
City of Coral Gables
Planning Department
February 2011

Future Land Use Element

FLU

	establishes minimum and maximum thresholds based upon the FAR of the building. Type of Use / Minimum % of FAR / Maximum % of FAR Residential / 0% / 85% Retail/Commercial / 8% / 40% Office / 0% / 85% Industrial / 0% / 5% Additional MXD or Mixed Use Overlay District (MXOD) development standards, including maximum densities, intensities, and height, are provided in the Zoning Code.
MXOD, Mixed-Use Overlay Districts.	An MXOD may be permitted as an overlay in the Commercial and Industrial land use categories (see FLU-2: Mixed-Use Overlay District Map). Properties within the MXOD have the option of developing their property in accordance with the underlying land use. Assigned MXOD within the City are as follows:

Policy FLU-1.1.6. Other land use classifications are as follows (Land use descriptions provided herein are general descriptions, refer to underlying/assigned Zoning Classification for the list of permitted uses):

Table FLU-5. Other Land Uses.

Classification	Description	Density / Intensity	Height
University Campus	Land uses for learning, research, living and other uses which are ancillary to a university campus. Sub Category University Campus Multi-use Area: In addition to the uses in Table FLU-5 hereinabove, this category shall include other land uses that are associated or affiliated with the university, or directly supportive of the university's mission to educate and nurture students, to create knowledge, and to provide service to the community. Such other uses shall include lodging, conference center, governmental/public sector, research, office, and medical/ healthcare uses. Retail uses ancillary to or which serve the other use(s) permitted in the University Campus and University Campus Multi-Use Area may be integrated in an amount not to exceed fifteen percent (15%) of the total floor area.	Maximum F.A.R. of 0.7 for the entire campus as a planned development site.	Per the Zoning Code.
Education	Primary and secondary schools, both public and private.	Maximum F.A.R. of 2.0.	Per the Zoning Code.
Parks and Recreation	Public/private land areas and buildings for recreation, both active and passive, including golf, tennis, and similar sporting and leisure activities.	Maximum F.A.R. of 2.0.	Per the Zoning Code.
Open Space	Open space areas including right-of-way plazas and entranceways.	Maximum F.A.R. of 0.	N/A
Conservation Areas	Environmentally sensitive areas such as marshes, swamps, mangroves, and natural wildlife habitats. Designated limited support facility development areas shall be restricted to passive support activities such as nature trails and restroom facilities. Proposals for limited development shall be reviewed on an individual basis.	Maximum F.A.R. of 0, except for designated areas specified for limited support facility development.	N/A
Public Buildings and Grounds	Buildings and adjacent land areas used for local, state, or federal government purposes, and for public and semi-public services, including utilities.	Maximum F.A.R. of 2.0.	Per the Zoning Code.
Hospital	Buildings and land areas used for medical and health related services.	Maximum F.A.R. of 2.0.	Per the Zoning Code.
Religious / Institutional	Churches, temples, synagogues, houses of worship, fraternal organizations, and related accessory uses such as educational and child care services and private clubs,	Maximum F.A.R. of 2.0.	Per the Zoning Code.

ADM GOV FLU DES COM HOU EDU MOB NAT REC HIS SAF CIE GRN

3

Future Land Use Element

FLU

Vision Statement: Continue Coral Gables vision and mission as a community that is attractive to live, work, play and visit.

Goals, Objectives and Policies:

Goal FLU-1. Protect, strengthen, and enhance the City of Coral Gables as a vibrant community ensuring that its neighborhoods, business opportunities, shopping, employment centers, cultural activities, historic value, desirable housing, open spaces, and natural resources make the City a very desirable place to work, live and play.

Objective FLU-1.1. Preserve Coral Gables as a "placemaker" where the balance of existing and future uses is maintained to achieve a high quality living environment by encouraging compatible land uses, restoring and protecting the natural environment, and providing facilities and services which meet or exceed the minimum Level of Service (LOS) standards and meet the social and economic needs of the community through the Comprehensive Plan and Future Land Use Classifications and Map (see FLU-1: Future Land Use Map).

Policy FLU-1.1.1. The City's Future Land Use Classifications and Map shall describe, assign, and depict the future land uses found to be in the public interest and to be the basis for regulations, programs, actions and rules of the City and other affected agencies.

Policy FLU-1.1.2 Residential land use classifications are as follows (Land use descriptions provided herein are general descriptions, refer to underlying/assigned Zoning Classification for the list of permitted uses):

Table FLU-1. Residential Land Uses.

Classification	Description	Density / Intensity	Height
Single-Family Low Density.	Single-family detached homes.	Maximum 6 units/acre.	Per the Zoning Code.
Single-Family High Density.	Single-family detached and attached homes, including townhouses.	Maximum 9 units/acre.	Per the Zoning Code.
Multi-Family Duplex Density.	Duplex homes, including townhouses.	Maximum 9 units/acre.	Per the Zoning Code.
Multi-Family Low Density.	Multi-family residential of low height and density.	Maximum 20 units/acre, or 25 units/acre with architectural incentives per the Zoning Code.	Up to 50' maximum (no limitation on floors), or up to 77' maximum (with a maximum of 2 additional floors) with architectural incentives per the Zoning Code.
Multi-Family Medium Density.	Multi-family residential of medium height and density.	Maximum 40 units/acre, or 50 units/acre with architectural incentives per the Zoning Code.	Up to 70' maximum (no limitation on floors), or up to 97' maximum (with a maximum 2 additional floors) with architectural incentives per the Zoning Code.
Multi-Family High Density.	Multi-family residential of high height and density.	Maximum 60 units/acre, or 75 units/acre with architectural incentives per the Zoning Code.	Up to 150' maximum (no limitation on floors), or 190.5' maximum (with a maximum 3 additional floors) with architectural incentives per the Zoning Code.

Policy FLU-1.1.3. Commercial land use classifications are as follows (Land use descriptions provided herein are general descriptions, refer to underlying/assigned Zoning Classification for the list of permitted uses):

MIAMI-DADE COUNTY

PARKS, RECREATION
and OPEN SPACES
DEPARTMENT

Deering Estate at Cutler - MANAGEMENT PLAN