

**CHARLOTTE HARBOR PRESERVE**

**STATE PARK**

**UNIT MANAGEMENT PLAN**

**APPROVED PLAN**

**STATE OF FLORIDA**

**DEPARTMENT OF ENVIRONMENTAL PROTECTION**

**Division of Recreation and Parks**

**June 15, 2007**



# Florida Department of Environmental Protection

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

Charlie Crist  
Governor

Jeff Kottkamp  
Lt. Governor

Michael W. Sole  
Secretary

June 18, 2007

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

Re: Charlotte Harbor Preserve State Park                      Lease # 4085 and # 4143

Dear Ms. White:

On June 15, 2007, the Acquisition and Restoration Council recommended approval of the Charlotte Harbor Preserve State Park management plan. Therefore, the Office of Environmental Services, acting as agent for the Board of Trustees of the Internal Improvement Trust Fund, approved the management plan for the Charlotte Harbor Preserve State Park. Pursuant to Sections 253.034 and 259.032, Florida Statutes, and Chapter 18-2, Florida Administrative Code this plan's ten-year update will be due on June 15, 2017.

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

Sincerely,

A handwritten signature in black ink that reads "Paula L. Allen". The signature is written in a cursive style with a large loop at the end.

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

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## INTRODUCTION

Charlotte Harbor Preserve State Park is located in Lee and Charlotte Counties. The preserve includes many discontinuous parcels that stretch around Charlotte Harbor, portions of which are included within the incorporated boundaries of Punta Gorda and Cape Coral (see Vicinity Map and Reference Maps). There is no central point of entry for the public, with access provided at a collection of trailheads and gates throughout the boundary of the preserve. Administrative offices are co-located with the Charlotte Harbor Aquatic Preserves, at 12301 Burnt Store Road (State Road 765) in Punta Gorda. The preserve consists of 42,598.06 acres, including over 70 miles of shoreline and numerous natural islands. The vast majority of the property is comprised of wetland communities and open water.

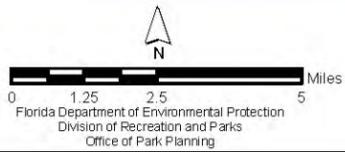
At Charlotte Harbor Preserve State Park, public outdoor recreation and conservation is the designated single use of the property. There are no legislative or executive directives that constrain the use of this property. The preserve is made up of lands obtained through four acquisition projects in addition to donations, settlement agreements, mitigation agreements, and federal surplus lands (see Addendum 1). Lands were initially acquired through the Environmentally Endangered Lands Program (EEL) and continued with the Conservation and Recreation Lands (CARL) program. The Josslyn Island CARL project was added in 1990. Additional lands were acquired under the joint Save Our Rivers/CARL projects known as Myakka Estuaries and Cape Haze. Recently, these two projects were combined with the Charlotte Harbor CARL Project to form the Charlotte Harbor Estuary project under the Florida Forever program. Acquisition funding was also provided by the Southwest Florida Water Management District (SWFWMD). The SWFWMD holds 50/50 title interest with the Trustees in portions of the park.

Lands comprising the preserve were acquired primarily for their contribution towards the protection of one of the largest and most productive estuaries in Florida. The Charlotte Harbor estuary region supports important recreational and commercial fisheries, as well as critical habitat for endangered and threatened species, but is rapidly being surrounded by cities and residential developments, which could compromise this important resource. The preserve is also an important buffer for five aquatic preserves: Pine Island Sound, Matlacha Pass, Gasparilla Sound - Charlotte Harbor, Cape Haze and Lemon Bay Aquatic Preserves. By preserving upland habitats surrounding Charlotte and Placida Harbors, Gasparilla Sound, Matlacha Pass and Pine Island Sound, the preserve helps protect water quality, sea grasses and other habitats that are important to fish and wildlife, provides residents and visitors to the area with opportunities for boating, fishing, and other resource-based outdoor recreational pursuits, and preserves significant archaeological and historical sites.

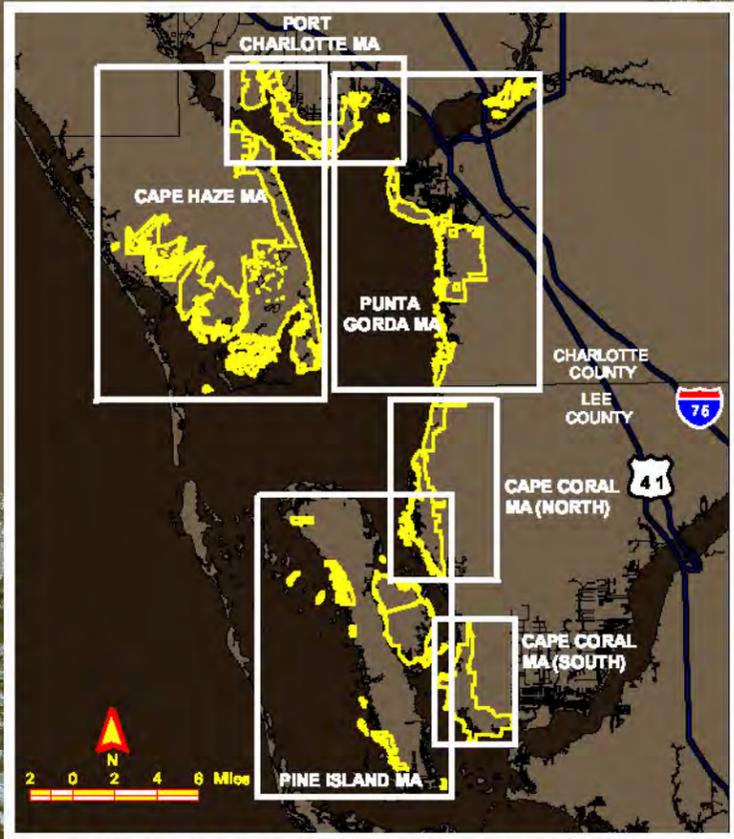
The preserve is also an important link in regional conservation lands (see Vicinity Map).



**CHARLOTTE HARBOR PRESERVE STATE PARK**



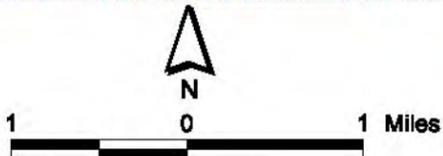
**VICINITY MAP**



**LEGEND**

- \* EXISTING PUBLIC ACCESS POINTS
- OTHER CONSERVATION AREAS
- AQUATIC PRESERVES
- CLASS II WATERS
- STATE PARK BOUNDARY

CHARLOTTE HARBOR PRESERVE  
STATE PARK  
CAPE HAZE MANAGEMENT AREA



REFERENCE MAP  
SHEET 1 OF 6



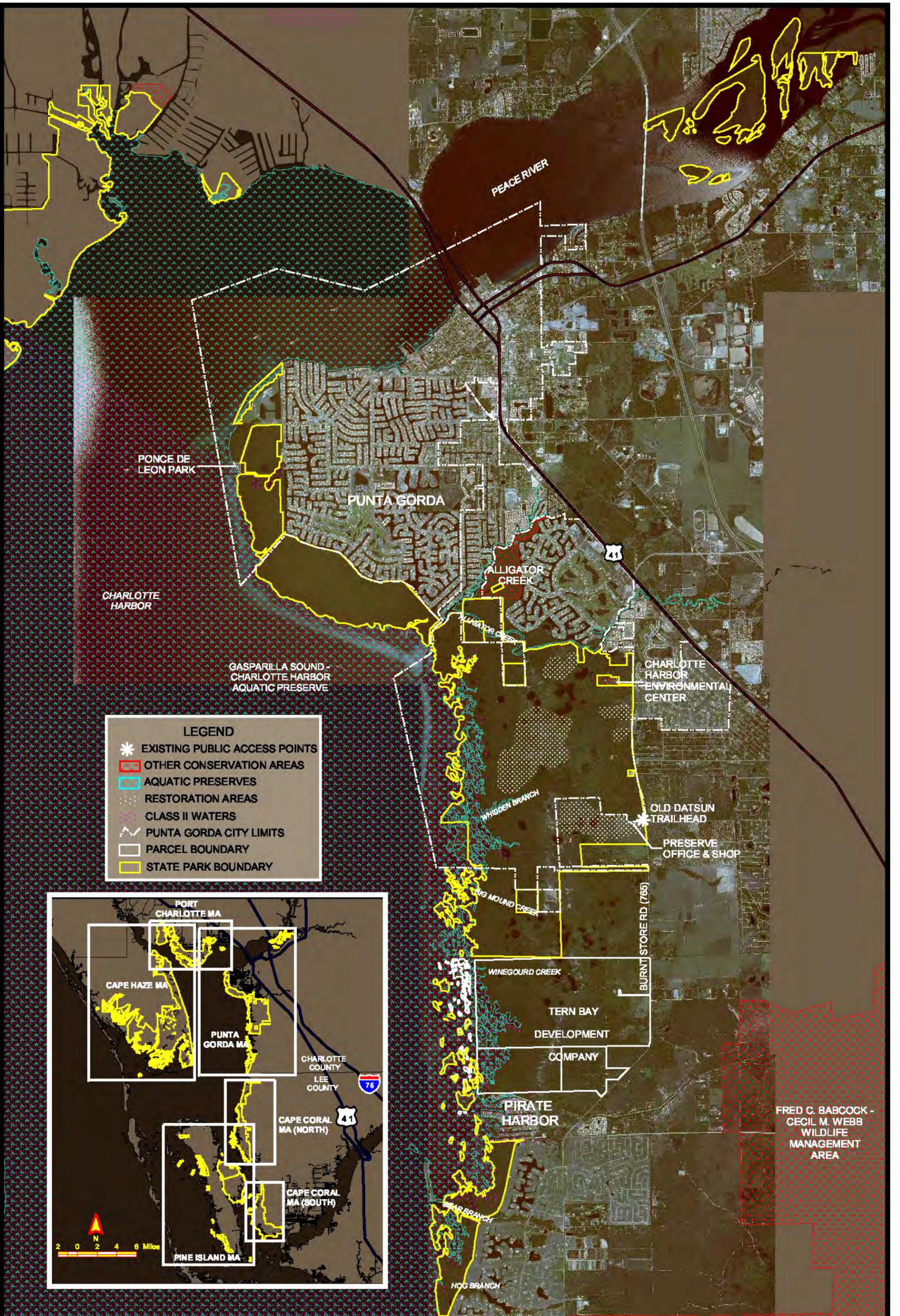
**LEGEND**

- \* EXISTING PUBLIC ACCESS POINTS
- OTHER CONSERVATION AREAS
- AQUATIC PRESERVES
- CLASS II WATERS
- STATE PARK BOUNDARY

CHARLOTTE HARBOR PRESERVE  
STATE PARK  
PORT CHARLOTTE MANAGEMENT AREA

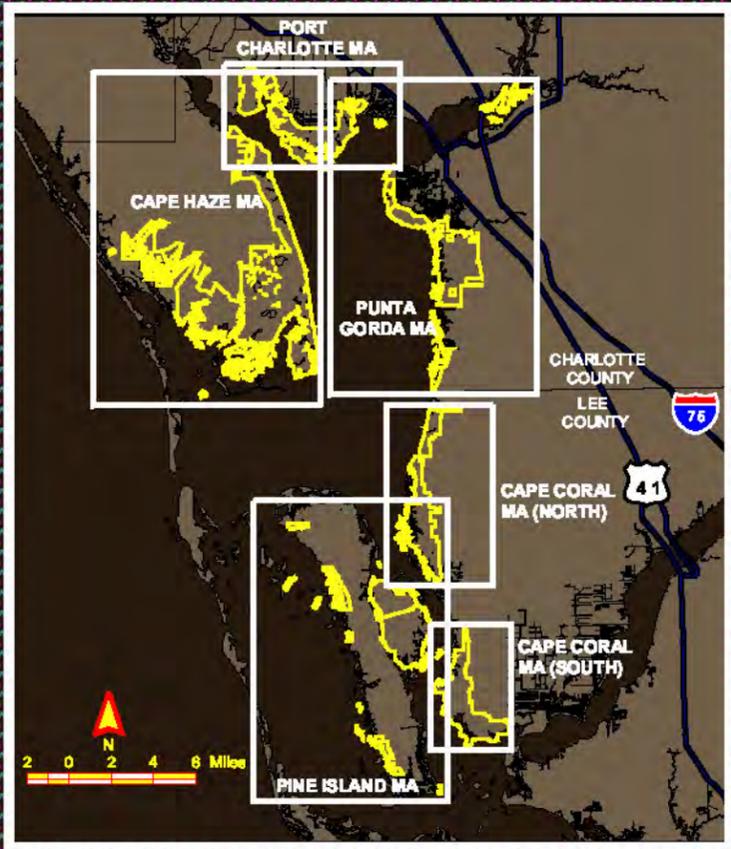


REFERENCE MAP  
SHEET 2 OF 6



**LEGEND**

- \* EXISTING PUBLIC ACCESS POINTS
- OTHER CONSERVATION AREAS
- AQUATIC PRESERVES
- RESTORATION AREAS
- CLASS II WATERS
- ~ PUNTA GORDA CITY LIMITS
- PARCEL BOUNDARY
- STATE PARK BOUNDARY



CHARLOTTE HARBOR PRESERVE  
STATE PARK  
PUNTA GORDA MANAGEMENT AREA



REFERENCE MAP  
SHEET 3 OF 6



CHARLOTTE HARBOR

GASPARILLA SOUND - CHARLOTTE HARBOR AQUATIC PRESERVE

MATLACHA PASS AQUATIC PRESERVE

MATLACHA PASS NATIONAL WILDLIFE REFUGE

CHARLOTTE HARBOR BUFFER PRESERVE (LEE COUNTY)

CHARLOTTE HARBOR BUFFER PRESERVE (LEE COUNTY)

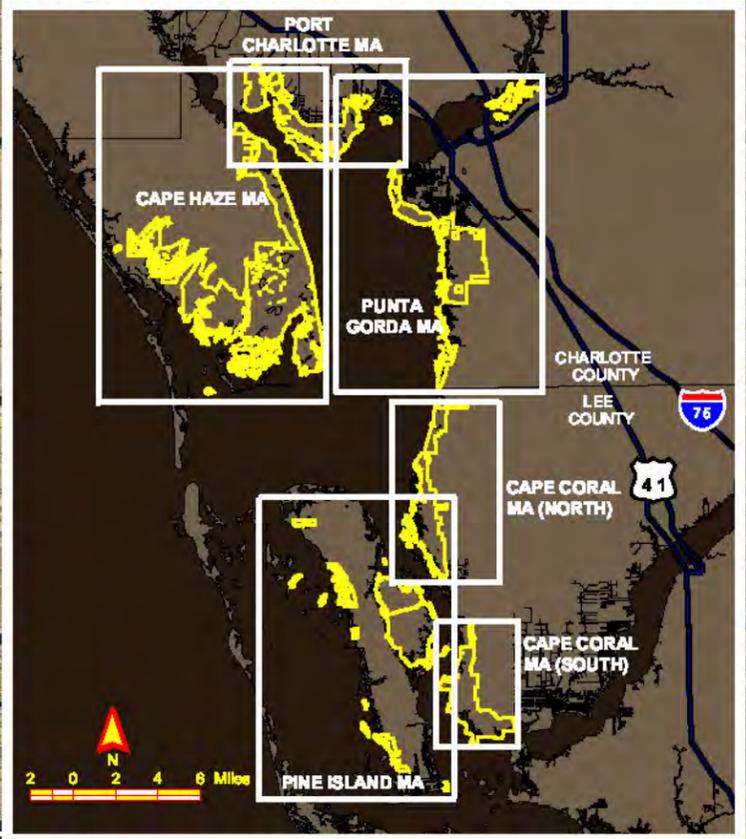
YUCCA PENS PRESERVE

YUCCA PENS PRESERVE

CAPE CORAL

FRED C. BABCOCK - CECIL M. WEBB WILDLIFE MANAGEMENT AREA

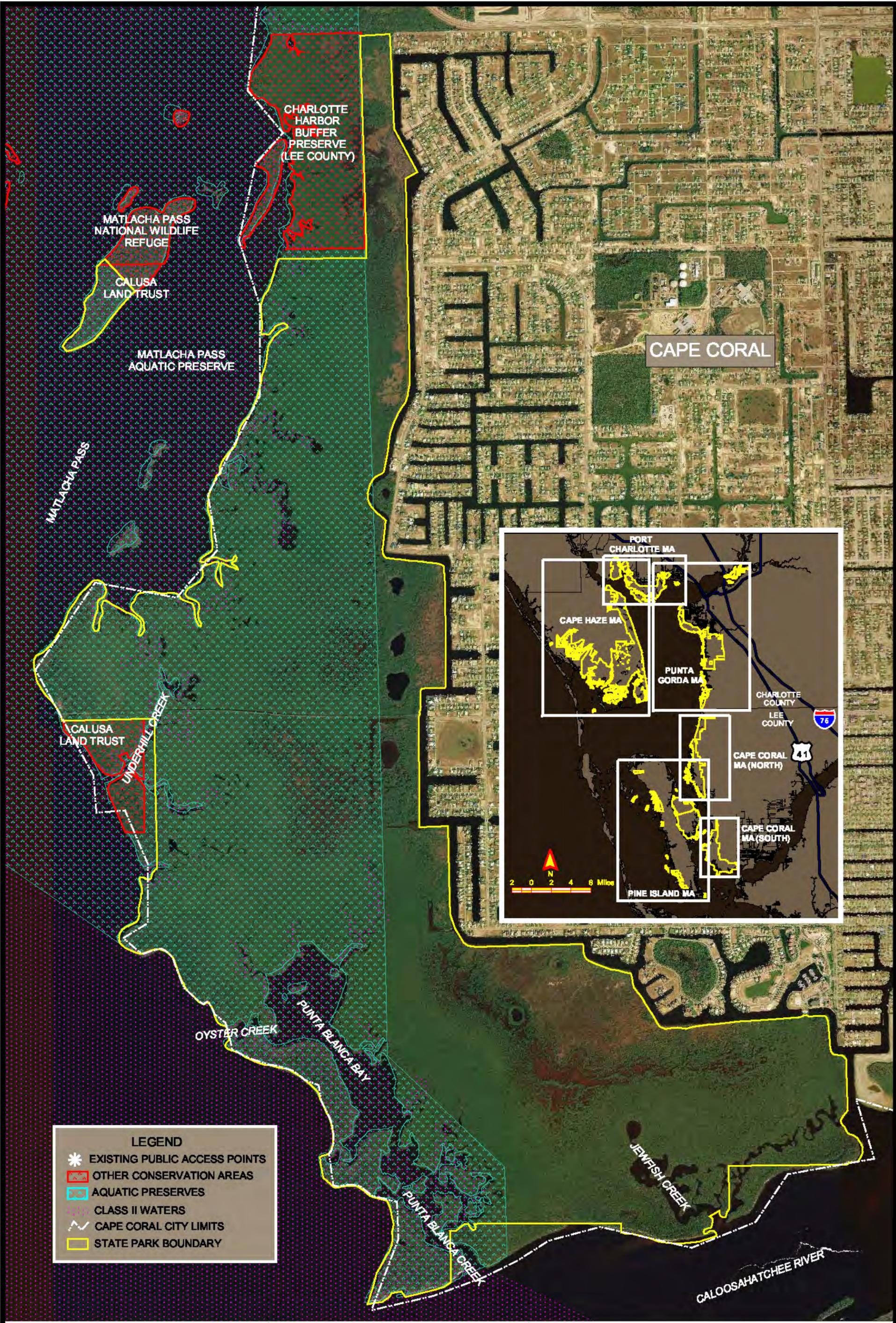
- LEGEND**
- \* EXISTING PUBLIC ACCESS POINTS
  - OTHER CONSERVATION AREAS
  - AQUATIC PRESERVES
  - CLASS II WATERS
  - CAPE CORAL CITY LIMITS
  - STATE PARK BOUNDARY



**CHARLOTTE HARBOR PRESERVE  
STATE PARK  
CAPE CORAL MANAGEMENT AREA (NORTH)**



**REFERENCE MAP  
SHEET 4 OF 6**



CHARLOTTE HARBOR BUFFER PRESERVE (LEE COUNTY)

MATLACHA PASS NATIONAL WILDLIFE REFUGE

CALUSA LAND TRUST

MATLACHA PASS AQUATIC PRESERVE

MATLACHA PASS

CAPE CORAL

CALUSA LAND TRUST

UNDERHILL CREEK

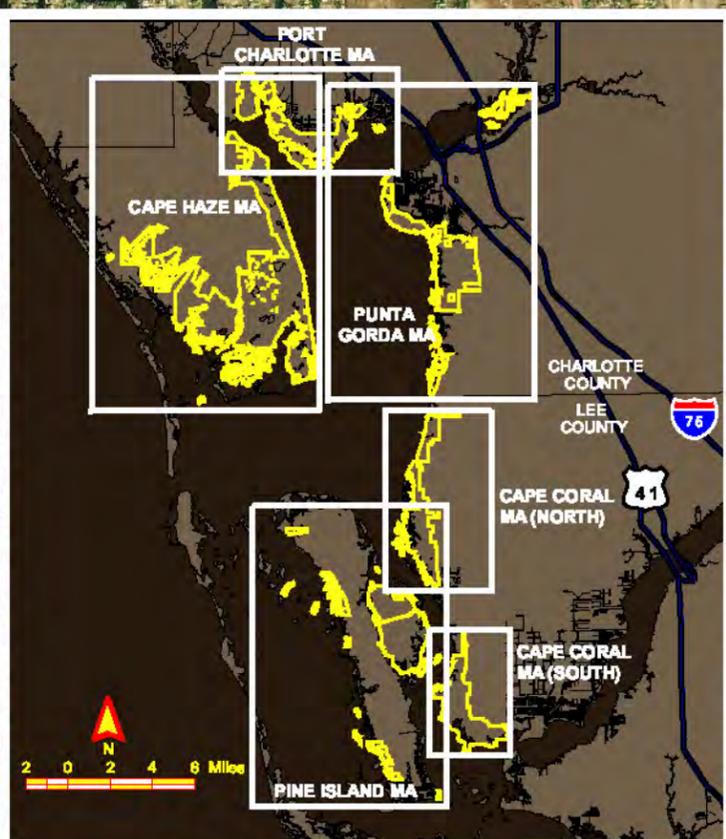
OYSTER CREEK

PUNTA BLANCA BAY

PUNTA BLANCA CREEK

JEWFISH CREEK

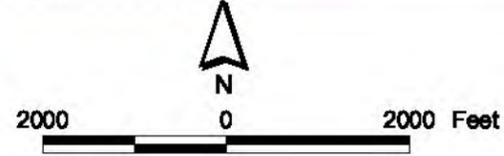
CALOOSA HATCHEE RIVER



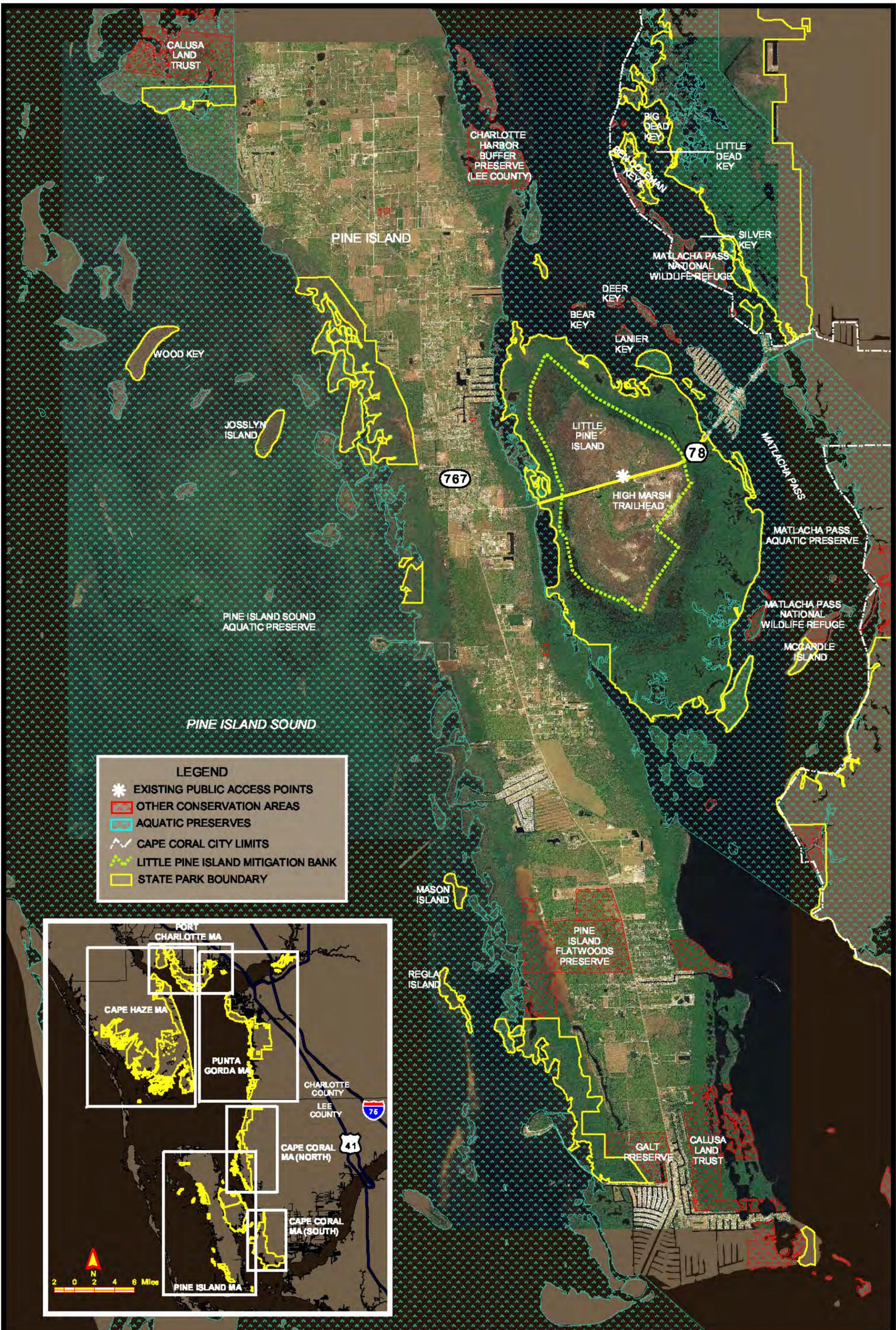
**LEGEND**

- \* EXISTING PUBLIC ACCESS POINTS
- OTHER CONSERVATION AREAS
- AQUATIC PRESERVES
- CLASS II WATERS
- CAPE CORAL CITY LIMITS
- STATE PARK BOUNDARY

CHARLOTTE HARBOR PRESERVE  
STATE PARK  
CAPE CORAL MANAGEMENT AREA (SOUTH)

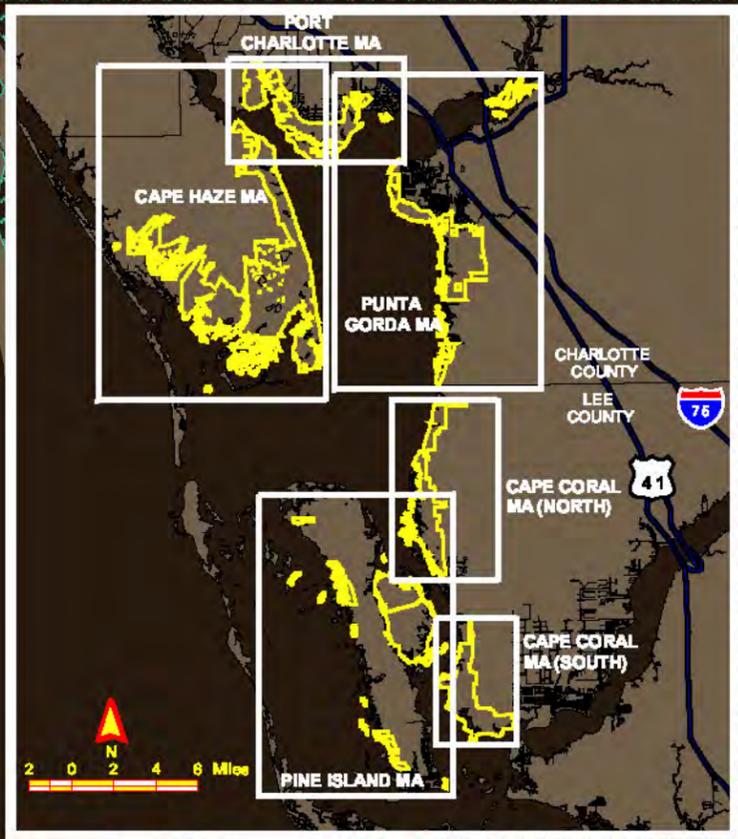


REFERENCE MAP  
SHEET 5 OF 6

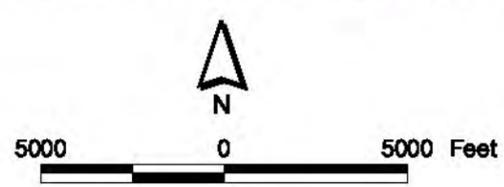


**LEGEND**

- \* EXISTING PUBLIC ACCESS POINTS
- OTHER CONSERVATION AREAS
- AQUATIC PRESERVES
- CAPE CORAL CITY LIMITS
- LITTLE PINE ISLAND MITIGATION BANK
- STATE PARK BOUNDARY



CHARLOTTE HARBOR PRESERVE  
STATE PARK  
PINE ISLAND MANAGEMENT AREA



REFERENCE MAP  
SHEET 6 OF 6

These include Lee County Conservation 2020 lands; Charlotte County, Parks and Recreation lands; Corkscrew Regional Ecosystem Watershed lands (South Florida Water Management District - SFWMD); Calusa Land Trust conservation lands; Cayo Costa State Park, Don Pedro Island State Park, Gasparilla Island State Park, Lovers Key State Park, Mound Key Archaeological State Park, Koreshan State Historic Park, and Estero Bay Preserve State Park (Division); Cecil Webb and Yucca Pens Wildlife Management Areas (Florida Fish and Wildlife Conservation Commission - FFWCC); Myakka River State Forest (Division of Forestry - DOF); Ding Darling, Matlacha Pass, Pine Island, and Island Bay National Wildlife Refuges (US Fish and Wildlife Service - USFWS); and Sanibel-Captiva Conservation Foundation lands.

## **PURPOSE AND SCOPE OF THE PLAN**

This plan serves as the basic statement of policy and direction for the management of Charlotte Harbor Preserve State Park as a unit of Florida's state park system. It identifies the objectives, criteria and standards that guide each aspect of park administration, and sets forth the specific measures that will be implemented to meet management objectives. The plan is intended to meet the requirements of Sections 253.034 and 259.032, Florida Statutes, Chapter 18-2, Florida Administrative Code, and intended to be consistent with the State Lands Management Plan. With approval, this management plan will replace the 1997 approved plan. All development and resource alteration encompassed in this plan is subject to the granting of appropriate permits; easements, licenses, and other required legal instruments. Approval of the management plan does not constitute an exemption from complying with the appropriate local, state or federal agencies. This plan is also intended to meet the requirements for beach and shore preservation, as defined in Chapter 161, Florida Statutes and Chapters 62B-33, 62B-36 and 62R-49, Florida Administrative Code.

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

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

In the development of this plan, the potential of the preserve to accommodate secondary management purposes ("multiple uses") was analyzed. These secondary purposes were considered within the context of the Division's statutory responsibilities

and an analysis of the resource needs and values of the preserve. This analysis considered the preserve natural and cultural resources, management needs, aesthetic values, visitation and visitor experiences. For this park, it was determined that timber management could be accommodated in a manner that would be compatible and not interfere with the primary purpose of resource-based outdoor recreation and conservation. This compatible secondary management purpose is addressed in the Resource Management Component of the plan. Uses such as, water resource development projects, water supply projects, stormwater management projects, linear facilities and sustainable agriculture and forestry (other than those forest management activities specifically identified in this plan) are not consistent with this plan or the management purposes of the preserve.

The potential for generating revenue to enhance management was also analyzed. Visitor fees and charges are the principal source of revenue generated by the preserve. It was determined that timber management activities would be appropriate at the preserve as an additional source of revenue for land management since it is compatible with the primary purpose of resource-based outdoor recreation and conservation.

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

## **MANAGEMENT PROGRAM OVERVIEW**

### **Management Authority and Responsibility**

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

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

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

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

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

The preserve has gone through several management changes under public ownership. The property was initially managed by the Florida Department of Environmental Protection (DEP) as the Charlotte Harbor State Reserve, and subsequently transferred to the Office of Coastal and Aquatic Managed Areas (CAMA) as Charlotte Harbor State Buffer Preserve, a component of the DEP Aquatic Preserves Program. In 2004, DEP reorganized several programs and the management of the preserve was transferred to the Division of Recreation and Parks (Division) to be managed as a unit of the state park system.

### **Park Goals and Objectives**

Since the 1997 approved plan, significant work has been accomplished and progress made towards meeting the Division's management objectives for the preserve. The following is a summary of activity since the last plan update related to resource management, protection, maintenance and visitor services.

- Treated over 7,009 acres with prescribed fire.
- Widened and maintained 53 miles of firelines and created 6.3 miles of new firelines for safer prescribed fire operations.

- Roller chopped 1,040 acres.
- Selectively thinned 265 acres in the Port Charlotte MA to facilitate roller-chopping operations to restore habitat.
- Constructed a low water crossing for access and safer prescribed burn operations in Cape Haze MA.
- Conducted initial treatment for exotic plants on 2,200 acres.
- Restored, created or enhanced over 175 acres of wetlands.
- Completed restoration in five of 7 phases of the Little Pine Island Mitigation Bank (included the removal of 1,598 acres of exotic vegetation, 48 acres of mosquito ditches, and replanting with native vegetation).
- Removed 521 feral hogs.
- Established baseline transects and surveys for Florida scrub jay breeding areas.
- Surveyed and monitored beautiful paw paw populations in the Cape Coral MA.
- Established photo points for monitoring vegetation response to fire.
- Surveyed gopher tortoise burrows after prescribed burns.
- Established two frog-monitoring routes in the preserve.
- Monitored more than 80 cultural sites, restored two damaged sites, and updated all site files.
- Constructed two office buildings, a pole barn and various other support buildings and acquired essential equipment to enhance resource management.
- Installed 21 miles of boundary fencing.
- Leveraged available funds with supplemental grants to enhance resource management and education efforts.
- Established 22 access points and 3.4 miles of new trails.
- Created two traveling professional displays dealing with the threat of exotic pest plants and the use of prescribed fire that were exhibited in libraries and other public buildings
- Installed five interpretive panels to enhance visitor's resource appreciation on self-guided walks.
- Conducted a series of training workshops on coastal management topics twice yearly targeting environmental professionals and others involved with planning, regulation, research and resource management.
- Developed four new annual hiking field trips and one estuary wading trip
- Initiated the newsletter *Charlotte Harbor Sounding* in conjunction with aquatic preserve staff and volunteers.
- Successfully nominated three sites as part of the South Section of the Great Florida Birding Trail
- Formed the Friends of the Charlotte Harbor Aquatic Preserves, Inc. whose members provide ongoing financial support for park programs, activities, and publications
- Coordinated volunteer involvement at local nature festivals, on guided nature walks, and Adopt-A-Roads, Coastal Cleanups, trail maintenance, and exotic removal initiatives

- Assisted Division of State Lands in the acquisition of new property that expanded the boundary of the preserve.

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

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

### **Natural and Cultural Resources**

1. Manage soil to reduce and prevent erosion.
  - A. Assess park lands to identify major erosion areas.
  - B. Implement erosion control measures such as berms and plantings whenever needed.
2. Maintain/restore natural flow ways and protect water quality.
  - A. Inventory hydrological changes and impacts to the park.
  - B. Assess corrective measures needed for hydrologically altered areas.
  - C. Restore/enhance known areas of dredge spoil.
  - D. Work with water management districts, local governments and other potential partners to restore hydrological systems.
3. Restore, maintain and protect natural communities.
  - A. Ground-truth and update natural communities' maps.
  - B. Continue to identify historic vegetative community types for restoring habitats to the appropriate natural community composition where feasible.
  - C. Achieve control of *Melaleuca* on park lands to the greatest extent possible.
  - D. Continue to develop additional quantifiable vegetative management objectives to achieve desired future conditions for natural communities.
  - E. Conduct all archeological activities in a manner that minimizes impacts to surrounding natural resources with the goal of preserving them and providing the original natural context to cultural sites.

4. Maintain and protect native species.
  - A. Continue the inventory of native plants.
  - B. Continue inventories of native animals.
  - C. Encourage non-consumptive research on native species of plants and animals.
5. Manage listed species in the park.
  - A. Work with cooperators to survey listed plant species and assess their population requirements.
  - B. Implement the Florida Scrub Jay Habitat Management Plan and reduce monitoring to yearly.
  - C. Resurvey beautiful pawpaw.
  - D. Assist the FFWCC, USFWS and Charlotte Harbor Aquatic Preserves (CHAP) in their surveys of bald eagles, colonial-nesting water birds, shore birds, and other wildlife as requested.
6. Eradicate invasive non-native species or maintain at the lowest practical level.
  - A. Inventory invasive non-native species.
  - B. Coordinate with DEP's Bureau of Invasive Plant Management to establish an exotic species operational plan.
  - C. Reduce and maintain exotic plant species to promote reestablishment of native species.
  - D. Reduce the population of feral hogs by establishing an aggressive trapping program or other means as needed.
  - E. Continue collaborating with researchers and agencies to eradicate exotic reptiles in the park.
7. Manage problem species.
  - A. Investigate opportunities, and where appropriate, reduce cattail coverage and encourage beneficial native species.
8. Manage forest resources to enhance or maintain healthy systems.
  - A. Complete select slash pine thinning activities in areas as outlined in the timber management assessment.
  - B. Evaluate potential areas that would benefit from roller-drum chopping activities to reduce saw palmetto density.
  - C. Conduct roller-drum chopping activities in those areas requiring saw palmetto density reduction.
  - D. Conduct a timber stand survey, describing currently and potentially forested areas, grouping areas within a tract into stands with similar management needs by species composition, age, stocking levels and growth.
  - E. Conduct an evaluation on lands not previously assessed for timber management to determine if a DOF timber management assessment is needed.
9. Conduct fire management operations to help restore biodiversity and maintain natural fire-type communities.
  - A. Complete written prescriptions for existing burn blocks/zones.
  - B. Complete fire line construction to create new or smaller burn zones to facilitate safer prescribed fire management.

- C. Improve access through culvert/bridge construction.
  - D. Assess additional land acquisitions and incorporate into Fire Management Plan with written burn prescriptions.
  - E. Complete site assessment, desired burn rotations of all fire management units, and include in annual Fire Management Plan updates.
  - F. Reduce hazardous fuels through late fall and winter burning whenever feasible.
  - G. Restore or preserve habitat for rare plant and animal species.
  - H. Create vegetative mosaic by varying intensity, frequency and season of burn activities within each fire-type community.
  - I. Promote diversity within natural communities by conducting fall and spring burns.
  - J. Stimulate flowering herbs, forbs, and other vascular plant species.
  - K. Reintroduce lightning season fire regimes where practical.
  - L. Maintain transitional zones between vegetative types.
  - M. Reduce wildfire potential and potential smoke management problems through management of fuel loads.
  - N. Coordinate exotic plant control with burn plans for optimum restoration potential.
10. Increase and improve prescribed fire resources.
- A. Collaborate with other agencies to coordinate interagency burns and usage of additional resources.
  - B. Obtain fire training for staff through course work and experience.
11. Organize, conduct and implement a cultural resources management program in coordination with the Bureau of Natural and Cultural Resources (BNCR), Division of Historic Resources (DHR), universities and private organizations that addresses identified resource management needs, preservation and protection at cultural sites and prescribes limited access and interpretation, where appropriate.
- A. Develop a comprehensive cultural resources management plan for the preserve that addresses the long-term stewardship of the archaeological and historic sites within the preserve.
  - B. Develop a management plan for Big Mound Key that provides detailed and specific approaches, guidelines and standards for mapping and documenting the site, eradicating and controlling exotic flora and fauna, stabilizing features, needs for archaeological research, site security, and public access and interpretation of the site, and proposed means for long-term funding for implementation of the plan.
  - C. Secure funds to conduct topographic and site mapping of Big Mound Key to document the architectural character of the site including the shape of all man-made features, elevations and contours at a minimum of 1-foot intervals.
  - D. Pursue a multi-year program to research, map, inventory, document, stabilize, restore and interpret Big Mound Key/Bogges Ridge and seek funding from State, federal and private foundations to implement the program.

- E. Inspect the most threatened archaeological and historic sites based on a priority schedule developed by the park and update the Master Site Files, as needed, to reflect site changes.
  - F. Conduct all ground-disturbing activities in accordance with DHR guidelines.
  - G. Obtain funding for supplemental staffing, or outsourcing, and continue archaeological monitoring, research and restoration at priority archaeological sites.
  - H. Seek funding to staff a full-time cultural resource specialist for the park to guide, develop and implement the management plan and resource management tasks set forth above.
12. Implement and encourage research that furthers knowledge of the systems, species and processes within the park or region and establish practical monitoring plans for restored and managed communities.
- A. Coordinate all requests and permits for research with the Division's District IV office and the BNCR, as needed.
  - B. Ensure that all research is conducted according to the guidelines in the Division's Operations Manual (Resource Management Policy #6).
  - C. Encourage, where appropriate, opportunities for universities and other professionals to direct research proposals to the preserve.
  - D. Pursue funding for appropriate types of research to enhance knowledge of the preserve's resources and facilitate appropriate management.
  - E. Establish monitoring plans and protocols for restoration and enhancement projects.

### **Recreation**

1. Continue to provide quality resource based outdoor recreational and interpretive programs and facilities at the state park.
  - A. Provide guided field trips that explore preserve environments.
  - B. Maintain a network of designated trails and woods roads for hiking access that explores a diversity of habitat types within the Pine Island, Cape Haze, Punta Gorda, Port Charlotte and Cape Coral North Management Areas.
  - C. Provide opportunities to access preserve sloughs, creeks and the waters of Charlotte Harbor for fishing, paddling and wildlife observation.
  - D. Maintain professional multi-media educational and public outreach tools for use on and offsite.
  - E. Maintain partnerships with CHAP, Charlotte Harbor Environmental Center (CHEC), Citizen Support Organizations (CSOs), the Charlotte Harbor National Estuary Program (CHNEP) and other appropriate entities, to enhance recreation and programming opportunities at the preserve and in the region.
2. Seek funding to expand recreational and interpretive opportunities through the improvement of programs and the development of new use areas and facilities, as outlined in this management plan.

- A. Pursue release of a portion of preserve lands for Charlotte County to develop, maintain and operate a boat ramp at Cattle Dock Point.
- B. Coordinate with local governments and other entities to evaluate the potential for additional canoe/kayak access within the preserve.
- C. Establish day use areas for picnicking, fishing, paddling and hiking at Cape Haze, Rotonda Boulevard South, Sam Knight Creek and Allen's Creek.
- D. Implement improvements necessary to provide limited day use access to the Garrod Lakes area for fishing and wildlife observation.
- E. Coordinate with local governments and other entities to provide additional, improved or expanded hiking opportunities in the preserve.
- F. Provide additional boardwalks, viewing platforms or other structures and trim vegetation where needed to enhance landscape, open water or wildlife viewing areas.
- G. Create and develop brochures and field guides for use on staff-led field trips and self-guided walks for informational, orientation and interpretive purposes.
- H. Evaluate existing interpretive signage, kiosks, and update and/or install additional ones in accordance with current and future needs.

**Park Administration/Operations**

- 1. Provide well-designed and well-maintained public facilities.
  - A. Conduct regular inspections of use areas and facilities and correct deficiencies when necessary.
  - B. Provide clear, consistent identification and informational signage at primary public access points.
  - C. Provide universal access to new facilities consistent with current federal standards.
  - D. Collect and compile data on visitor attendance, use patterns and preferences to assist in evaluating existing facilities and recreational opportunities and make informed decisions on future access needs.
  - E. Design structures and signage to minimize impacts to the visual landscape.
- 2. Promote community support and bolster preserve staff and funding resources through education, training and partnership opportunities.
  - A. Provide staff and volunteers with ongoing training opportunities in visitor services, resource management, preserve operations, general maintenance and interpretation.
  - B. Recruit and maintain a cadre of volunteers to assist with management and interpretation of the preserve.
  - C. Pursue funding alternatives to the legislative budget appropriation process.
  - D. Actively educate the public and local governments about the natural resources, management activities, needs and problems and recreational opportunities of the preserve.
- 3. Establish measures to protect the preserve's integrity restrict unauthorized access,

- use and damage to public resources and maintain public health and safety.
- A. Evaluate the existing network of designated public access points and, if necessary, make adjustments that provide a variety of visitor experiences yet maintain effective visitor capacity.
  - B. Construct up to two additional staff residences within the preserve.
  - C. Construct and maintain boundary fencing where necessary and feasible to delineate preserve property.
  - D. Continue to work in cooperation with Florida Park Patrol, Lee and Charlotte County Sheriffs Offices and other law enforcement agencies (FFWCC, USFWS, etc.) to bolster law enforcement on park lands.
4. Support land use planning policies, regulations and acquisition initiatives that serve to enhance management and protection of preserve resources.
- A. Network with other land and water management and regulatory entities to coordinate and enhance regional resource management and protection efforts.
  - B. Continue to coordinate resource management activities with Charlotte Harbor Aquatic Preserves, Gasparilla Island Administration, SWFWMD, SFWMD, Lee County, Charlotte County and other appropriate entities.
  - C. Monitor proposed land use changes in the vicinity that may impact resource integrity, and engage in the land use planning process, when necessary, to advance the long-term interests of the preserve.
  - D. Pursue acquisition of areas deemed important to be managed as part of the preserve.

### **Management Coordination**

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

On the federal level, the preserve interacts with the USFWS in the management and monitoring of colonial bird nesting, endangered and threatened species management, migratory bird management and applicable federal laws. The Army Corps of Engineers (ACOE) is instrumental in advising and permitting wetland restoration projects. The National Oceanic and Atmospheric Administration (NOAA) administer several programs that offer grant funding for coastal restoration projects. The Environmental Protection Agency (EPA) offers assistance indirectly through the CHNEP in the form of grant funding. The preserve resources are a major component of the CHNEP and preserve staff is active in developing and implementing the management and work plans for the CHNEP region through participation on the technical advisory committees. The CHNEP has also supported conservation land acquisition and has funded several restoration, monitoring and education projects within the preserve and adjacent aquatic preserves.

The Department of Agriculture and Consumer Services, DOF assists Division staff in

the development of wildfire emergency plans and provides the authorization required for prescribed burning. The FFWCC assists staff in the enforcement of state laws pertaining to wildlife, fish and other aquatic life existing within park boundaries. Monitoring of listed species is also coordinated with FFWCC. The Department of State, DHR assists staff to assure protection of archaeological and historical sites. The preserve cooperates and is co-located with staff of the Charlotte Harbor Aquatic Preserves (CHAP). CHAP is involved in a number of activities that protect and compliment the resource management and education objectives of the preserve, including water quality, resource monitoring, land use planning and permitting input, education programming, and coordination with the preserve citizen support organization. The DEP Division of Water Resources Management in conjunction with the Division of State Lands and the Environment Resource Permitting Program provide guidance and permitting for restoration projects, conservation easements, and other types of mitigation that benefit preserve resources. The DEP Bureau of Invasive Plant Management assists with funding for exotic, invasive plant control. The preserve also coordinates with the DEP Office of Greenways and Trails in the statewide expansion of public access trails and continuity in greenway areas throughout the state.

The Division coordinates management activity with the SWFWMD on lands the District shares 50/50 title interest with the Trustees. SWFWMD also provides grant funding through the Surface Water Improvement Program (SWIM) for water quality improvement projects and habitat restoration that addresses water quality and quantity concerns. South Florida Water Management District (SFWMD) has also been instrumental in funding wetlands enhancement programs in the south Cape Coral unit.

At the local level, the park interacts, and where mutually beneficial, cooperates with county (Lee and Charlotte, primarily) and city (Punta Gorda and Cape Coral) governments. The preserve manager is a member of the governing board of CHEC, Inc. The CHEC provides trail access to the preserve and preserve staff coordinates education and outreach functions for the local community and schools through the Center. Management coordination is also vital with the county Mosquito Control Districts to protect public health and environmental resources. Permits and agreements with several institutions advance the knowledge regarding the species and management needs of resources in the park, such as, Audubon, Archbold Biological Station, Selby Gardens, and the Lake Wales Ridge Work Group.

The Florida Natural Areas Inventory (FNAI) and the state university system, as well as out of state institutions and private conservation organizations, are important cooperators in the areas of research.

### **Public Participation**

The Division provided opportunities for public input by conducting a public workshop and an advisory group meeting. A public workshop was held on February 1, 2007. The

purpose of this meeting was to present this draft management plan to the public. An Advisory Group meeting was held on February 2, 2007. The purpose of this meeting was to provide the Advisory Group members the opportunity to discuss the draft management plan.

### **Other Designations**

Charlotte Harbor Preserve State Park is not within an Area of Critical State Concern as defined in section 380.05, F.S. It is not currently under study for such designation. The park is a component of the Florida Greenways and Trails and the CHNEP.

The cultural resources within the preserve have been recognized as some of the most important in the region and both Josslyn Island and Big Mound Key/Bogges Ridge are federally designated on the National Historic registry.

The Charlotte Harbor Preserve State Park is within a FFWCC Strategic Habitat Conservation Area (SHCA). The SHCAs are essential to enhancing the long-term security of many plants, animals and natural communities that constitute essential components of Florida's natural diversity. The preserve is designated as a Class III area, which contains seven or greater focal species that would likely find appropriate habitat conditions in the area.

Surface waters contained within the boundary of this unit as of April, 1988 are designated as Outstanding Florida Waters (OFW) pursuant to Chapter 62-302 Florida Administrative Code. Surface waters contained within the boundaries of the adjacent aquatic preserves are also OFW. Outstanding Florida Waters are defined as waters designated by the Environmental Regulations Commission as worthy of special protection because of their natural attributes. Surface waters in and adjacent to the park are classified as a mix of Class II (Shellfish Propagation or Harvesting) and Class III (Recreation, Propagation and Maintenance of a Healthy, Well-Balanced Population of Fish and Wildlife) waters pursuant to Chapter 62-302 Florida Administrative Code. Water classifications correspond to the state designated use of a waterbody and have specific water quality criteria to maintain the minimum conditions necessary to maintain the designated use. Waters in and adjacent to the park are also designated as a priority Surface Water Improvement and Management (SWIM) water body by both the South and Southwest Florida Water Management Districts.

The park is also within or adjacent to Gasparilla Sound/ Charlotte Harbor, Cape Haze, Pine Island Sound, and Matlacha Pass Aquatic Preserves as designated under the Florida Aquatic Preserve Act of 1975 (section 258.35, Florida Statutes).

## **RESOURCE MANAGEMENT COMPONENT**

### **INTRODUCTION**

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

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

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

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

### **RESOURCE DESCRIPTION AND ASSESSMENT**

#### **Natural Resources**

##### **Description of Management Areas**

To facilitate inventory and resource management activities, the 42,598-acre Charlotte Harbor Preserve State Park has been divided into five physiographic management areas. The boundaries of each management area are identified on its corresponding Reference Map. Although the management areas share many similar resources, they each have unique features and management needs that are discussed in this chapter. All of the management areas contain cultural resource sites. All privately owned lands, other state or county properties, and those owned and managed by the USFWS within National Wildlife Refuges are excluded from these boundaries.

The Cape Haze Management Area (CHMA) is approximately 20,343 acres encompassing the entire southern and eastern shoreline of the Cape Haze peninsula from Placida and Coral Creek on the west to the Myakka River on the east. This MA also includes the new land additions in the Rotonda area. The area is composed of mangrove islands, salt flats, marsh, oak scrub, midden/mound and pine flatwoods. This management area serves as a buffer to the Gasparilla Sound/Charlotte Harbor and Cape Haze Aquatic Preserves. Catfish, Whidden and Sisters Ponds Creek connect to the aquatic preserves in the southern portion of the Cape Haze peninsula. Big Muddy and Trout Creeks connect to the preserves and Myakka River south of Cattle Dock Point in the area locally referred to as the West Wall or McCall Sand Flats on the east. It includes mangroves, salt flats, salt marsh, wet and mesic flatwoods, scrub and mound communities.

Public access to the management area is provided at a picnic and parking area on State Road 771, approximately three miles northeast of Placida and at designated pedestrian gates on Sargassum Road, Rotunda Boulevard South and York Road.

The Port Charlotte Management Area (PCMA) includes 5,855 acres along the shoreline of the Gasparilla Sound/Charlotte Harbor Aquatic Preserve from near El Jobean on the Myakka River to the vicinity of Alligator Bay south of Port Charlotte. Tippecanoe, Sam Knight and Flopbuck Creeks empty into Tippecanoe Bay at the north side of the harbor. Numerous unnamed tidal inlets and bays adjoin the Myakka Cutoff, north of Hog Island and to the east flowing into the Peace River. This area also includes all of Hog Island and the mangrove wetlands on Grassy Point, which is just east of Alligator Bay but separated from the contiguous ownership by several privately owned and developed parcels. Several major canal systems bisect wetlands in the preserve and empty in to the harbor via Alligator Bay. There are also a number of small out parcels in this management area in El Jobean, Port Charlotte and along the shoreline of Tippecanoe Bay. A large proportion of the management area and part of the Cape Haze Management Area were purchased jointly with SWFWMD. This unit includes mangroves, salt flats, salt marsh, mesic flatwoods, scrubby flatwoods and scrub.

Public pedestrian access is provided at the end of Watchow Road in El Jobean. Access is also provided at the end of Tea Street in Port Charlotte via Charlotte County's Tippecanoe Environmental Park.

The Punta Gorda Management Area (PGMA) is approximately 5,572 acres and borders the Gasparilla Sound/Charlotte Harbor Aquatic Preserve from the west side of the City of Punta Gorda and south to the Charlotte/Lee County line. Also included in this management area are several mangrove islands on the Peace River near the I-75 bridges and along the East Wall. There are also several freshwater and tidal creeks in this unit, including Alligator Creek, Winegourd and Big Mound Creeks, Whidden, Bear and Hog Branches, which empty into the harbor on the East Wall. Continuity of ownership in

this management area is fragmented by private development in the Pirate Harbor area and a parcel proposed for the Tern Bay development to the north for a mile and a half. Ponce De Leon Park, which is owned by the City of Punta Gorda, is also excluded from the boundary. Numerous small islands are privately owned. This management area contains extensive areas of mangroves, pine flatwoods, salt marsh, salt flats, hydric hammock and mound communities.

The preserve management offices and maintenance facilities are located in this management area. There is also a public trail system at this location. A 15-acre parcel south of Alligator Creek and adjoining Burnt Store Road is leased to CHEC, Inc., a consortium of local and private agencies in partnership with DEP. The land is leased for the establishment and operation of a teaching and environmental education facility and houses a visitor center and hiking trails. The Center is the primary public access point to the PGMA.

The Cape Coral Management Area (CCMA) encompasses 7,951 acres along the shoreline of the East Wall of the Harbor from near the Charlotte/Lee County line south to and then a short distance up the north bank of the Caloosahatchee River in south Cape Coral. Yucca Pen, Allen, Annie's, Big Dead Creeks and Gator Slough bisect the northern part of this management area. Pontoon Bay, Underhill and Oyster Creeks connect to Matlacha Pass. Punta Blanca Bay and Punta Blanca and Jewfish Creeks connect to the Caloosahatchee River. The CCMA is composed primarily of mangrove wetlands and marsh with occasional small stands of slash pines, westward of the spreader waterway and the Cape Coral development area. This management area adjoins both the Gasparilla Sound/Charlotte Harbor Aquatic Preserve on the north and Matlacha Pass Aquatic Preserve to the south.

Public access is provided at several gates in the northwest Cape Coral area.

The Pine Island Management Area (PIMA) includes Little Pine Island as well as portions of the western and southern shoreline of Pine Island, and several adjacent smaller islands (Lanier, Deer, Bear, Bird Rookery, Little Dead Silver and Ben Coleman Keys) in the waters of the Matlacha Pass Aquatic Preserve. Of the larger islands, one-half of McCardle Island in Matlacha Pass, and all of Regla, Mason, and Josslyn Island and Wood Key in Pine Island Sound, are within the preserve boundary. Collectively, the PIMA includes approximately 6,474 upland acres that buffer 66,687 acres of submerged lands in the aquatic preserves. The natural resources include fringing mangroves, mangrove islands, salt marsh, pine flatwoods and tropical hardwood hammock/mound communities. The PIMA is also rich in cultural resources sites and colonial water bird rookeries. Public hiking trails are accessible from Pine Island Road (State Road 78) on Little Pine Island.

The management area system outlined above is used for purposes of clarification and

for the practical day-to-day planning of cultural and natural resource management activities. All the above management areas share similar physical, cultural and natural resource characteristics and the estuary unites their widespread geographic locations. The following resource descriptions and resource management portions of this plan will generally apply to all of the management areas unless otherwise noted.

### **Topography**

The preserve exhibits little natural topographic relief. Most of the preserve's lands are periodically submerged or inundated, and most of the acreage lies within the landward extent of jurisdictional waters of the State as defined by the Florida Statutes. The few non-estuarine areas possessing natural topography are typically less than 5 feet above mean sea level. Low elevation areas are typically barren salt flats or vegetated with mangroves, marsh or wet (hydric) pine flatwoods. Topographic alteration by humans has occurred to some extent in all management areas of the preserve. The pre-Columbian peoples and their predecessors built extensive mounds. Some of the canals and ponds associated with these archaeological sites may have been built or altered by these earlier pioneers. Pre-Columbian Indian middens (or kitchen middens) and mounds may reach heights of 15-20 feet above sea level and are usually vegetated with tropical hardwood hammock or coastal hammock species. Other, more recent, anthropogenic alterations to the topography of the preserve are numerous, including fire plow scars, mosquito ditches, dams, canals, drainage ditches, spoil piles, and barrow pits. All management activities in the preserve are undertaken with due regard and consideration for protection of the cultural resources, and with the intent, where practical, to restore more recently altered natural areas to their historic community type.

### **Geology**

Charlotte Harbor Preserve State Park is in Florida's Coastal Lowlands within the Southern (geomorphic) Zone of the state. More specifically, it is in the Gulf Coastal Lowlands and Caloosahatchee Valley provinces adjacent to Immokalee Rise, Southwestern Slope, DeSoto Plain and Caloosahatchee incline. The Gulf Coastal Lowlands province is characterized by Puri and Vernon (1964). The major drainage systems in the area are the Myakka, Peace, and Caloosahatchee Rivers, which flow south and west through Charlotte Harbor and San Carlos Bay, and empty into the Gulf of Mexico through the Boca Grande, Captiva, Redfish and Punta Rassa Passes. The coastal barrier islands (Gasparilla, Cayo Costa, North Captiva, Captiva and Sanibel) lie between the Charlotte Harbor and the Gulf of Mexico.

The estuarine wetlands of Charlotte Harbor began to form approximately 5,000 years ago when a rise in sea level flooded the mouths of the Myakka and Peace rivers. The flooding caused sediment to be deposited in a series of deltaic formations, which began the in filling of the present estuary. These recently deposited sediments form the substrate of the estuary's wetlands.

The Anastasia Formation is the predominant component lying below unconsolidated surface material. This formation appears as a light cream to light gray sandy limestone and tan, shelly, sandy marl. Sporadic outcrops are visible on salt barrens and in estuarine creek bottoms at several locations. The Anastasia was formed, as an offshore deposit when southwest and southern Florida were shallow marine environments during periods of higher sea level. The formation varies from very thin to 10 feet thick and occasionally reaches 15 feet in depth. It overlies the Caloosahatchee Marl and is an important component of the shallow aquifer (McCoy, 1962 from Estevez, 1984).

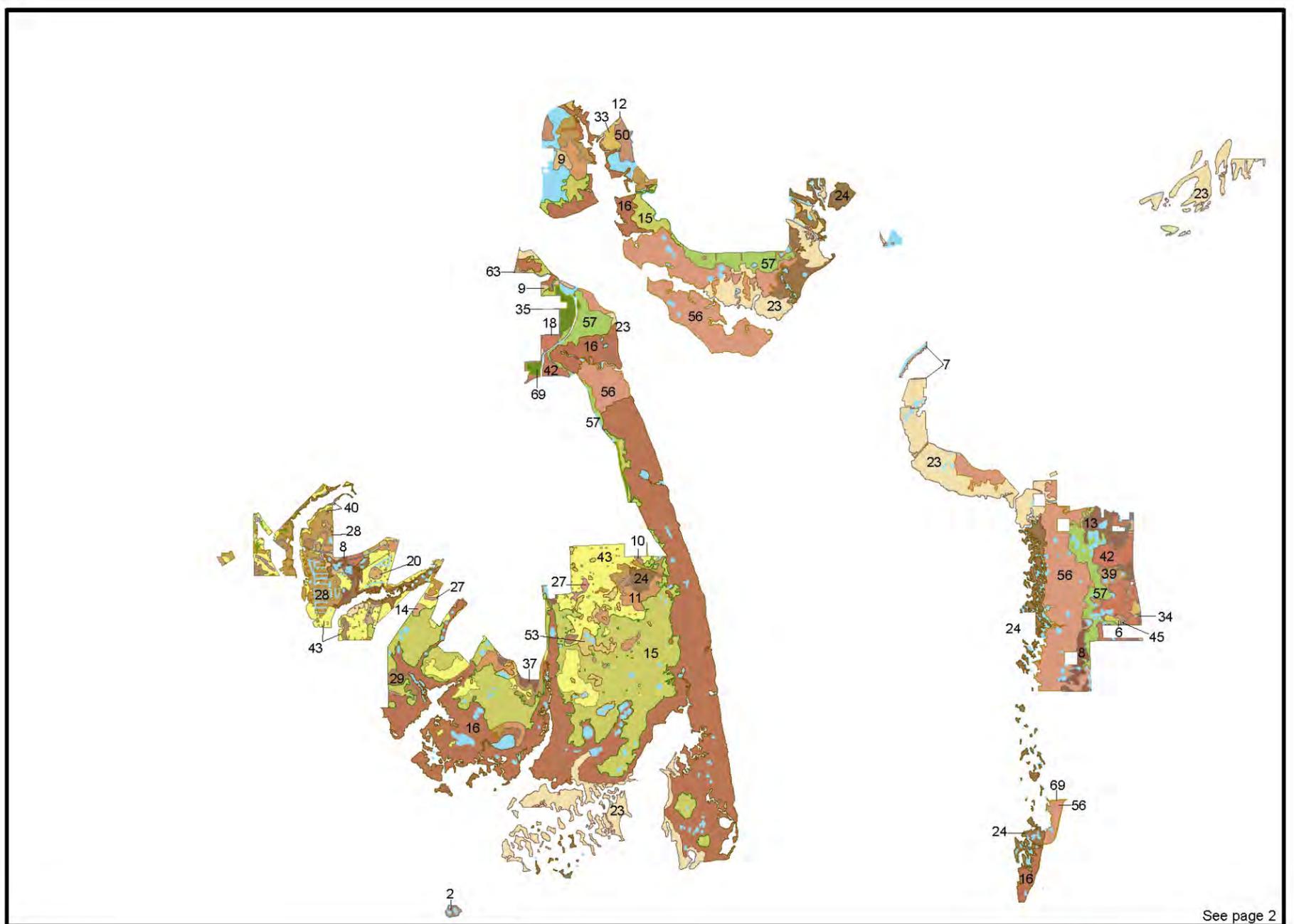
### **Soils**

The majority of the preserve is covered by low, poorly drained soils. The USDA Soil Conservation Service (currently Natural Resource Conservation Service), characterizes soils of the preserve as extensive areas of poorly drained sandy and mucky soils of about 36 different types (see Soils Maps). The soils range from dry Satellite Fine Sands that support scrub oaks and lichen vegetation to wet Wulfert Muck that is dominated by mangroves and rushes. The dominate soils are hydric soils composed of Peckish Mucky Fine Sand, Estero Muck, Wulfert Muck, Isles Muck and Kesson Fine Sand all of which are typical of coastal estuaries. The hydric soils make up approximately 82.4 percent of the preserve, or 35,995 acres. The remaining 17.6 percent are upland soils dominated by Smyrna Fine Sand, Myakka Fine Sand, Oldsmar Sand, Wabasso Sand limestone substratum and Immokalee sand. These soils support mesic pine flatwoods, most of the cabbage palm and oak hammocks, scrub, and scrubby flatwoods communities. Most of the upland soils are distributed throughout the preserve with the exception of Smyrna fine sand. This soil is limited to the Cape Haze Management Area, and appears to be associated with those areas where long leaf pine has been found. Detailed soil descriptions are provided in Addendum 3.

Previous land uses, hydrologic alterations and fill removal/placement have affected portions of all the management areas of the preserve. In areas where large-scale disturbances have taken place, soil horizons may be intermixed and/or totally absent because of earth moving, erosion, or oxidation processes. These disturbed areas frequently have altered salinities or chemical makeup, resulting in very different floral and faunal components than would typically occupy the same areas without disturbances. Any proposed activities in the preserve must consider these consequences and take appropriate management steps to prevent soil disturbance and erosion.

### **Hydrology**

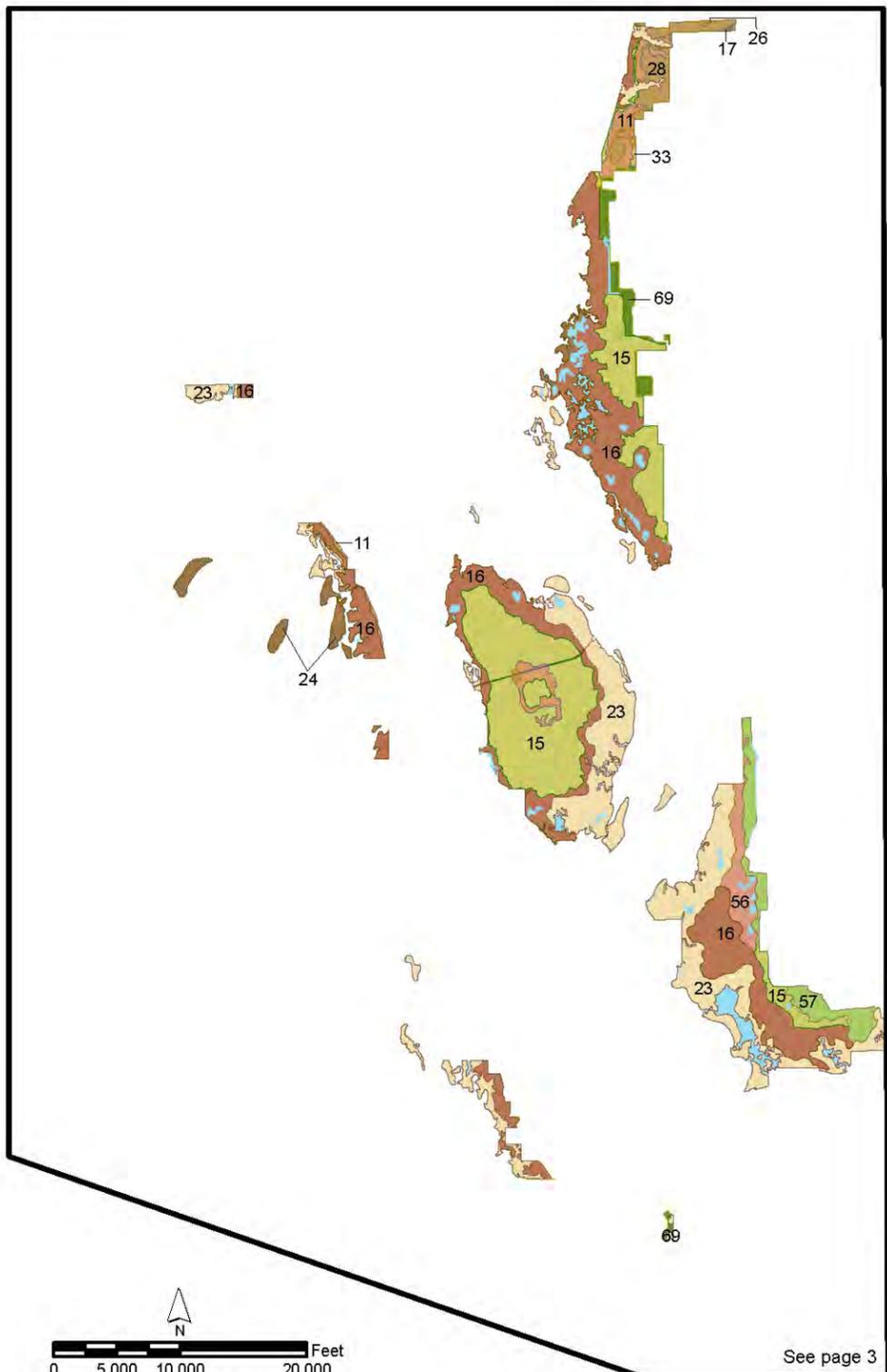
The preserve is predominantly tidal and supratidal in hydrologic regime. The shoreline varies from those dissected by tidal creeks to shorelines protected by unbreached sand and coastal berms, behind which lie basin mangrove and high marsh plant communities that are only periodically or seasonally flushed by extreme high tides or storms.



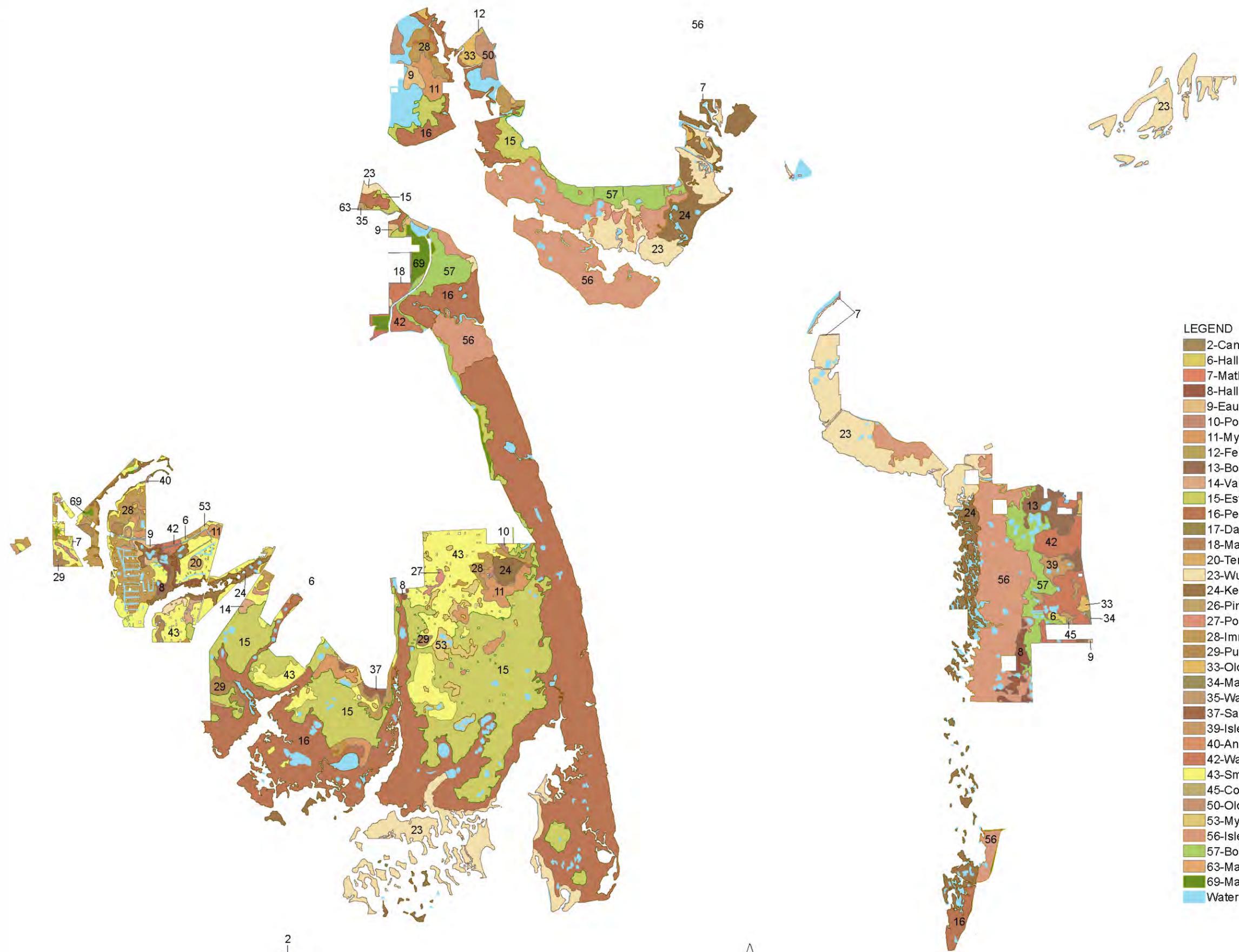
See page 2

LEGEND

- 2-Canaveral fine sand
- 6-Hallandale fine sand
- 7-Matlacha-Urban Land complex
- 8-Hallandale fine sand, tidal
- 9-EauGallie sand
- 10-Pompano fine sand
- 11-Myakka fine sand
- 12-Felda fine sand
- 13-Boca find sand
- 14-Valkaria fine sand
- 15-Estero muck
- 16-Peckish mucky fine sand
- 17-Daytona sand
- 18-Matlacha gravelly fine sand, limestone substratum
- 20-Terra Ceia muck
- 23-Wulfert muck
- 24-Kesson fine sand
- 26-Pineda fine sand
- 27-Pompano fine sand, depressional
- 28-Immokalee sand
- 29-Punta fine sand
- 33-Oldsmar sand
- 34-Malabar fine sand
- 35-Wabasso sand
- 37-Satellite fine sand
- 39-Isles fine sand, depressional
- 40-Anclote sand, depressional
- 42-Wabasso sand, limestone substratum
- 43-Smyrna fine sand
- 45-Copeland sandy loam, depressional
- 50-Oldsmar fine sand, limestone substratum
- 53-Myakka fine sand, depressional
- 56-Isles muck
- 57-Boca fine sand, tidal
- 63-Malabar fine sand, high
- 69-Matlacha gravelly fine sand
- Water



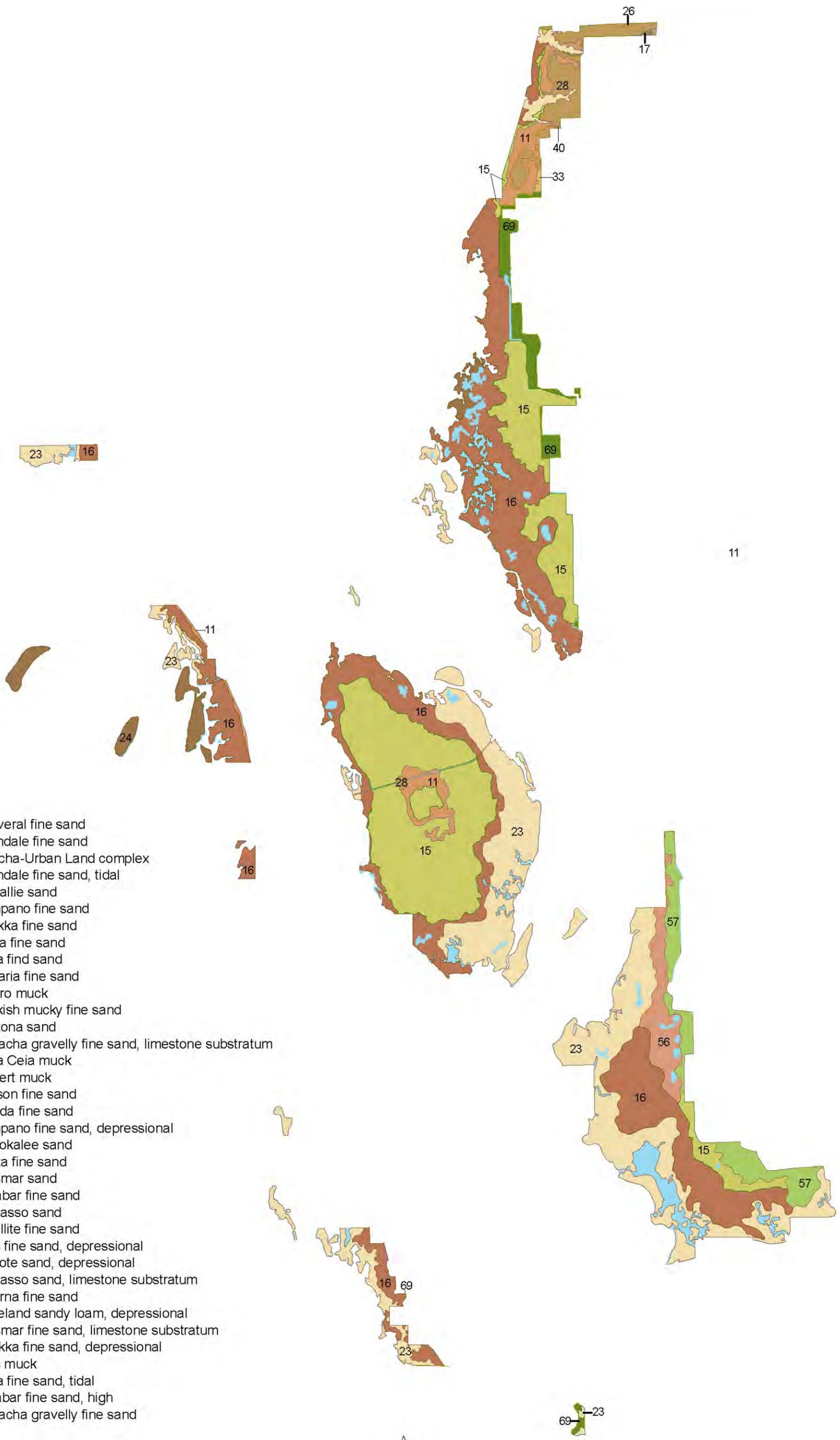
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- LEGEND**
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  - 37-Satellite fine sand
  - 39-Isles fine sand, depressional
  - 40-Anclote sand, depressional
  - 42-Wabasso sand, limestone substratum
  - 43-Smyrna fine sand
  - 45-Copeland sandy loam, depressional
  - 50-Oldsmar fine sand, limestone substratum
  - 53-Myakka fine sand, depressional
  - 56-Isles muck
  - 57-Boca fine sand, tidal
  - 63-Malabar fine sand, high
  - 69-Matlacha gravelly fine sand
  - Water

CHARLOTTE HARBOR  
PRESERVE STATE PARK





LEGEND

- 2-Canaveral fine sand
- 6-Hallandale fine sand
- 7-Matlacha-Urban Land complex
- 8-Hallandale fine sand, tidal
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- 69-Matlacha gravelly fine sand
- Water

The remaining streams and creeks that drain the preserve are primarily estuarine and tidally influenced. As previously discussed, there are three rivers and several larger creeks that drain into Charlotte Harbor through portions of the preserve. The larger rivers and creeks have watersheds that are more extensive and include headwaters that are outside the preserve boundary. These watersheds drain portions of eight counties.

Alteration of natural drainage patterns and clearing for agriculture, navigation, commerce and development has impacted hundreds of thousands of acres in the region, beginning in the 1940s. Capped shallow wells, drainage ditches, mosquito ditching, rock pits, shell mines, sump ponds, road fills, berms, dikes, impoundments, weirs, salinity control structures and other alterations exist on preserve lands. These alterations affect natural communities in a number of ways. Soil salinities, pH and nutrient availability change because of hydrologic alterations. Altered hydroperiods (wet/dry cycles) or dehydrated soils favor transitional “weedy” species (often exotic species), and indigenous plants and animals (including many of the reptiles and amphibians) are displaced with species more tolerant of drier conditions. On sites where substrate has been overturned or disturbed, conditions are created that favor the invasion of many of the more noxious exotic pest plants.

Hydrologic alteration of saltmarsh habitats encourages encroachment by native and exotic trees species. With heavier cover, habitat value declines for wading and ground nesting birds, rodents, and the raptors that feed upon them, as well as other species that depend upon open grassy areas and the diverse fauna that thrive in the moist soils.

Several ‘spreader’ waterways and perimeter canals abut the preserve. These canal systems are navigable waterways dug to retain and settle stormwater runoff from the various subdivisions around Charlotte Harbor and in Cape Coral. They were designed to retain flows and then spread the discharge across saltmarsh and mangrove estuaries for filtration. The theory being that storm water treated in this fashion should be less degrading to water quality and estuarine productivity once it reaches open water. Because these systems were designed as closed systems with the need for boatlifts or locks to maintain them, local communities periodically attempt to have them opened for navigation that is more convenient. The impacts of these direct discharges into the preserve are likely to be detrimental from both an erosion and water quality perspective, and such proposals should be strongly discouraged. Likewise, breaches that facilitate direct discharge to open waters should be assessed and addressed by the various regulatory agencies and the local communities.

Opportunities to restore or reverse the alterations to these systems are complicated by the potential impacts (flooding, erosion, degraded water quality) to off-site properties. Efforts are also hindered by the lack of funding for the necessary engineering and hydrological and biological studies needed prior to undertaking restoration efforts. Projects for both hydrologic restorations and invasive plant management have been

successfully completed on preserve lands in the Little Pine Island Mitigation Bank, the Cattle Dock Point DOT mitigation site, and through the South West Florida Water Management District's Charlotte Harbor Surface Water Improvement (SWIM) program at the Alligator Creek restoration site. Future funding needs may also be realized through mitigation and other agencies programs.

### **Minerals**

There are no known minerals of commercial value in the preserve. However, past shell mining in the CHMA has impacted pine flatwoods and salt marsh communities. Some of the alterations (deep barrow pits and test holes) may not be restorable because of previously mentioned soil and chemistry disturbances.

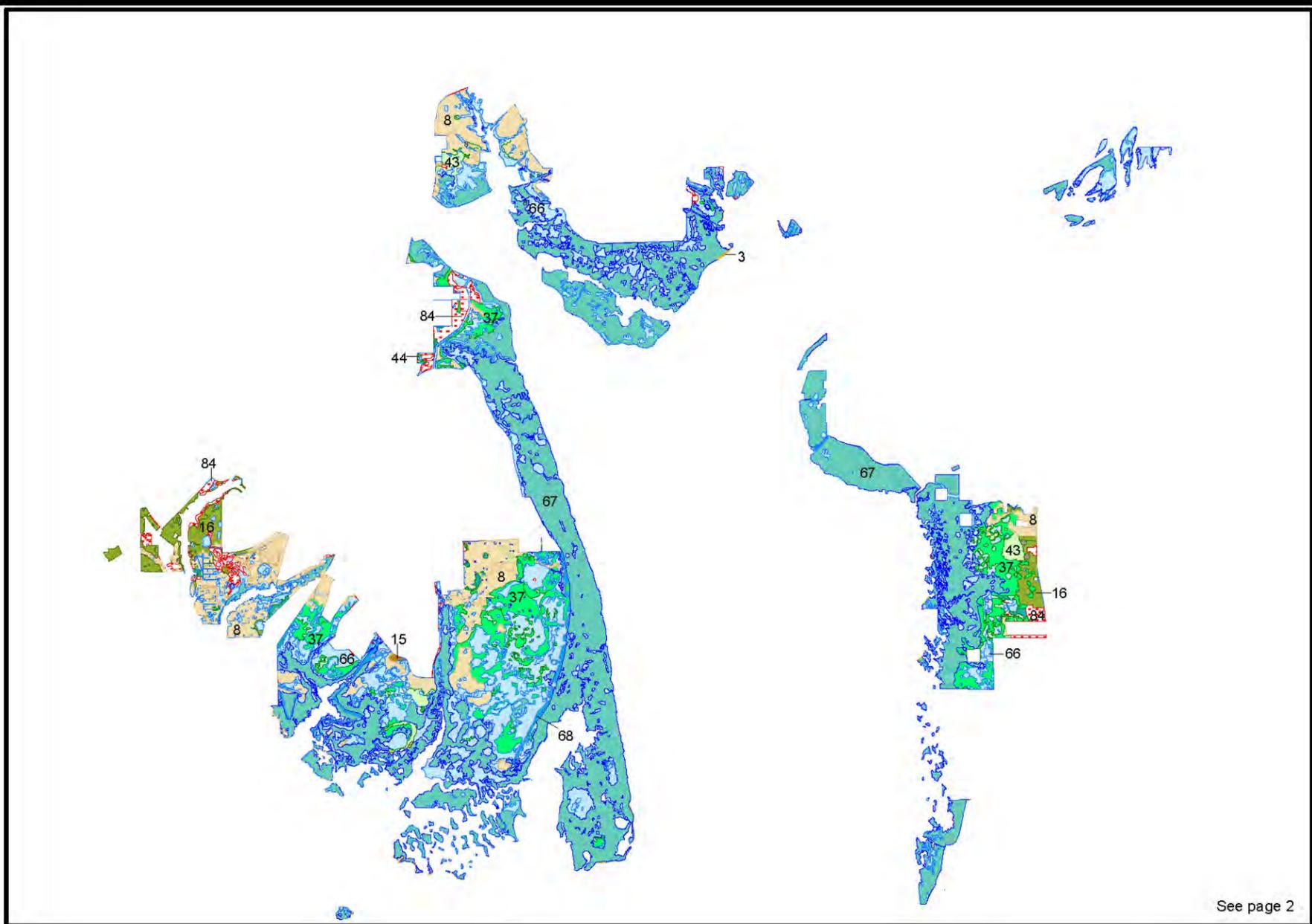
### **Natural Communities**

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

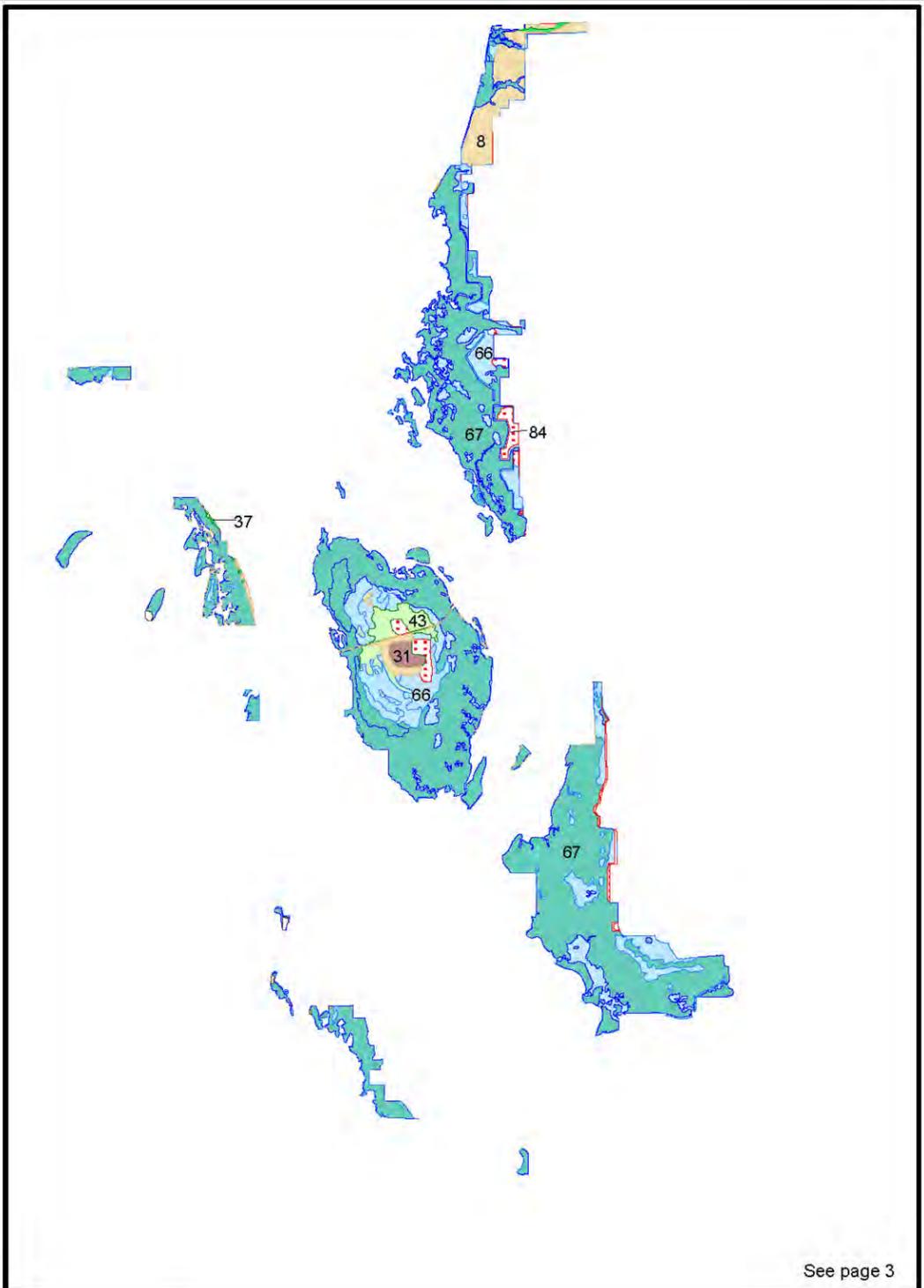
The preserve contains 14 distinct natural communities in addition to ruderal areas (see Natural Communities Maps). Several communities are not identified on the communities' maps but do occur in the preserve in discreet locations (coastal berm, shell mound and estuarine unconsolidated substrate). Not all communities are correctly identified on the maps because of scale and lack of ground truthing, which is an identified need in the goals and objectives of this plan. Preserve specific assessments of the existing natural communities are provided in the narrative below. A list of plants and animals occurring in the unit is contained in Addendum 4.

**Coastal berm (not identified on map).** This community, also known as shell ridge or coastal levee, consists of shell material, sand, and debris deposited landward of and parallel to the mean high water line by storm waves or high tides. In some areas, this ridge occurs at the water's edge but is more commonly encountered just inside the overhanging mangroves. This habitat typically forms the division between tidal and basin mangrove forest types.

Coastal berms are also instrumental in creating and maintaining the overwash plain community that is discussed under the unconsolidated substrate section. Periodically tidal water may be impounded by coastal berms. Evaporation concentrates salts in the



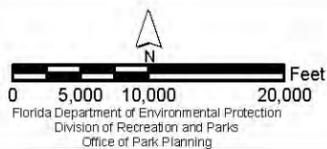
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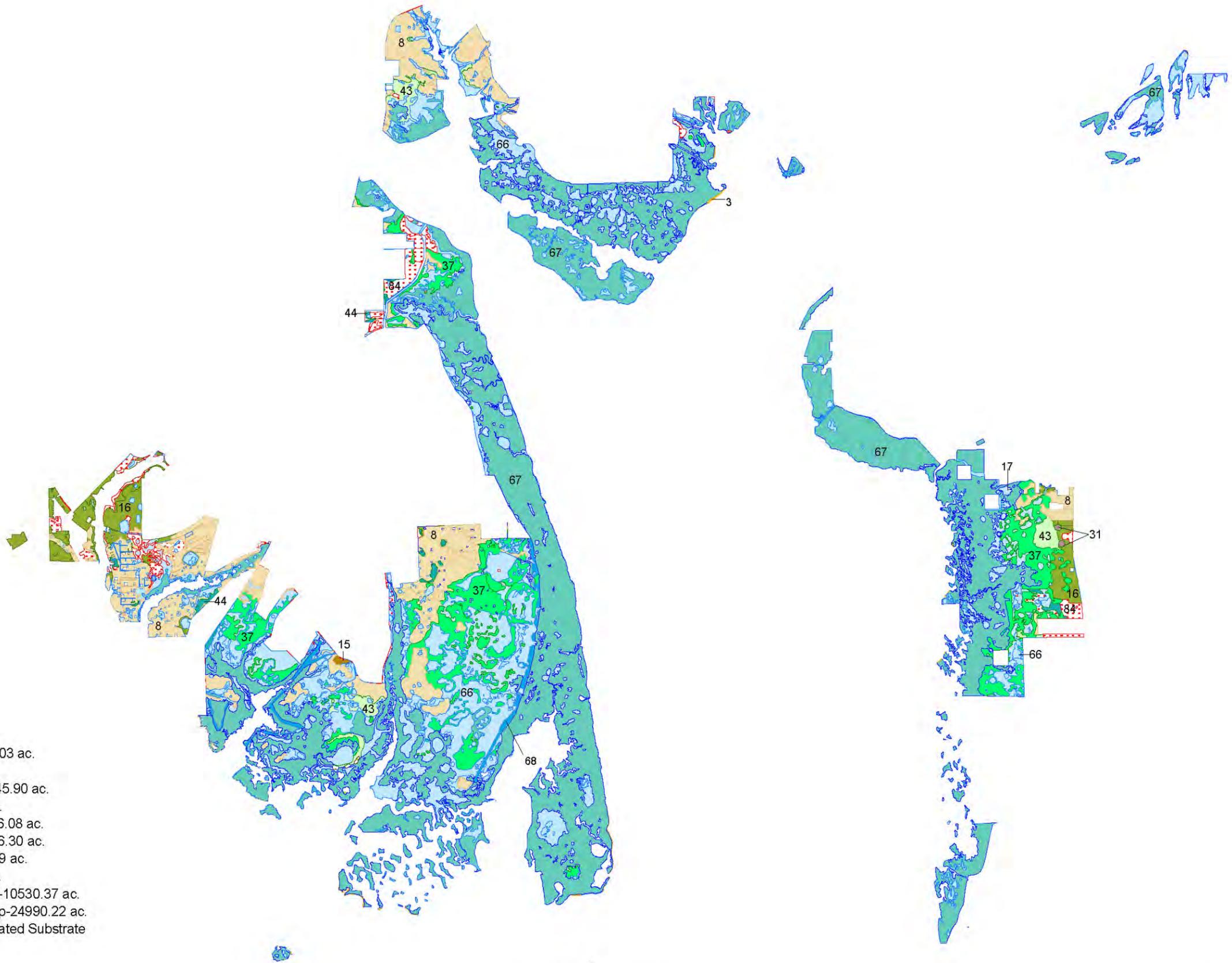


See page 3

LEGEND

- 3 - Coast Berm-34.84 ac.
- 8 - Mesic Flatwoods-4453.03 ac.
- 15 - Scrub-16.57 ac.
- 16 - Scrubby Flatwoods-745.90 ac.
- 17 - Shell Mound-43.53 ac.
- 31 - Depression Marsh-126.08 ac.
- 37 - Hydric Hammock-2696.30 ac.
- 43 - Wet Flatwoods-738.80 ac. ac.
- 44 - Wet Prairie-124.02 ac.
- 66 - Estuarine Tidal Marsh-10456.33 ac.
- 67 - Estuarine Tidal Swamp-24662.26 ac.
- 68 - Estuarine Unconsolidated Substrate-275.10 ac
- 84 - Ruderal-1120.50 ac.



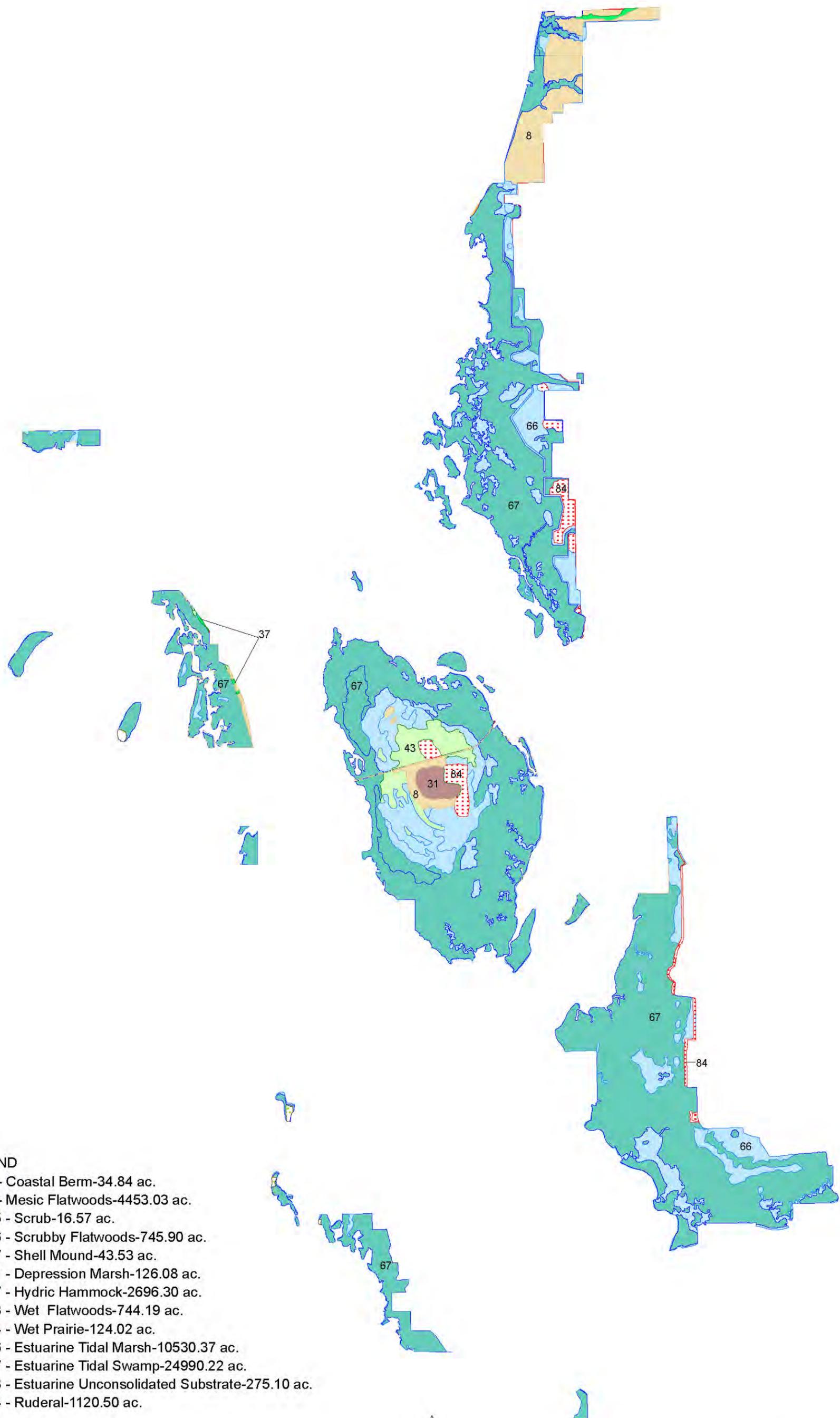


LEGEND

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- 43 - Wet Flatwoods-744.19 ac.
- 44 - Wet Prairie-124.02 ac.
- 66 - Estuarine Tidal Marsh-10530.37 ac.
- 67 - Estuarine Tidal Swamp-24990.22 ac.
- 68 - Estuarine Unconsolidated Substrate
- 84 - Ruderal-1120.50 ac.

CHARLOTTE HARBOR  
PRESERVE STATE PARK





**LEGEND**

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- 84 - Ruderal-1120.50 ac.

impounded water, often killing patches of mature mangrove trees. As the water evaporates and salts accumulate in the soil, a salt barren or flat is created.

Vegetation found on the coastal berm consists of wetland and salt tolerant species, including buttonwood, prickly pear cactus (*Opuntia stricta*), spider lily (*Hymenocallis latifolia*), cat's claw (*Pithecellobium unguis-cati*), sea grape (*Coccoloba uvifera*), and occasionally on higher berms, cabbage (or sabal) palm (*Sabal palmetto*), strangler fig (*Ficus aurea*), gumbo limbo (*Bursera simaruba*), and the exotics Brazilian pepper (*Schinus terebinthifolius*) and seaside mahoe (*Thespesia populnea*).

Wildlife that utilize this habitat include raccoon (*Procyon lotor*), yellow rat snake (*Elaphe minor*), northern cardinal (*Cardinalis cardinalis*), Carolina wren (*Thryothorus ludovicianus*), and the red-bellied woodpecker (*Centropis carolinus*).

The coastal berms are self-perpetuating and do not typically require any specific management other than protecting the native vegetation and removal of invasive plant species.

**Mesic flatwoods.** Generally, mesic flatwoods are characterized by an open canopy forest of widely spaced pine trees with little or no understory but a dense ground cover of herbs and shrubs. Typical plants include south Florida slash pine (*Pinus elliotii* var. *densa*), gallberry (*Ilex glabra*), saw palmetto, tarflower, and wiregrass (*Aristida beyrichiana*).

Wildlife that utilizes this habitat type includes the American bald eagle (*Haliaeetus leucocephalus*), eastern indigo snake, eastern diamondback rattlesnake (*Crotalus adamanteus*), feral hog (*Sus scrofa*), gopher tortoise and raccoon.

Mesic flatwoods require periodic fire and the recommended prescribed fire interval is 1-4 years. In many areas of the preserve, fire has been suppressed for many years. As a result, much of this natural community has become overwhelmed with the native saw palmetto. The resumption of periodic burning through prescribed fire and the control of exotic/invasive plant and animal species are the most important management tools in the mesic flatwoods. Mesic flatwoods are found throughout the preserve.

**Scrub.** The scrub community in the preserve is usually dominated by an open or closed canopy of scrub oak (*Quercus inopina*) and myrtle oak (*Q. myrtifolia*) with an understory of scattered woody species such as tarflower (*Bejaria racemosa*), staggerbush (*Lyonia fruticosa*), and wax myrtle (*Myrica cerifera*). The palmetto (*Serenoa repens*) ground cover is interspersed with grasses and herbs. Small patches of scrub occur adjacent to drainages in the Cape Coral, Punta Gorda, Port Charlotte and Cape Haze management areas. In Cape Haze, Boggess Ridge has the largest expanse of scrub in the preserve and supports a small Florida scrub jay (*Aphelocoma coerulescens coerulescens*) population.

These small bands of related birds have unique social and ecological adaptations and depend upon a mosaic of scrub habitats at different maturity levels to survive.

The scrub community is a fire dependent community with a prescribed fire interval of 3-25 years, depending upon type of understory and desired mosaic. Mature scrub is often an impenetrable thicket of low trees and shrubs. Prescribed fire (ecological burning), conducted under proper circumstances, helps to reduce fuel loads, thins shrub layers, prunes back canopy, opens areas for seed dispersal, and maintains an uneven-aged community that provides a greater variety of the life essentials (foraging and nesting habitat) for adult and juvenile scrub jays than would a single-aged oak scrub. Maintenance of viable scrub jay populations mandate that this community type be managed with particular care.

With appropriate fire management, several other patches of scrub in the Cape Haze area should be able to support scrub jays. The scrubs in the Cape Coral, Punta Gorda and Port Charlotte areas are too small to support scrub jays. Although jays from the adjacent Charlotte County preservation lands visit the Port Charlotte scrub lands.

Most wildlife that utilizes the adjacent communities would also frequent the scrub habitats in the preserve for incidental foraging. The scrub also represents important refuges for small mammal and reptile species during high water periods. Gopher tortoises (*Gopherus polyphemus*) find forage and higher ground more suitable for permanent burrows.

**Scrubby flatwoods.** Scrubby flatwoods are characterized as open canopy forest of widely scattered pine trees with a sparse shrubby understory and numerous areas of barren white sand. Typical plants include a combination of mesic and scrub vegetation including longleaf pine (*Pinus palustris*), slash pine, sand live oak (*Quercus geminata*), shiny blueberry (*Vaccinium myrsinites*), scrub oak, myrtle oak, saw palmetto, stagger bush (*Lyonia fruticosa*), rusty lyonia, tar flower, goldenaster (*Chrysopsis scabrella*), golden rod (*Solidago* spp.), wire grass, frost weed (*Helianthemum corymbosum*) and lichens.

Scrubby flatwoods generally occur intermingled with mesic flatwoods along slightly elevated relic sand bars and dunes. The white sandy soils are extremely permeable and seldom flood even under the wettest conditions. Although the elevated deeper sandy soils of scrubby flatwoods engender a drier environment than the surrounding mesic flatwoods, the scarcity of ground vegetation and intervals of barren sands along with the relatively incombustible scrub oak leaf litter reduces the frequency of naturally occurring fire. Therefore, prescribed burning should mimic a frequency of approximately 3-8 years, which appears to be natural for this community.

The scrubby flatwoods are scattered throughout the preserve with the largest community in the CHMA. Wildlife utilization would be similar to adjacent mesic

flatwoods.

**Shell mound (not identified on map).** Shell mounds represent two types of archaeological sites but share similar suites of species. There are midden-type sites with elevations usually less than one meter in height. They vary widely in total volume, are roughly oval, or narrow and linear in shape. These (kitchen) middens are composed of discarded shells, animal bones, broken potshards, and worn tools. Collectively, these artifacts represent the day-to-day life of the estuaries' earliest Native American residents before European contact.

Mound-type sites are purposefully, perhaps ceremonially, constructed, and incrementally layered archaeological features that cover several acres and are up to ten meters in height. They appear to be composed of shell materials borrowed from middens but architecturally arranged in intricate tiers. They usually display a bifurcated or bilaterally symmetrical architecture.

Both middens and mounds support tropical vegetation related to their material composition and their respective elevations above sea level. The closed canopy, organically richer soils and higher moisture levels on the mounds create a microhabitat supporting tropical plant species more commonly found to the south of the Charlotte Harbor area. Gumbo limbo, mastic (*Mastichodendron foetidissimum*), white stopper (*Eugenia axillaris*), strangler fig, wild lime (*Zanthoxylum fagara*), white indigo berry (*Randia aculeata*), broad-leaved spider lily, and wild coffee (*Psychotria nervosa*) grow profusely on the deeper, organically rich soils that make up the mounds. Midden sites would have similar species depending upon elevations. In some cases, where elevations are lower, midden sites would appear to be similar to the coastal berms communities.

Wildlife that utilize this habitat type include white-eyed vireo (*Vireo griseus*), blue jay (*Cyanocitta cristata*), red-shouldered hawk (*Buteo lineatus*), Carolina wren, northern cardinal, bobcat (*Felis rufus*), gopher tortoise, indigo snake (*Drymarchon corais*), and yellow rat snake.

As noted in later sections on cultural resource management, all cultural resource sites are managed according to input and guidelines established by the Department of State's Division of Historical Resources. Exotic plant control or other resource management or visitor activities are conducted in compliance with those guidelines.

**Depression marsh.** Depression Marsh is characterized as a shallow, usually rounded depression in sand substrate with herbaceous vegetation often in concentric bands. Typical plants include spikerush (*Eleocharis* spp.), willow (*Salix caroliniana*), swamp primrose (*Ludwigia* spp.), buttonbush (*Cephalanthus occidentalis*), alligator flag (*Thalia geniculata*), pickerelweed (*Pontedaria chordata*), arrowheads (*Sagittaria* spp.), and

bladderwort (*Utricularia* spp.). Because of their isolation and small size, many depression marshes support a very different assemblage of species than that found in larger, more permanent wetlands.

Depression marshes are considered extremely important in providing breeding or foraging habitat for such species as the oak toad (*Bufo quercicus*), pinewoods treefrog (*Hyla femoralis*), barking treefrog (*Hyla gratiosa*), squirrel treefrog (*Hyla squirella*), eastern narrowmouth toad (*Gastrophryne carolinensis*), white ibis (*Eudocimus albus*), wood stork (*Mycteria americana*), and sandhill crane (*Grus canadensis*).

Depression marshes occurring as isolated wetlands within larger upland ecosystems are of critical importance to many additional wetland and upland animals. Hydrological conditions vary, with most depression marshes drying in most years. Hydroperiods range widely from as few as 50 days or less to more than 200 days per year. Fire is important to maintaining this community type by restricting invasion of shrubs and trees and the formation of peat. Historically, fire frequency was often greatest around the periphery of the marsh and least toward the center. A severe peat fire can lower the ground surface and create a pond at the center of the marsh.

Depression marshes at the preserve have been negatively impacted by hydrological alterations and exotic plant infestation. Hydrological restoration, conservation/protection of intact depression marshes, and exotic plant control are key management tools used in managing depression marshes.

**Hydric hammock.** Hydric hammock is characterized as a well-developed hardwood and cabbage palm forest with a variable understory. Typical plants include cabbage palm, wax myrtle, saw palmetto, poison ivy (*Toxicodendron radicans*), myrsine (*Rapanea punctata*), and Virginia creeper (*Parthenocissus quinquefolia*). Typical animals include raccoons, feral hogs and gray squirrel (*Sciurus carolinensis*).

Hydric hammock occurs on low, flat, wet sites where limestone may be near the surface. Soils are sands with considerable organic material that, although generally saturated, are inundated only for short periods following heavy rains. Hydric hammock at the preserve occurs mostly in small forests covering lowlands just inland of coastal communities. Because of their generally saturated soils and the scarcity of herbaceous ground cover, hydric hammocks rarely burn.

The normal hydrological regime must be maintained in hydric hammock. If the water table is lowered, hydric hammock will gradually change to mesic conditions. At the preserve, hydrologic alterations from mosquito and drainage ditches have allowed significant infestation by Brazilian pepper. Removal of exotic plants, preservation and restoration of the natural hydrology are key components of hydric hammock management.

**Wet flatwoods.** Wet (hydric) flatwoods are characterized as relatively open-canopy forests of scattered pine trees or cabbage palms with either thick shrubby understory and very sparse ground cover, or a sparse understory and a dense ground cover of hydrophytic herbs and shrubs. Typical plants include south Florida slash pine, spike rush (*Eleocharis* spp.), sedges, wax myrtle, gallberry, saw palmetto, and greenbrier (*Smilax rotundifolia*). Typical animals include oak toad (*Bufo quercicus*), pinewoods tree frog (*Hyla femoralis*), black racer (*Coluber constrictor*), yellow rat snake, eastern diamondback rattlesnake, pygmy rattlesnake (*Sistrurus miliarius*), red-shouldered hawk, bobwhite (*Colinus virginianus*), opossum (*Didelphus virginiana*), cotton rat (*Sigmodon hispidus*), cotton mouse (*Peromyscus gossypinus*), raccoon, striped skunk (*Mephitis mephitis*), bobcat and white-tailed deer (*Odocoileus virginianus*).

Wet flatwoods occur on relatively flat, poorly drained terrain. The soils typically consist of 1 to 3 feet of acidic sands generally overlying an organic hardpan or clay layer. Cabbage palm flatwoods tend to occur on more circumneutral sands (pH 6.0 - 7.5) underlain by marl or shell beds. The hardpan substantially reduces the percolation of water below and above its surface. During the rainy season, water frequently stands on the surface, inundating the flatwoods for one or more months per year. During the drier seasons, ground water is less accessible for many plants whose roots fail to penetrate the hardpan. Thus, many plants are under the stress of water saturation during the wet seasons, and under the stress of dehydration during the dry seasons.

This community is also fire dependent. Natural fires probably occurred every 3-10 years during pre-Columbian times and the recommended prescribed fire interval is 3-8 years. Without relatively frequent fires, wet flatwoods succeed into hardwood-dominated forests whose closed canopy would essentially eliminate the ground cover herbs and shrubs. In fact, much of the variation in community structure is probably associated with fire frequency. Thus, the longer the period since the last fire, the more developed the understory shrubs. If the understory is allowed to mature, an accumulation of pine needles drapes the understory shrubs/trees and increases the probability of a catastrophic canopy fire because of the increased load and height of the fuels.

Wet flatwoods are relatively resilient to canopy damage but recover poorly when the ground cover or hydrology has been disturbed. Exotic plants (melaleuca and Brazilian pepper) have readily invaded wet flatwoods at the preserve. Prescribed fire, hydrologic preservation and restoration, and exotic plant control are the most important activities used to manage wet flatwoods.

**Wet prairie.** This natural community is characterized as a treeless plain with a sparse to dense ground cover of grasses and herbs including wire grass, maidencane (*Panicum hemitomon*), spike rushes, and beak rushes (*Phynchospora* spp.). Other common plants include wax myrtle, St. John's wort (*Hypericum* spp.), sunflower (*Helianthus*

*angustifolius*) and white-top sedge (*Dichromena colorata*).

Wet prairie occurs in low lying, relatively flat coastal areas and often grades into wet flatwoods, mesic flatwoods, depression marsh or dry prairie. These communities are seasonally inundated or saturated 50 to 100 days out of the year, but generally have a shorter hydro period than other herbaceous wetlands making it subject to desiccation during the dry season. Natural fire typically occurs every 2-4 years.

Wet prairies were thought to be common throughout the Coastal Plain at one time. However, few quality intact examples remain, and are becoming increasingly rarer. Prescribed burning and exotic plant species control are the primary management objectives for this community.

**Estuarine tidal marsh.** The tidal marsh is an important primary productivity source in the estuarine system. Marsh grasses produce abundant seed heads and foliage, providing food for insects, crustaceans, fish, birds, rodents and larger mammals. Invertebrate herbivores in marsh systems break down plant material that is redistributed on the tides to more remote areas and used by a wide variety of estuarine and open water organisms.

The filtration and stabilization role of *Spartina* (Cordgrass) and *Juncus* (Needle rush) marshes in tidally inundated flood plains is important to estuarine water quality maintenance. Tidal marshes also create open vistas and abundant cover for other wildlife. Insects of the marsh are also favored food sources for migratory swallows and other birds. Maintenance of highly productive saltmarsh communities as naturally functioning systems is a chief goal in the management of the preserve.

Large areas of this marsh occur in all management areas and it represents the majority of this habitat that remains in Charlotte and Lee counties. Prescribed fire in adjacent flatwoods communities and exotic plant control are effective management tools.

**Estuarine tidal swamp.** Tidal swamps are also referred to as mangrove forests, mangrove swamp or mangrove islands. The mangrove forests in the preserve can be divided into three distinct types. The *fringing forest* is dominated by red mangrove along the water's edge. The *basin forest* lies behind the coastal berms and consists of a mixture of red mangroves and black mangroves. Moving landward toward the overwash plain, mangroves become more widely spaced and less frequent in numbers. Scattered black mangroves with an understory of herbaceous vegetation dominate this intermediate area and may be called mangrove savannah.

Mangroves are adapted to high soil and water salinities and frequent inundation of the roots and pneumatophores (specialized aerial root structures). The extensive root systems stabilize shoreline sediments, filter nutrients from upland sources, provide

points of attachment for sessile and epiphytic organisms and provide shelter for larval fish and invertebrates. Mangroves also provide an important input to the detrital food chain of the estuary when their leaves are reduced to microscopic particles and colonized by small algae, fungi and bacteria. These “enriched” particles are grazed by other organisms in the estuarine food web and eventually are utilized by larval and juvenile fish and crabs that are important to local sport and commercial fisheries. The reader is referred to Estevez, et al., 1984 and Harris, et al., 1983 for a comprehensive list of the fish and marine invertebrates of the Charlotte Harbor region.

Many wading and diving birds nest on protected mangrove islands within the preserve. Brown pelicans (*Pelecanus occidentalis*), white ibis (*Eudocimus albus*), double crested cormorant (*Phalacrocorax auritus*), and great blue heron (*Ardea herodias*), little blue heron (*Egretta caerulea*) and yellow-crowned night heron (*Nycticorax violaceus*) find refuge from land-based predators to raise their young.

**Estuarine unconsolidated substrate (not identified on map).** This community is characterized as expansive, relatively open areas of subtidal, intertidal, and supratidal zones typically lacking dense populations of plant and animal species. The preserve’s unconsolidated substrate is also referred to as salt flat, salt barren, saltern, salina or overwash plain. These salt flats are typified by open areas of barren, white or lightly colored sand surrounded with low salt marsh vegetation. The ground cover, where present, includes succulents such as saltwort (*Salicornia virginica*), glasswort (*Batis maritima*), and the woody shrub Christmas berry (*Lycium carolinianum*). Surrounding the barren areas are estuarine tidal swamps and marshes with grasses such as *Distichlis spicata*, and *Paspalum* spp. Occasionally highly stressed, shrubby trees such as buttonwood (*Conocarpus erectus*), black (*Avicennia germinans*), and white mangroves (*Laguncularia racemosa*) encroach upon or recolonize these areas. The open, flat terrain make these areas ideal ground nesting habitat for Wilson’s plover (*Charadrius wilsonia*), killdeer (*Charadrius vociferus*), common nighthawk (*Chordeiles minor*), eastern meadowlark (*Sturnella neglecta*), and mottled duck (*Anas fulvigula*).

During the dry season, these open flat areas are easily traversed by motor vehicles and areas of salt flats in the CHMA have been heavily impacted by such practices in the past. These rutted areas are often prime invasion sites for Melaleuca (*Melaleuca quinquenervia*) and unfortunately, they do not recover naturally. Little information is available on the restoration of salt flats but fencing and regular patrols have greatly reduced the unauthorized use of motor vehicles in these areas.

**Ruderal.** These areas in the preserve were impacted by past agricultural activities, facility installations, roadway or dredge and fill activities, drainage and mosquito ditching, and barrow pits. All of these activities have had some level of impact with the most significant being alteration of hydrology. Restoration efforts have been underway to restore hydrologic flows in the Punta Gorda Management Area, primarily the

Alligator Creek water shed. Alligator Creek has been designated as a SWIM project by SWFWMD, and a large restoration project is currently underway.

Portions of Cattle Dock Point in the CHMA are highly disturbed, having been cleared and then covered in spoil material. The SWFWMD's SWIM program designed two DOT mitigation projects to restore these areas. The first was completed in 2002 and the second in 2004. There are similar sites in all of the management areas. Most restoration projects involve the removal of the spoil and recreation of tidal streams and associated marshes. Each will be addressed as funding becomes available for restoration.

Additional restoration efforts include the use of prescribed fire and vegetation plantings. In the PGMA, prescribed fire is being used to prepare previous agriculture fields for slash pine plantings and natural re-vegetation. Approximately 30 acres of agriculture fields have been replanted with slash pines.

As some ruderal areas are restored to the former community type, acreage figures will be revised to reflect those changes.

### **Designated Species**

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

The estuarine system that includes the preserve supports a vast array of plants, fish and wildlife. For the most part, these species are common and of little danger of becoming extirpated in this area. Species with stricter habitat requirements, specific sensitivities, and/or of commercial importance are in need of additional protection as Florida's expanding human population appropriates additional resources and habitats.

FNAI lists 15 types of plants and 62 vertebrates as rare or endangered in Charlotte County and 34 types of plants, 65 vertebrates and 1 invertebrate as rare or endangered in Lee County. Within the preserve, FNAI has documented three plants, five mammals, six birds, one reptile and one fish that are listed species. FNAI has documented 35 occurrences of these various organisms within the preserve.

FNAI qualifies their data by stating that the data should not be used as a substitute for site specific or comprehensive surveys, as many areas FNAI covers have not been adequately surveyed. Based on natural community types present in the preserve and the species reported to be in this county by FNAI, preserve staff estimate an additional 99 FNAI-listed species potentially occur within the preserve. Comprehensive surveys for rare and endangered species will be conducted at the preserve over the next five

years. Once these surveys are completed it is expected that the number of federally, state, and FNAI listed species records will increase greatly.

Most notable among the designated plant species known to occur in the preserve is the beautiful pawpaw (*Deeringothamus pulchellus*). It is a state and federally designated endangered species. There are only 28 populations, with 5,000 individual plants, known to exist in the world. Five of the populations exist in the preserve. Beautiful pawpaw requires fire to flower, less than 50 percent pine canopy, and a mix of low shrubs and grasses. Development and fire exclusion and suppression have severely stressed or extirpated the species throughout the former range. Maintenance of suitable habitat for this and other rare species requires periodic prescribed burning of pine flatwoods to reduce hardwood shading and competition.

Designated animal species include the West Indian manatee (*Trichechus manatus*), American alligator, eastern indigo snake, eastern diamondback rattlesnake, gopher tortoise, Florida scrub jay, swallowtailed (*Elanoides forficatus*), snail kite (*Rostrhamus sociabilis*), Florida sandhill crane (*Grus canadensis pratensis*), bald eagle, Florida long-tailed weasel (*Mustela frenata peninsulae*), southern mink (*Mustela frenata mink*), Pine Island rice rat (*Oryzomys palustris*), insular cotton rat (*Sigmodon hispidus insulicola*), and a suite of shore birds, wading birds and occasional transient or migrant species.

Eastern indigo snakes and eastern diamondback rattlesnakes are both becoming increasingly rare in Florida due to destruction of habitat and persecution by humans. These snakes are also closely associated with gopher tortoises, which are also becoming rare due to habitat destruction. The snakes utilize gopher tortoise burrows for refugia and for thermoregulation, especially during periods of cold weather. Eastern indigo snakes and eastern diamondback rattlesnakes are important predators of small mammals, helping to keep their populations in balance.

Gopher tortoises are important keystone species, with numerous commensal species, including the gopher frog (*Rana capito*), utilizing their burrow for refugia. Surveys and mapping of gopher tortoises are conducted after prescribed burns to determine the extent and utilization of the various habitat types. There has been not attempt to summarize or analyze the data to date but there is an identified need for continued monitoring.

Florida scrub jays are state and federally listed as threatened. Scrub jays have very specific habitat requirements as previously described. Scrub habitats throughout Florida have been degraded by development or fire exclusion. The population of scrub jays located in the CHMA contributes to an important component of the meta-population of scrub jays in the Cape Haze area of Charlotte County. Approximately 11 jays in two-three family groups were counted on the Boggess Ridge scrub in 2004. Other jays occasionally sited in the Rotonda (CHMA) and Tippecanoe (PCMA) areas

are nesting on private or county-owned lands adjacent to the preserve. Recent roller chopping and prescribed fire have enhanced several burn units adjacent to these areas and may prove beneficial to those populations. Additional burning has been planned for Boggess Ridge and Tippecanoe scrubs. A scrub/scrub jay management plan has been developed to enable appropriate land and species management practices. This includes comprehensive surveys and habitat mapping, as well as coordination of activities with Charlotte County and USFWS.

Snail kites are state and federally listed as endangered. Snail kites are an uncommon visitor to the preserve. This area is well outside of their normal range. The kite feeds on aquatic snails and requires expanses of open freshwater marshes and cypress strand for sustenance. One sighting at the preserve was during the extreme drought of 2001 when many peninsular wetlands dried up becoming unsuitable for foraging. The most recent sighting was a single bird in the spring of 2005.

The Florida sandhill crane, a state listed threatened species, is a sub-population of sandhill cranes. This sub-population is resident year round in Florida, does not migrate and is protected from hunting. In 2001, a pair nested and successfully raised a chick near the main office of the preserve in Punta Gorda. Low vegetation near seasonal ponds is favored areas for sand hill foraging and nesting.

Bald eagles have over two dozen nests located on the preserve and contribute substantially to the southwest Florida and national populations. Preserve staff take great care to consider the proximity of nests and nesting season for these birds when developing prescribed fire or other resource management plans, and regulating public access during the nesting season.

The Florida long-tailed weasel is very rare in Florida. Habitat destruction and predation by feral cats and dogs are the largest threats to the Florida long-tailed weasel. This diminutive mammal is only known from the Cape Haze area but should inhabit similar pine flatwoods areas in the preserve. The southern mink and insular cotton rat are also very rare in southwest Florida. Habitat destruction and predation by feral cats and dogs are also the largest threats to both. The Pine Island rice rat is ranked as critically imperiled in Florida because the only known population is on Pine Island that is undergoing a surge of development pressure. Habitat destruction and predation by feral cats and dogs are also the largest threats to the Pine Island rice rat.

The extensive areas of remote pinelands and swamps within the preserve -may also be marginally important to the Florida black bear and Florida panther. Although there is not enough suitable habitat to support a resident population of either species, the wooded corridors provide cover and subsistence as the large animals move to and from other larger tracts of habitat. The linear wildlife corridors become increasingly important as urban development continues to consume and encroach upon remaining

bear and panther habitat.

The most significant management tools for designated species are reinstating or maintaining the ecological fire regime, continue hydrologic restoration of wetlands and control of invasive exotic plant and animal species.

### **Special Natural Features**

The preserve does have several natural rivers and creeks. The Caloosahatchee River, the Peace River and the Myakka River are the large rivers that border the preserve. Yucca Pen Creek, Alligator Creek, Catfish Creek, Whidden Branch, East Branch of Coral Creek, and West Branch of Coral Creek as well as several smaller unnamed creeks exist within the preserve.

The preserve occupies more than 70 percent of the unaltered shoreline of Charlotte Harbor and is a scenic vista. The mangrove forests lining the shoreline serve as a scenic buffer hiding much of the adjacent development from sight even in areas where the preserve is relatively narrow. Vegetation growing in ditches, canals and drainages along several roads in the preserve may be trimmed in accordance with state regulations to enhance safety and maintain scenic vistas for passing motorists.

### **Cultural Resources**

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

Florida's coastal areas, especially uplands contiguous with water, often have a rich history of human settlement. The Florida Master Site File (FMSF) lists 86 sites within the preserve (see Addendum 6). Charlotte Harbor Preserve State Park includes the intact remains of a unique and internationally recognized progression of human cultures to survive in an estuarine environment. Artifacts evaluated for the Master Site File attest to more than 20 cultures and 13 site types represented in the preserve. Cultures represented include 20<sup>th</sup> Century American, Late Archaic, Caloosahatchee, Glades, Safety Harbor, St. Johns and Weeden Island. Site types include aboriginal boat burials, prehistoric shell middens, prehistoric midden, prehistoric mound, historic

refuse, artifact and ceramic scatters, and prehistoric shell works. Two of the pre-Columbian sites in the preserve are listed on the National Register of Historic Places. Josslyn Island is a mangrove key located in the waters of Pine Island Sound, west of Pine Island in Lee County and Big Mound Key/Bogges Ridge is a large mound complex on the shore of Gasparilla Sound and the southern tip of Cape Haze in Charlotte County. All archaeological sites in the preserve are managed according to the established management procedures for archaeological and historic sites and properties on state-owned or controlled lands.

Rare site evidence exists for earliest pre-Columbian human occupation of the Charlotte Harbor area from approximately 6,000 to 11,500 years ago when the climate of southwest Florida was cooler and dryer and ocean levels were lower than they are today. Most of such sites have long been submerged beneath the rising waters of the Gulf of Mexico. The majority of currently known cultural sites in the harbor were occupied by various human societies from BP 5,000 to BP 300 (1700 AD). Indications are that the rich estuarine environment provided sustenance to stable human populations over all this time, with shellfish, finfish, turtles, deer, and shore and marsh birds comprising the nutritional mainstay for seasonal and permanent encampments and settlements.

Political, spiritual and technological influence on harbor peoples by shell and earthen mound-building, Weeden Island and Safety Harbor native cultures began around 1600 years ago and continued through the arrival of the Spanish 500 years ago. After contact, however, European patterns of conquest, enslavement, emigration, and the spreading of disease became the primary causes for the disappearance of the original native populations from southwest Florida by 1750 AD.

The historic period of human occupation in Charlotte Harbor from 500 years ago to the present is rich with the tales of Spanish, English, and French mariners, colonists, fishermen and militia from Europe and closer ports of the Caribbean plying the estuaries in their attempts to explore, conquer, and reap the harvests of the "new world." The documentation of their presence resides for the most part between the pages of books. They left behind no monuments of shell and the metal of their tools and weapons tends to biodegrade rapidly in the salt environment. The archaeological record of their presence is very frail, often on the original Indian sites themselves and great care is needed to preserve and protect this period of history. The reader is referred to Luer, 2002 for additional information about the historic record for the Upper Charlotte Harbor region.

While several surveys, assessments and stabilization of sites have been conducted, not all of the archaeological sites in the preserve have been assessed in recent years. Over time, these sites have suffered significant damage from misinformed treasure hunters, avocational archaeologists and natural events. Assessed sites exhibit a wide degree of

conditions from intact to heavily disturbed. In addition to human vandalism and disturbance, natural forces are instrumental in the damage or potential destruction of many of these valuable cultural resources.

Since 1998, the preserve has been systematically searched for cultural resources with new sites recorded and old sites reviewed and updated for the FMSF. Based on information received from DHR, it is likely that additional cultural resources are present on the preserve and will continue to be identified and recorded. This work is being done by preserve staff in cooperation with and with the guidance of staff from the Division of Historical Resources (DHR) and George Luer, a private archaeologist who has studied the archaeological sites in the preserve for over 25 years. All cultural resource activities will be permitted through the DHR.

Preserve staff works closely with the Park Patrol and DHR to manage and protect these sites. During the past eight years, arrests and convictions have been obtained for site looters and several areas have been restored to their original contours. The park has supported and funded several archaeological surveys and restoration efforts.

## **RESOURCE MANAGEMENT PROGRAM**

### **Special Management Considerations**

#### **Timber Management Analysis**

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

During the development of this plan, an analysis was made regarding the feasibility of timber management for this park. An assessment on three stands was recently completed by a qualified DOF forester. Addendum 7 contains the timber management analysis for the preserve.

The long-term management goal for timber management is to reduce heavy rough, thin dense saw palmetto, return fire intervals and restore former agricultural lands to historic cover types. Periodic prescribed fire, mechanical treatment of palmetto, thinning of pines, and planting pines in some areas will accomplish this management goal and contribute to the restoration and management.

### **Additional Considerations**

In cases where sovereign submerged lands lay within the boundaries of the Charlotte Harbor regional Aquatic Preserves, management activities will be coordinated with CAMA. The Florida Park Patrol lends assistance in patrolling and monitoring these areas for encroachments, vandalism of cultural sites and other activities along the shorelines.

The preserve lease was amended in 2001 to include the submerged lands of the old CSX phosphate dock at the south end of Gasparilla Island (see base map page 1). This action was taken to return the once disputed submerged lands to public ownership and protection from any future marina development on the site. The dock was partly demolished to discourage trespass on the structure and continues to collapse as old timbers and pilings rot away. The submerged structure provides habitat for numerous invertebrate and fish species, including the Goliath grouper (*Epinephelus itahara*), a state protected species. Consideration is being given to conveying these submerged lands to Gasparilla Island State Park. Lee County has previously expressed an interest in managing the structure as an artificial reef site, including maintaining appropriate navigation aids.

The hurricane season of 2004 was one of the worst ever recorded for this region. Hurricane Charley, a category four storm, made landfall at Cayo Costa, Punta Gorda, Port Charlotte and points east. Winds gusts in excess of 180mph and sustained winds of 145mph buffeted the areas during its advance. Areas to the south and east of the storm center sustained major wind damage, including toppled trees, damaged structures and major erosion. A few areas were overwashed by storm surge. Charley was followed closely by Frances, Jeanne and Ivan that added additional stress to compromised systems. In the storms' aftermath, native vegetation, wildlife and shoreline changes should be researched and monitored. It is anticipated that the loss of native vegetation may accelerate the advances of invasive, exotic plant species. Although it may be too soon to predict the long-term impact to wildlife species, bald eagles and colonial water birds were impacted due to the loss of suitable nesting trees that were felled and/or stripped of their leaves. Mangroves and pine trees were especially hard hit and many are dying, post storm, because of desiccation, insect attacks and disease. Several mangrove areas are being monitored for the long-term impacts to these and other natural perturbations.

Management of natural communities is often enhanced by physically restoring areas that have been disturbed or otherwise manipulated by people. Such management is often achieved in the course of hydrologic, scenic or other restoration measures, such that two or more management goals can often be achieved simultaneously. Most of the disturbed sites in the preserve are large-scale and will require cooperation from other agencies to achieve restoration. Reintroduction of historic fire regimes to control

hardwoods and invasive exotic species will also achieve multiple goals by sustaining healthier and more diverse communities.

### **Management Needs and Problems**

The preserve encompasses a large coastal land area including numerous islands. Many of the areas are accessible only by wading ashore or hiking over rough and challenging terrain. Heavy thunderstorms and rains during the summer, combined with clouds of mosquitoes, make many areas even more difficult to access. Monthly aerial surveillance would expedite monitoring these areas and increase protection of sensitive areas. Preserve staff continue to cultivate cooperative working relationships with Charlotte and Lee Counties' mosquito control and sheriff's offices to have occasional access to helicopter or fixed wing flyovers of preserve lands. This arrangement, while very helpful, could be improved upon with regular monthly schedules. Management will continue dialogue with these agencies to establish more frequent schedule of flights.

**Natural Resources.** A second issue related to the size of the preserve is a lack of comprehensive mapping and inventory of plant and animal communities. As previously noted, the community types described for the preserve are representative and the acreages are estimates from photographic interpretation. There are many variations and anomalies in the mapping that need to be corrected. This will entail a large commitment of staff time and a high level of geographic information system (GIS) and mapping technology. Many wildlife species that are listed for the preserve have been documented. Others have not been sampled or positively identified. Preserve staff will continue to cooperate with agencies and researchers to inventory and document the plant and animal species within the preserve.

Invasive, exotic plant species continue to be a threat to the natural areas of the preserve. Continued efforts to detect, treat and monitor infested areas may need to be supplemented with additional staff or contractors in the aftermath of the hurricanes of 2004-2005 and the predicted intensification of frequency for hurricanes in the next few years. Staff continues pursuing additional funding for invasive species control through the Bureau of Invasive Plant Management, private and public grant sources and the opportunities for well-planned and monitored mitigation on preserve lands.

Given the size and the uncontrolled boundaries of the preserve, the control of feral hogs and other exotic animal species is highly unlikely without assistance from other agencies and property owners. The Division will coordinate with the FFWCC, private trappers and researchers regarding intensive methods of removal.

Other resource management needs and problems involve monitoring and protecting bald eagles, shore birds and cultural sites. The oversight of shore birds and bald eagles is well in hand.

Hydrologic mapping, analysis, modeling and restoration are identified needs throughout the preserve. As previously noted, several restoration projects have been completed that would not have been possible through the conventional budgetary process. Currently two projects are being funded through the SWFWMD. The Alligator Creek restoration project is underway and approximately 50% completed. The SWFWMD is also funding the Coral Creek restoration feasibility study to analyze a number of alternatives to restoring hydrology, function and stormwater management in the Rotonda area. Remaining needs will also depend upon alternative funding sources, partnerships and innovative approaches to a very complex regional issue.

**Cultural Resources.** Erosion poses a threat to many of the archaeological sites located in the preserve. The terrestrial and submerged sites located along the coast are adversely impacted by receding shorelines, tidal activity, bioturbation and sediment deposition caused by boat wakes and the dynamic processes of land formation. The preserve's shell and earthen mound sites are gradually eroding from the effects of wind and water, uprooted trees, unauthorized digging, animal activity, and vegetation.

Vegetation poses a threat to the preserves' shell and earthen structures in the form of intrusive root growth, tree falls and exotic infestation that can damage subsurface integrity and exacerbate erosion problems. Several of the known mounds now support unique tropical hardwood hammocks that are safeguarded and targeted for exotic removal. In general, however, vegetation grows unchecked on these cultural sites.

Unauthorized human activity poses a threat to the preserve's cultural resources in the form of vandalism, artifact collecting, and digging. In the past, mounds have been vandalized and illegal excavations have been discovered.

### **Management Objectives**

The resources administered by the Division are divided into two principal categories, including natural resources and cultural resources. The Division's primary objective in natural resource management is to maintain and restore, to the extent possible, the conditions that existed before the ecological disruptions caused by humans.

The broad purpose of resource management at the preserve is to restore natural communities that have been altered by humans and maintain the dynamic, undisturbed character of natural communities and processes. Invasive exotic plants and animals will be eliminated or controlled. Prescribed burning will be continued at appropriate sites.

The objectives for managing cultural resources are to protect these resources from human-related and natural threats and to research, evaluate and document these resources before they are lost. This will slow the rate of deterioration and help preserve the cultural resources for future generations to enjoy. The preserve has significant cultural resources that must be protected in perpetuity.

## Management Measures for Natural Resources

### Hydrology

Previous activities such as dredging, filling and the development of mosquito ditches and drainage canals have significantly changed the freshwater inflows into the estuary and altered the hydrology of the area. Alteration of volumes, velocity and quality degrade estuarine resources and many upland areas either are impounded with too much water or excessively drained which encourages exotic species invasions. More recent alterations involve the increased storm water inputs from 'up stream' development and altered conveyance networks. Hydrologic issues such as water quantity and water quality need to be addressed as part of the plan to restore these altered areas. Additionally, proposed restoration activities must be coordinated with the water management districts and local governments to ensure that restorations do not exacerbate up stream flooding. The preserve continues to exchange information and ideas to resolve many of these concerns. Staff has been successful in acquiring funding through various programs to implement restorations of some ponds and flow ways in the Punta Gorda area. The Coral Creek feasibility study is also underway and will, it is hoped, outline alternatives for restoring the wetlands in the Rotonda portion of Cape Haze MA. Hydrologic studies need to be conducted and water budget models developed for the Punta Gorda, Cape Haze, Port Charlotte and northwest Cape Coral Management Areas.

### Prescribed Burning

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

There are approximately 6,000-7,000 acres of pine flatwoods in the preserve with some hydric flatwoods, scrubby flatwoods, and oak hammock intermixed. Most of the pines are South Florida slash pine (*Pinus elliottii* var. *densa*), with some stands consisting of a mix of slash and longleaf pine, (*Pinus palustris*). Tree densities vary from relatively open canopies with greater spacing between trees to denser closed canopies. South Florida slash pine stands with 70 to 100 square feet of Basal Area (BA) per acre are considered to be at optimal natural density based on north Florida slash pine communities (B. Mallet, DOF, personal communication). Forest management activities, including new planting, timber thinning and prescribed burning will be conducted to restore natural community structure and function.

Wildfires once burned frequently across Florida's landscape. Many of the natural

communities previously mentioned in this plan have adapted to and are dependent upon a fire regime to maintain healthy systems and species diversity. These naturally occurring, usually low intensity fires killed or set back understory hardwood species and palmettos, and favored a more open and grassy understory in pine flatwoods. Likewise, fires halted the invasion of hardwoods into marshes. Since the early to mid 1900s, natural wildland fires have been aggressively extinguished. Fire exclusion, altered hydrology and increased construction in pyrogenic communities have radically changed the plant and animal diversity in these communities and dramatically increased fuel loads. Prescribed fire (or control burning) is periodically introduced into these communities to assist staff in establishing a natural fire return interval. The prescribed fires are carefully planned and executed to reduce fuel loads and restore the natural systems' function and species diversity.

### **Designated Species Protection**

The welfare of designated species is an important concern of the Division. In many cases, these species will benefit most from proper management of their natural communities. At times, however, additional management measures are needed because of the poor condition of some communities, or because of unusual circumstances that aggravate the particular problems of a species. To avoid duplication of efforts and conserve staff resources, the Division will consult and coordinate with appropriate federal, state and local agencies for management of designated species. Specifically, data collected by the FFWCC and USFWS as part of their ongoing research and monitoring programs will be reviewed periodically to inform management of decisions that may have an impact on designated species at the preserve. Additional on site monitoring for beautiful paw paw, gopher tortoise and scrub jays will be conducted by park staff as described in previous sections of this chapter. Park staff will also continue to cooperate with CHAP and USFWS in annual surveys of colonial-nesting water birds and shore birds.

Restoration of native plant communities, reestablishing fire regimes and exotic plant and animal control are beneficial for the designated species within the preserve. Species mortality is avoided by careful timing and preparation for prescribed burning and other activities. Preserve staff is also familiar with recovery plans for the appropriate species.

### **Exotic Species Control**

Exotic species are those plants or animals that are not native to Florida, but were introduced because of human-related activities. Exotics have fewer natural enemies and may have a higher survival rate than do native species. They may harbor diseases or parasites that significantly affect non-resistant native species. Consequently, it is the strategy of the Division to remove exotic species from native natural communities.

At least 38 plant and 22 animal invasive, non-native species are known to occur within

the preserve. According to the Florida Exotic Pest Plant Council (EPPC), 28 of these plant species are considered Category I and 10 are considered Category II invasive exotics. Category I invasive plant exotics alter native plant communities by displacing native species, changing community structures or ecological functions, or hybridizing with natives. This definition does not rely on the economic severity or geographic range of the problem, but on the documented ecological damage caused. Category II invasive exotics are those that have increased in abundance or frequency but have not yet altered Florida plant communities to the extent shown by Category I species.

Exotic plants can quickly invade a natural community and displace native plants, alter hydrologic and fire regimes, impact wildlife species, bring additional pressure to endangered and threatened species of plants and animals, and potentially establish a monoculture, with concomitant lowered diversity and self-perpetuation.

Several species at the preserve pose serious threats to ecosystem function and integrity. Brazilian pepper (*Schinus terebinthifolius*) and melaleuca (*Melaleuca quinquenevria*) are the two most widespread and ecologically destructive of these plants. Brazilian pepper tends to invade disturbed sites, hydrologically altered areas, wetlands and eco-tones. Pepper has invaded over 4,000 acres at the preserve. Chemicals produced by Brazilian pepper inhibit the growth of other plant species (i.e., it is allelopathic). Pepper also has very low rates of leaf litter decomposition that keeps stored nutrients bound up for extended periods. It is also spread by wildlife that feed on the abundant fruit. Once it has become large enough, pepper is fire resistant and can alter natural fire regimes.

Melaleuca, also known as punk tree or paper bark, has the ability to invade unaltered, pristine habitats in south Florida. Melaleuca has invaded over 3,000 acres at the preserve, primarily wetter sites. Melaleuca also is allelopathic, has rapid rates of leaf litter accumulation and very high levels of evapotranspiration. It alters hydrologic function with thick root mats that effectively exclude other plants and absorb vast quantities of fresh water. The species is spread by prodigious amounts of wind-dispersed seeds (up to 1,000,000 in a large mature tree). Fire or mechanical injury can trigger a spontaneous release of all the seeds. Although the tree will burn, the thick papery bark protects the central core of the tree allowing it to resprout from the trunk or stump. The oils in the leaves and finer branches are quickly engulfed emitting dense black smoke and triggering the opening of the seed capsules. The explosive release of seeds is capable of repopulating hundreds of acres in a single event.

The preserve has a large, very aggressive exotic plant control program, utilizing biological, chemical, mechanical and physical control methods. Biological controls in combination with integrated pest management are the most promising methods for long-term control of the above species.

Florida does not have an official invasive non-native animal species list, but at least 270

exotic animal species are known to occur in Florida. The most serious of the invasive non-native animal species in the preserve are the feral hog (*Sus scrofa*) and the Nile monitor lizard (*Varanus niloticus*). The nine-banded armadillo (*Dasypus novemcinctus*) and coyote (*Canis latrans*) also appear to be expanding their range in this area and are being monitored.

Feral hog populations are very high at the preserve and their impacts are obvious and severe. In Florida, feral hogs can breed at 7-8 months of age and produce 3-4 litters a year, with anywhere from 3-12 piglets in each litter. These animals are extremely destructive when rooting in the damp soils of natural communities and are a biological threat to rare and endangered plants and animals. They compete for food with deer, turkeys, squirrels and wood ducks. They prey on wildlife such as small mammals, eggs of ground nesting birds and sea turtles, and a variety of herptofauna. They can also create severe ground disturbance in public use areas, in wetlands, and on nature trails. They also present potential for harming staff or visitors and transmit several contagious diseases. The preserve continues a year round monitoring and trapping program to manage feral hogs.

Nile monitors lizards are large (up to 6 feet) semi-aquatic lizards. They are aggressive opportunistic predators, preying on shellfish, fish, amphibians, reptiles, birds, bird eggs and mammals. Nile monitors are excellent swimmers and climbers and lay up to 60 eggs per year. They have been found in the south CCMA and if their populations continue to expand unchecked, it may have serious implications for native wildlife, especially wading bird rookeries. The University of Tampa is conducting an intensive research project at the preserve to eradicate the monitors and determine their impact on habitats and native species. The preserve will continue to support that research and the efforts of others to eradicate this species.

Exotic fish also occur in the preserve. Some, such as the tilapia (*Oreochromis* spp.) were intentionally introduced by previous landowners and fishermen to populate ponds and barrow pits for sport fishing. Others have invaded freshwater creeks, streams, rivers and ponds most probably from pet trade releases. The preserve will continue to consult with researchers and wildlife agencies regarding the feasibility of controlling or eradicating these species, as well as invasive amphibians and birds.

### **Problem Species**

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

Raccoons have acclimated to urbanization and in response to additional and convenient

sources of food, such as garbage cans, dumpsters and pet foods, have become a serious nuisance and health treat in some natural areas. They are also opportunistic, feeding on colonial waterbird, shorebird and marine turtle eggs. The ubiquitous raccoon can exact localized impacts to these endangered and threatened species. Occasional efforts may be required to control problem populations.

Invasive non-native plant species are not the only species that can cause problems within an ecosystem. Sometimes man's activities in an area can result in native species becoming a disruptive influence, or a native species may have what appears to be an unnatural effect on a system. The native species that occasionally present problems are cattails (*Typha latifolia*) and Carolina willow (*Salix caroliniana*).

Cattails and willow can become a problem when other environmental elements are disturbed. Increased nutrients from stormwater runoff or fertilizers create ideal conditions for mass invasions of cattails in freshwater ponds and streams. Willows can obstruct water conveyances and cause flooding along roadways. Fish and wading bird habitats are displaced as open water and shallow benthic zones are replaced by dense stands of cattails and willows. Mechanical or herbicide treatments are occasionally warranted to control excessive invasions of these plants.

#### **Management Measures for Cultural Resources**

The management of cultural resources is often complicated because these resources are irreplaceable and extremely vulnerable to disturbances. The advice of historical and archaeological experts is required in this effort. Managers of state lands must coordinate any land clearing or ground disturbing activities with the Division to allow for review and comment on the proposed project. Recommendations may include, but are not limited to approval of the project as submitted, pre-testing of the project site by a certified archaeological monitor, cultural resource assessment survey by a qualified professional archaeologist, modifications to the proposed project to avoid or mitigate potential adverse effects.

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

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

The extensive array of sites all need active management, but the practical approach is to develop annual and five-year priority schedules for conducting the most urgent management activities within the limited staff and funding capability and availability of funds. In coordination with DHR and BNCR, the preserve should develop a comprehensive cultural resources management plan for the preserve that addresses the long-term stewardship of the archaeological and historic sites within the preserve.

The preferred preservation approach to be taken on the CHPSP mounds and middens is to stabilize or restore them. These calls for taking actions that slow the rate of deterioration to an acceptable level or re-establishing the scientifically determined former appearance of the feature. Before stabilization or restoration treatments can be applied, basic documentation of the condition of the shell and earthen features must be undertaken. This process includes mapping sites by developing site plans, surveying and mapping topographic contours and development of dimensional drawings showing stratigraphy of wall features where they have been exposed. The mapping process also involves a certain degree of archaeological investigation necessary to recover important material cultural in situ. Recovery of information during the clean up of features in order to map them is a crucial, low-invasive technique that allows discovery and recording of information that, in part, mitigates the loss of integrity caused by the unfortunate disturbances that in most cases occurred many years ago.

Once mapping of sites is attained, various forms of stabilization or restoration can be employed based on the individual site or feature need and the management or interpretive concepts for the site. In some cases, vegetation removal or trimming only is warranted. Taking measures to reduce erosion but leaving the open holes may be the only feasible approach, particularly if there is an interpretive value for retaining the appearance of the disturbed areas. In cases where restoration is recommended, extensive backfilling of holes or trenches may be required. In any case, sites that are proposed for public access and interpretation must be rendered safe prior to becoming open for visitation by the public.

Public access and interpretation of sites must be considered on a site-by-site basis as the need for protection and management will have precedence over recreational opportunity consistent with the unit's "preserve" classification. Careful consideration must be given to whether it is effective to post sensitive sites with "no access" or "restricted areas" in preserve cultural resource protected zones, because, by posting such sites, access may be inadvertently encouraged by curiosity seekers or by individuals who are seeking to engage in destructive activities. The needs and techniques for protection strategies must be based on a number of factors related to past uses, site sensitivity, obscurity of sites or their ease of access by the public and staff, and the perceived threats posed by natural or human forces. Decisions for access are determined by preserve management but should incorporate review by District, BNCR and DHR. The techniques for access and posting for certain sites must consider how

the public perceives its opportunity to access other sites within the preserve. A preserve-wide tiered approach to public access that is interpretable and understandable by the public is crucial for the successful implementation of a controlled access program for cultural sites in the preserve.

Using the Division archaeological site inspection form, preserve staff should inspect and record conditions of the most threatened archaeological and historic sites based on a priority schedule developed by the preserve and submit this information to DHR for review. The Florida Master Site File should be updated as needed to reflect changes to sites.

Exotic wildlife (hogs, armadillos) and exotic invasive plants, as well as some native plants, also present potential damaging forces to these resources. Exotic animal and plant removal is carried out with full cognizance of the fragile nature of these resources. Earth-disturbing activities are not conducted on known or suspected sites unless approved by DHR.

Many of the archaeological sites are remote and are only accessible by boat over much of the year. This situation poses logistical problems for monitoring and early detection of unauthorized activities. Frequent aerial monitoring, boat, and foot patrols are the most expedient and effective method of protecting most of these sites. Additional staffing and funding for surveying and monitoring are a high priority.

Stabilization and protection of several sites is underway and funding will be sought for conducting a survey and stabilization of Big Mound Key/Bogges Ridge.

**Big Mound Key and Bogges Ridge.** While all archaeological sites within the preserve should be regularly inspected to determine if threats are apparent, Big Mound Key continues to experience dramatic rates of deterioration that resulted from illegal heavy-equipment excavations during the late 1970s and early 1980s. This site, 8CH0010, is the most dramatic site in that its complex of mounds are architecturally arrayed and artifacts recovered indicate that the site may have been a center of power or authority over the Charlotte Harbor landscape. Yet Big Mound Key remains the most imperiled site because of its severely unstabilized condition. The site is also plagued by extensive exotic plant growth and the ground-disturbing effects of feral hogs that further cause erosion on uprooted slopes.

The magnitude of management needs at Big Mound Key warrant aggressive treatment to stabilize topographic contours of mound features. The property exhibits remarkable architectural design elements in terms of its site plan symmetry, construction methods and the scientific value of intact archaeological deposits that have significant value in understanding the life ways of successive cultural occupation of the property. The property was substantially impacted in the late 1970s and early 1980s, prior to state

ownership. The invasive exotic Brazilian pepper has discouraged access by vandals in recent years, but contributes to the unstable condition of the mounds when storm events uproot vegetation. Feral hogs damage ground surfaces that easily erode with rainfall, and their game trails channel water flow that exacerbates erosion.

A long-term, multi-faceted, preservation program is essential for tackling the challenges of managing Big Mound Key and Boggess Ridge archaeological sites. The preservation program should be guided by the development of a management plan for the site. The development of a phased preservation program can best be achieved through formation and coordination of an interagency taskforce consisting of several key state agencies, universities, and private sector organizations and individuals. Substantial funding sources will need to be pursued and the likelihood of attracting funding interests is very high considering the significance of the archaeological sites and their scientific value. The basic elements of the preservation program at Big Mound Key and Boggess Ridge will involve: 1) selective exotic plant removal and plant surveys for rare plants; 2) maintain the burn program for Boggess Ridge; 3) hog control and removal; 4) documentation and topographic mapping of the mounds and midden features; 5) compilation and summarizing past archaeological research and developing a long-range archaeological research program; 6) determine the extent of stabilization needed for each feature to most effectively preserve the resource; 7) seek funding for cultural resources monitoring staff; and 8) provide controlled access and interpretive programming where consistent with protection and preservation goals.

### **Research Needs**

#### **Natural Resources**

Any research or other activity that involves the collection of plant or animal species on preserve property requires a collecting permit from the Department of Environmental Protection. Additional permits from the FFWCC, the Department of Agriculture and Consumer Services, or the USFWSF may also be required.

Development of a hydrologic model is probably the single most important research need at this time. As previously noted water quality, quantity, velocity and timing are crucial to maintaining healthy upland and estuarine communities. Staff should continue to pursue additional funding and research partners in acquiring this information.

Additional research on the growth, impact and control of exotic plants remains a need. Assistance from other agencies with this subject will continue to be pursued by park staff. Impacts of removal and restoration of lost native plants will also continue to be researched.

Most of the lands in the park have been inventoried to some degree. Various staff over

the last 11 years has collected information about particular areas and species as new lands were acquired. Other agencies, notably the FFWCC, USFWS, Soil Conservation Service (SCS), FNAI, and other marine and terrestrial biologists, archaeologists, and researchers have also amassed considerable information about the natural and cultural resources of the preserve. However, there are still gaps in the information, and existing data coverage may not reflect changes in species diversity. Data that are available usually are not summarized and are therefore cumbersome to use for practical management applications.

To evaluate the resource condition, needs, management techniques, and long-term success or failure of management efforts, detailed inventory procedures must be developed, adapted if needed, and implemented to acquire the baseline and all subsequent information that is needed for assessments of a resource or community. A flexible, but consistent, schedule of monitoring resource management and restoration efforts must also be implemented. Monitoring may be implemented with formal documentation, as required for certain activities such as prescription burning, or be less formal in the case of day-to-day field observations for exotic animal damage or visitor activities which may occur.

Diversity of species is recognized as an indicator of the ecological balance and resilience of the particular community or ecosystem to which the species belong. Declines in diversity of species are generally viewed with concern, as they are usually indicative of serious imbalance within the biotic (plant and animal) or abiotic (e.g., water, weather, soil) environment of that particular community, region, or ecosystem. Achieving or maintaining optimum diversity is generally an illusive goal but one which must be pursued with the assumption that to do less may induce species extinction or environmental collapse of a system. Establishment of an efficient inventory system and monitoring schedule is essential to that effort.

Staff works closely with scientists and researchers to identify potential areas for research and have helped compile a restoration catalogue of needed projects. Information gained from these efforts will continue to help refine efforts.

### **Cultural Resources**

A comprehensive natural and cultural resources management plan should be developed to provide specific direction for the coordinated resource management efforts needed to preserve the cultural sites in the preserve. A separate, detailed management plan should be developed for Big Mound Key. Through coordination with BNCR and DHR, a multi-year program to research, map, inventory, document, stabilize, restore and interpret Big Mound Key/Bogges Ridge should be initiated that could be funded jointly from federal, state, local, and public and private foundations to implement the research.

Additional staffing and funding to search the preserve for additional emergent and submerged sites and documenting these sites before they are lost are imperative. The opportunity for additional research in the rich complex of sites in the preserve is obvious but will require appropriately qualified personnel or the outsourcing to private archaeological research firms. Archaeological research within the preserve should be the focus of a long-term research design based on the need to conduct priority preservation work, or to address questions that have been raised by the scientific community in an effort to understand the life ways of Native American cultures. Such research should be aimed at helping fulfill state preserve land management responsibilities and more informed stewardship and administration of these extensive archaeological resources.

### **Resource Management Schedule**

A priority schedule for conducting all management activities that is based on the purposes for which these lands were acquired, and to enhance the resource values, is contained in Addendum 8. Cost estimates for conducting priority management activities are based on the most cost effective methods and recommendations currently available.

### **Land Management Review**

In 1997 land management reviews were established under s. 259.036, Florida Statutes. The purpose of these reviews is to determine whether conservation, preservation and recreation lands titled in the name of the Board of Trustees of the Internal Improvement Trust Fund are being managed for the purposes for which they were acquired, and, managed in accordance with the adopted land management plan. The manager shall consider the findings and recommendations of the land management review team in finalizing the required 10-year update of its management plan. A review was conducted on June 25 and 26, 2000 and the review team made the following determinations:

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



## LAND USE COMPONENT

### INTRODUCTION

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

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

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

### EXTERNAL CONDITIONS

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

#### **Regional Population**

The preserve is located within the Ft. Myers-Cape Coral and Punta Gorda Metropolitan Statistical Areas (MSA) that includes both Lee and Charlotte Counties. Demographic data provided by the 2005 Florida Statistical Abstract reveals a rapidly growing urban area with growth rates that exceed statewide averages. The MSAs had a combined 2004-estimated population of 678,238, which represents an increase of more than 52 percent since 1990. The combined population of Lee and Charlotte County is projected to increase over 23 percent, to nearly 900,000 residents by 2015.

Populations for these counties are generally older and less ethnically diverse than the

statewide average (U.S. Census Bureau, 2000). A large portion of the population is age 65 or older. Median incomes for households are slightly below (Charlotte) and above (Lee) the statewide average.

As of 2000, over 1.5 million people resided within 50 miles of the preserve, which includes Sarasota and Bradenton to the north and Naples to the south (U.S. Census Bureau, 2000). An influx of seasonal residents in the winter months increases coastal populations significantly. Urban population centers in the region include Port Charlotte, Punta Gorda, Cape Coral and Ft. Myers. With the exceptions of these urban centers, resident population density is relatively low in the immediate vicinity of the preserve (SWFRPC, 2002).

### **Existing Use of Adjacent Lands**

The majority of lands adjacent to the preserve are either vacant or developed as low to medium density residential. Pockets of high density residential are found in the urban centers of Punta Gorda and Port Charlotte and the vicinity of Rotonda. Vacant lands include privately owned individual undeveloped parcels, some of which may be forested or in pasture, and large subdivided tracts with infrastructure improvements but no homes constructed. North Cape Coral the vicinity of Rotonda and parts of Port Charlotte include swaths of vacant lands that were platted as part of large-scale development schemes that were never fully implemented. No significant commercial or service uses are located adjacent to the preserve. Minor pockets of commercial uses occur associated with adjacent urban centers or transportation routes. Transportation routes aligned along preserve boundaries include the Highway 771, 776, 78 and 765 (Burnt Store Road) corridors. Industrial uses in the vicinity are limited but include a sand mine adjacent to the CHMA. Pockets of agricultural related uses (tree and row crops) are still found south of Punta Gorda and on Pine Island.

A number of public and private conservation lands are located adjacent to the preserve including, Tippecanoe Environmental, Amberjack Environmental, and Sunrise Parks (Charlotte County), Alligator Creek and Cedar Point (CHEC, Inc.), Fred Babcock-Cecil M. Webb Wildlife Management Area (FFWCC), Charlotte Harbor Buffer, Pine Island Flatwoods and Galt Preserves (Lee County), Matlacha Pass and Island Bay National Wildlife Refuges (U.S. Fish and Wildlife Service), and Calusa Land Trust lands.

### **Planned Use of Adjacent Lands**

Future Land Use designations of lands adjacent to the CHMA, PCMA and PGMA are comprised primarily of Low Density Residential (Charlotte County, 1997 and Punta Gorda, 2004). Land designated Agriculture are also located south of the PGMA. The CCMA includes Single Family and Single Family/Multi-Family Planned Development Project future land uses (City of Cape Coral, 2004). Lands adjacent to

the PIMA include Wetlands and Coastal Rural (Lee County, 2004). Growth pressure in this region indicate that existing developable lands will eventually be converted to residential and/or commercial uses, including areas designated Agriculture. Future uses are likely to mirror existing land use patterns of primarily low to medium density residential uses.

Anticipated changes along the Burnt Store Road corridor have the potential to directly impact preserve lands. While much of this corridor is currently comprised of open land or low-density development, significant changes are anticipated from the Lee County line north to Highway 41. According to likely development scenarios identified in the Burnt Store Area Plan (2005), a public private planning initiative, an additional 7,138 dwelling units and 445,000 square feet of commercial space may be located in this area. Of particular note is the Tern Bay project (formerly Caliente DRI) with 1,800 proposed units and 170,000 square feet of commercial space located on the southern boundary of the PGMA. In addition, proposed transportation improvements include the four-laning of Burnt Store Road. This road project is included in the Charlotte County 2015 Cost-Feasible Plan and the Lee County 2020 Financially-Feasible Plan.

As vacant or under-developed lands are converted to uses that are more intensive, additional resource and visitor management challenges could occur. Development adjacent to the preserve can exacerbate exotic species control, limit opportunities for using prescribed fire and alter existing patterns of hydrology. In addition, as preserve boundaries become more populated incidents of unauthorized access, illegal uses and encroachments onto preserve lands may increase. Increased urban activity adjacent to the preserve has the potential to impact the visitor experience through increased noise, light pollution and a more visible built environment. The Division will monitor land use changes adjacent to the preserve and provide feedback on proposed development plans to local planning officials to ensure the protection of preserve resources.

## **PROPERTY ANALYSIS**

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

### **Recreation Resource Elements**

This section assesses the unit's recreation resource elements those physical qualities that, either singly or in certain combinations, supports the various resource-based recreation activities. Breaking down the property into such elements provides a

means for measuring the property's capability to support individual recreation activities. This process also analyzes the existing spatial factors that either favor or limit the provision of each activity.

### **Land Area**

The size and configuration of preserve lands presents unique challenges to developing a recreational land use plan. The preserve is comprised of many discontinuous parcels situated along the entire Charlotte Harbor coastline. Preserve lands stretch over 17 miles from east to west, from Punta Gorda to Cape Haze and over 30 miles north to south from Port Charlotte to Cape Coral. Another significant constraint is the lack of suitable uplands for recreational development. The vast majority of the preserve is comprised of wetlands, with standing water during all but the driest months of the year.

### **Shoreline and Water Area**

Water is the attractive feature of the preserve. The open waters of Charlotte Harbor are well suited for fishing and boating activity, although portions of the harbor are quite shallow with boating access severely restricted at low tides. Three major rivers (Myakka, Peace and Caloosahatchee) and an abundance of tidal creeks provide additional opportunities for water-based recreation. The shallow waters of the harbor and tidal creeks are well suited for paddling. However, shoreline access is challenging due to the extensive presence of tidal marshes and mangrove forests. A number of borrow pits add interest for fishing and wildlife observation.

Charlotte County has an established blueway trail system to encourage exploration of the harbor shoreline. There may be opportunities in the future to establish rest stops and primitive campsites on preserve lands in coordination with the county. However, operational and resource management concerns of Division staff would have to be addressed before encouraging access to remote areas of the preserve.

### **Natural Scenery**

Open water and expansive tidal marsh communities provide opportunities for scenic vistas.

### **Significant Wildlife Habitat**

Charlotte Harbor is an extremely rich, diverse estuarine system. Fishing is excellent. Wildlife is abundant, including biting insects, and a variety of bird life is readily observable. Birding is considered of such quality that the trails in the PGMA have been listed in the south section of the Great Florida Birding Trail.

### **Archaeological and Historical Features**

Preserve lands have a rich cultural history. Preserve cultural resources provide unique opportunities for the public to learn about the prehistory of this region. The preserve includes sites that are so unique and significant in their design and past use

that they require public interpretation. However, specific recommendations for public access to preserve cultural sites are not included in this plan. Concerns regarding the protection of these resources must first be addressed prior to facilitating access. It is considered premature to promote public access until plans for the management of cultural sites, particularly Big Mound Key, have been developed, as discussed in the Resource Management Component. Decisions regarding future public access to cultural sites will be addressed on a case-by-case basis in consultation with appropriate Bureaus in the Division and DHR.

### **Assessment of Use**

Past uses of the preserve, land administration issues, applicable zoning and future land use designations, current recreation activities and visitor programs, established protected zones, and existing facilities are briefly described in the following sections. The Base Map reflects all legal boundaries, structures, facilities, roads and trails existing in the preserve.

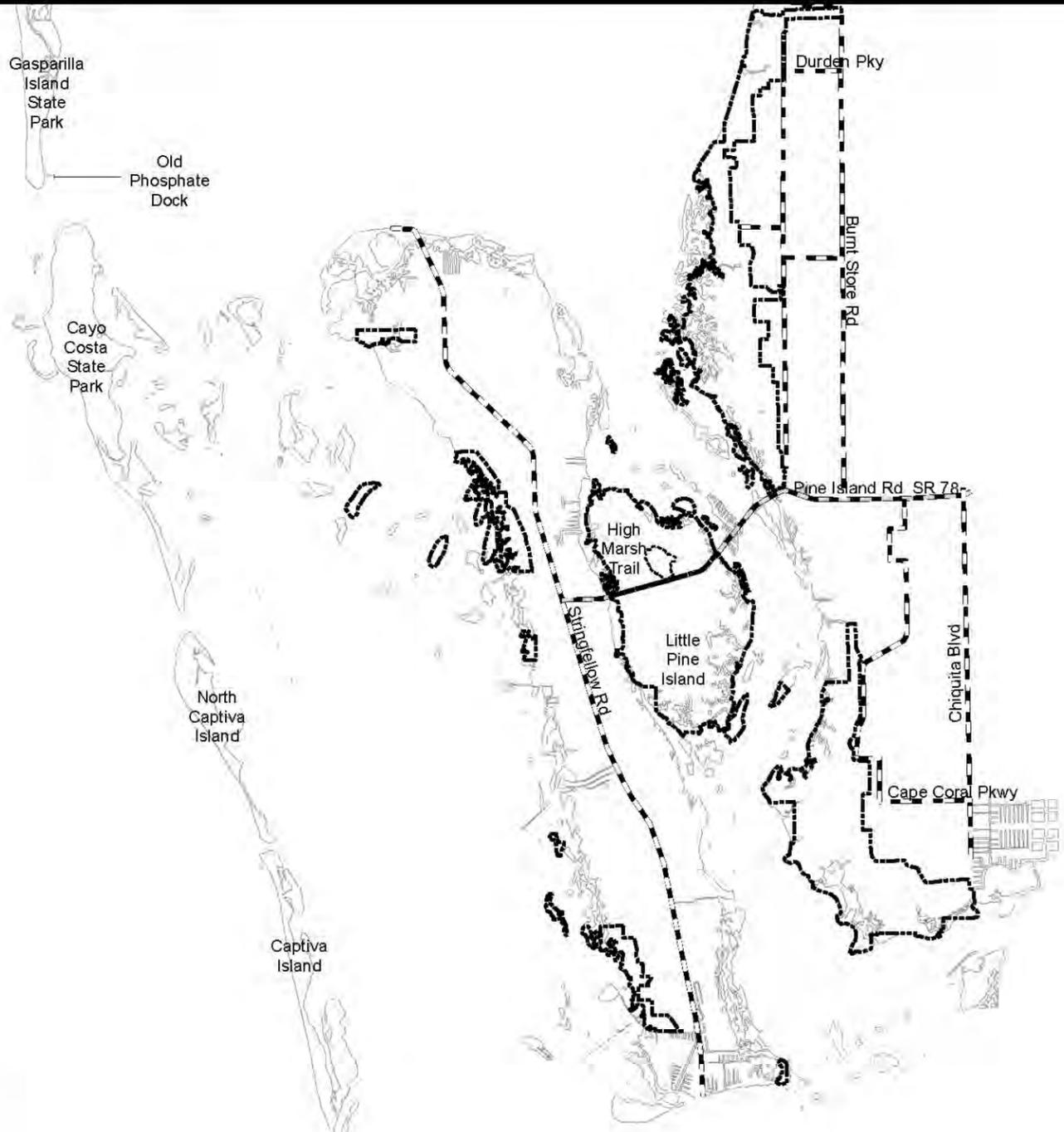
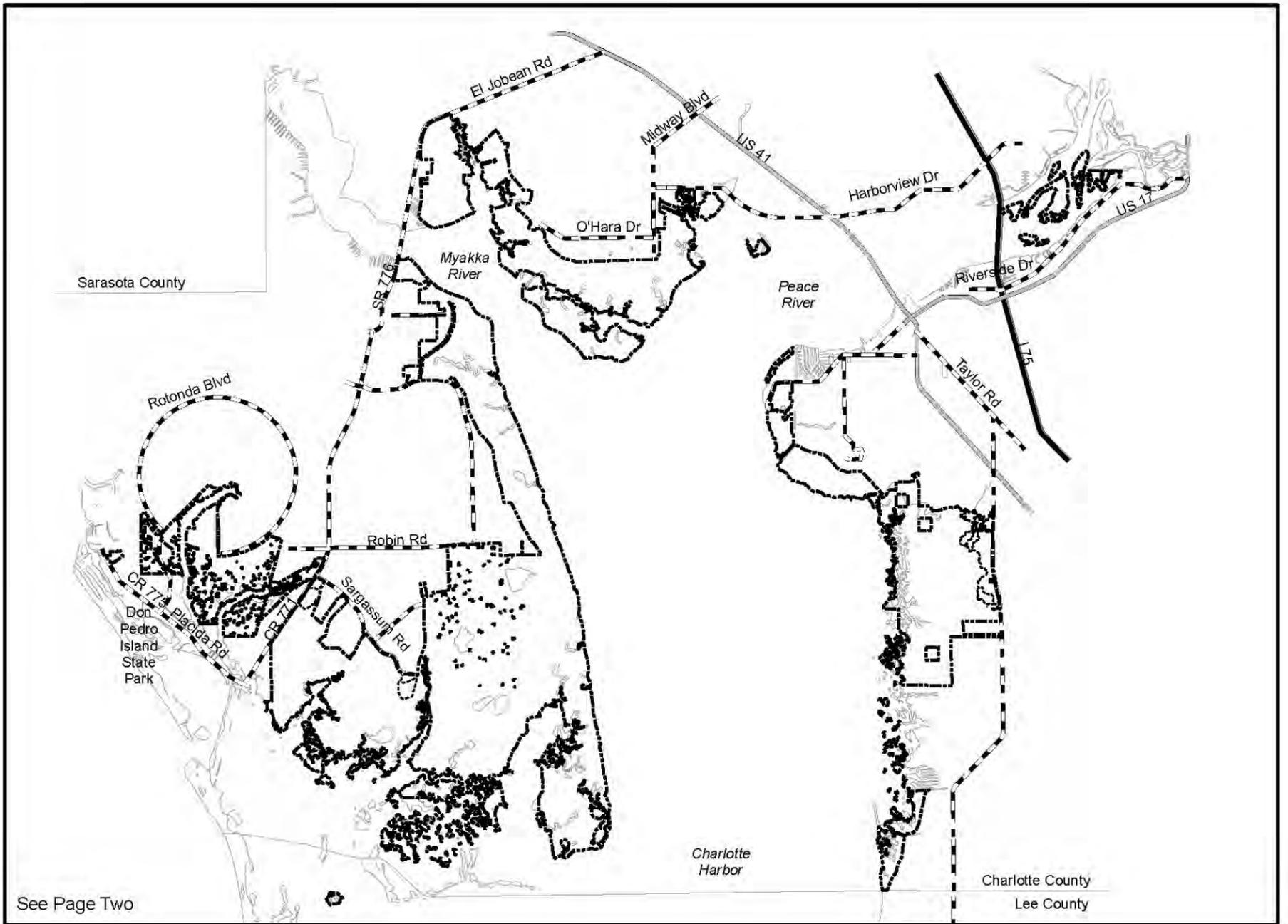
#### **Past Uses**

Humans have used the lands surrounding Charlotte Harbor for thousands of years. The earliest most visible evidence of past use at the preserve is the shell and earthen mounds left by the prehistoric inhabitants of this area. In addition to changes in topographic relief, native peoples also dug canals and created water features. More recent land uses have altered the landscape in more lasting ways and on a larger scale. Clearing land for agricultural fields and pasture, digging mosquito ditches, dredging canals and waterways, excavating borrow pits, mining shell for construction material, and installing roads and utility infrastructure have all left their mark on preserve lands.

Historic uses have significantly altered hydrology and natural community composition and present challenges to restoring and protecting preserve resources. However, remnants of prehistoric uses provide opportunities for interpretation, existing unimproved roads can enhance public and service access and existing borrow pits can be attractive features for public uses, such as fishing, canoeing/kayaking and wildlife observation.

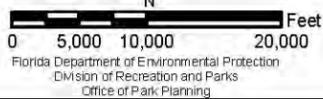
#### **Future Land Use and Zoning Designations**

The following table provides a summary of the future land use and zoning designations at the time this management plan was updated. A variety of designations is applicable given the preserve's location within four different government jurisdictional boundaries. Future land use designations appear consistent with the current and proposed future uses of the property. As the following table illustrates, the preserve includes a variety of zoning and land use designations, some of which are not directly related to conservation and resource-based recreation uses.



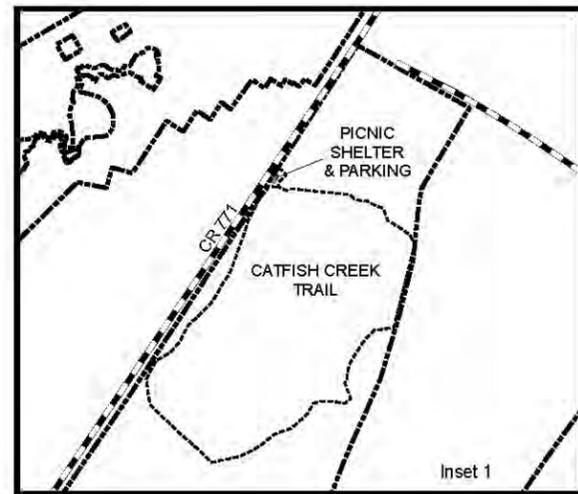
**LEGEND**

- Park Boundary
- US Highway
- Interstate
- State Road
- County Road
- Park Road Unpaved
- Hiking Trails
- Shorelines
- Structures
- Parking Lots

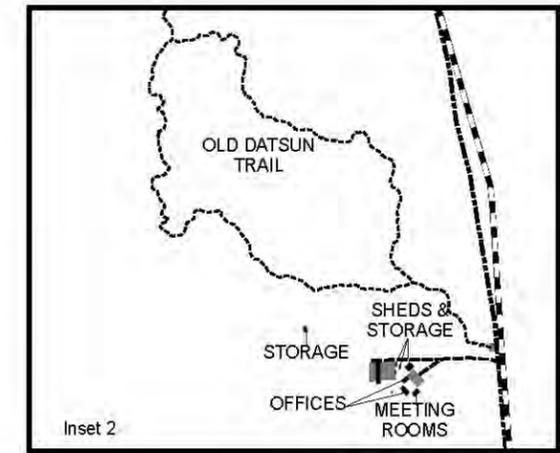
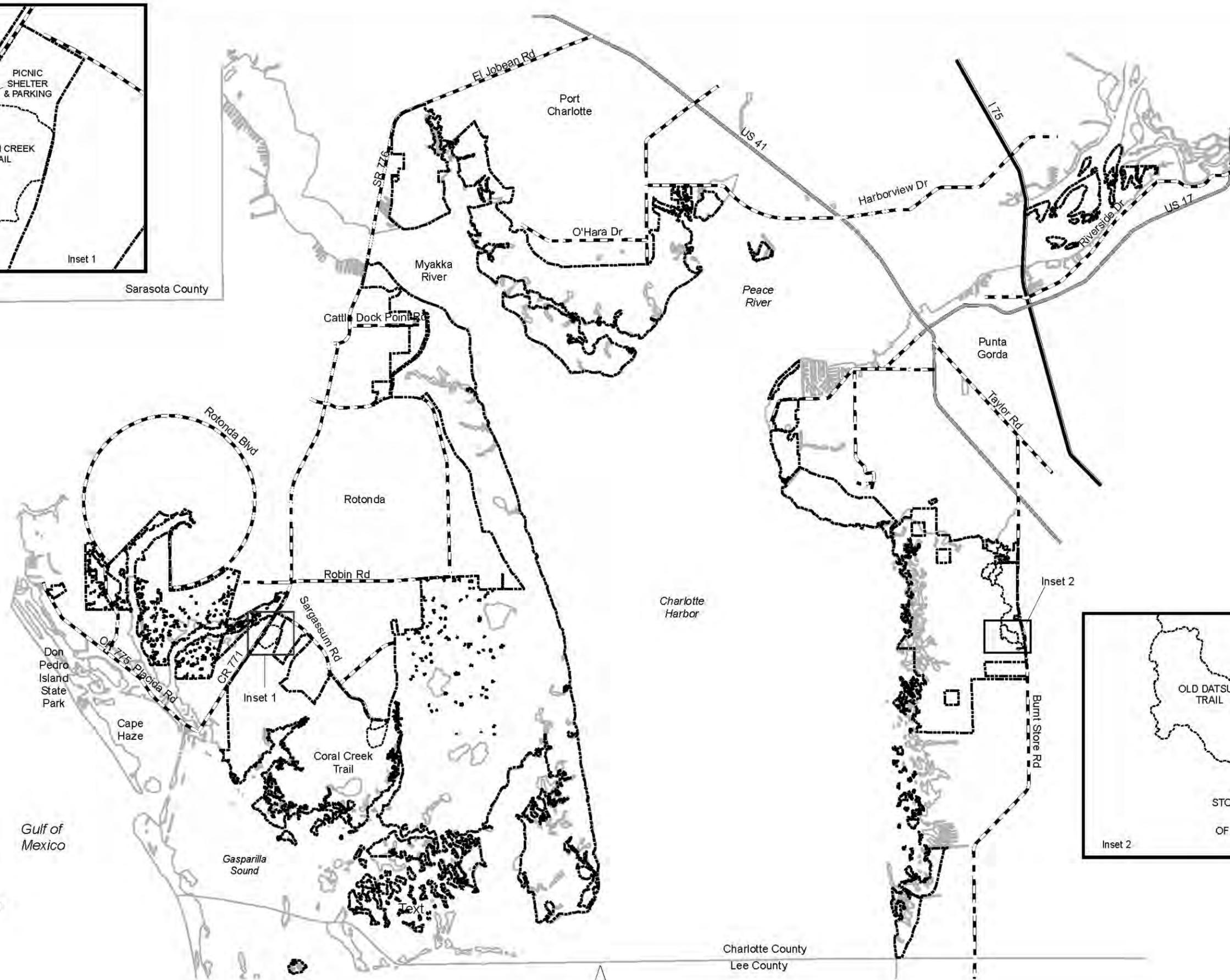


**CHARLOTTE HARBOR  
PRESERVE STATE PARK**

**BASE MAP**



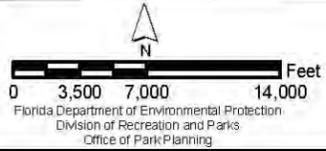
Sarasota County



Inset 2

- LEGEND**
- Park Boundary
  - US Highway
  - Interstate
  - State Road
  - County Road
  - Park Road Unpaved
  - Hiking Trails
  - Shorelines
  - Structures
  - Parking Lots

**CHARLOTTE HARBOR  
PRESERVE STATE PARK**



<b>Jurisdiction</b>	<b>Future Land Use</b>	<b>Zoning</b>
Charlotte County	Preservation; Resource Conservation	Environmentally Sensitive (ES); Agricultural Estate (AE); Residential Single Family (RSF2)
Lee County	Wetlands; Conservation Lands - Wetlands	Agricultural (AG-2)
Punta Gorda	Preservation; Recreation - Public	Environmental Preservation (EP)
Cape Coral	Natural Resources/ Preserve	Preserve; Multi-Family Residential (R3); Pedestrian Commercial (C1); Single Family Residential (R1A)

The number of seemingly incongruous designations is a reflection of patterns of previous ownership and a lack of specific zoning and future land use options dedicated to accommodate these uses. The Division will work with local governments to establish designations that provide both consistency between comprehensive plans and zoning codes and permit typical state park uses and facilities necessary for the provision of resource-based recreation opportunities.

### **Current Recreational Use and Visitor Programs**

It was estimated that 3,062 people visited the preserve in 2005. The low level of visitation is not surprising given the character of the recreational resources of the preserve and that most boating visitors are not recorded because their debarkation point is outside the preserve. Peak visitation occurs during the dryer, cooler winter months when environmental conditions are less harsh.

Exploration of the preserve is done primarily by foot or boat from Charlotte Harbor and limited to day use. Hiking, fishing, wildlife observation and nature appreciation are the primary recreational activities at the preserve. Due to its size and number of access points, many visitors prefer a more structured setting to experience the preserve and select to participate in a variety of personal interpretive and recreational programs that include guided walks, talks and special events. Examples include:

- Birding on Little Pine Island
- Hiking the High Marsh at Little Pine Island
- Mucking About in Pine Island Sound

- Trekking Cape Haze
- Acline Mound Hike
- Coral Creek - Cape Haze Estuary Day Paddle

The preserve also coordinates a biannual series of training workshops on coastal management topics such as seagrasses, mangroves, archaeology, and artificial reefs for environmental professionals and other target audiences involved with planning, regulation, research and resource management.

The Friends of Charlotte Harbor Aquatic Preserve, Inc. and CHAP staff assists with the development and delivery of visitor programs. The preserve is committed to participating in the *Get REAL! (Recreational and Environmental Adventures in Learning)* Program, a DEP initiative that focuses on using parks as classrooms without walls. Programs target school-aged children, seniors and economically disadvantaged youth.

Opportunities for improving preserve programming exist and include strengthening partnerships with other natural and cultural resource education institutions, and developing additional brochures guide books and training materials.

### **Protected Zones**

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

At Charlotte Harbor, approximately 86 percent of preserve lands have been designated as protected zones, including scrub, depression marsh, hydric hammock, wet flatwoods, wet prairie, estuarine tidal marsh, estuarine tidal swamp and known cultural sites as delineated on the Conceptual Land Use Plan.

### **Existing Facilities**

**Cape Haze Management Area.** The Catfish Creek Trailhead, located off Highway 771 provides access to a one-mile hiking trail. Facilities are limited to a paved parking area and picnic shelter. The Amberjack Scrub Trailhead, located at the end of York Street off Placida Road, includes a .75 mile hiking trail through scrub habitat. Additional hiking access to miles of unmarked trails is provided at walk-throughs located at seven gates along Rotonda Boulevard and Rotonda Trace.

**Port Charlotte Management Area.** No facilities are located within this management area. Walk-in access is provided near El Jobean and through the adjacent Tippecanoe Environmental Park.

**Punta Gorda Management Area.** The PGMA contains the administrative complex for the preserve. Preserve and aquatic preserve offices; maintenance and storage facilities are located off Burnt Store Road. Public facilities are limited to the Old Datsun Trailhead, with a small paved parking area and hiking trail.

The CHEC, Inc. is located about 1.5 miles north of the administrative complex on land leased directly from the Trustees. CHEC, Inc. is a non-profit organization managed by Charlotte County, Charlotte County School District, the city of Punta Gorda and the Peace River Audubon Society. CHEC, Inc. contains an environmental center and several miles of hiking trails, which provide access to preserve lands.

**Cape Coral Management Area.** Public access is provided at walk-throughs located at eight gates along the boundary of the north unit of the management area. Gates 1, 4 and 7 provide access to the Charlotte Harbor shoreline via unmarked woods roads. The route from Gate 4 is known as the North Cape Flats Trail. There is no public access to the southern portion of this management area.

**Pine Island Management Area.** Facilities at this management area are limited to the High Marsh Trailhead off Highway 78. A natural surface parking area provides access to a hiking trail that explores tidal marsh communities. This area is the site of a large-scale mitigation project that is removing invasive exotic plants, primarily melaleuca.

The following is a listing of facilities at Charlotte Harbor Preserve State Park:

**Cape Haze Management Area**

Catfish Creek Trailhead:

Paved parking (10 spaces)

Medium picnic shelter

Hiking trail (1.0 mile)

Amberjack Scrub Trailhead

Hiking trail (.75 mile)

Unimproved parking

Coral Creek Trailhead (Gate 3):

5 miles, unmarked trail

Sargassum Scrub Trailhead (Gate 5):

1.5 miles, unmarked trail

**Punta Gorda Management Area**

Administrative Complex:

Preserve offices

Aquatic preserve offices

Conference room  
Barn  
Pole barns (2)

Storage sheds (7)  
Paved parking (12 spaces)

Old Datsun Trailhead:  
Paved parking (6 spaces)

Hiking trail (1.75 miles)

Trails Originating at CHEC, Inc.:  
Eagle Point Trail (.9 miles)  
Pine Flatwoods Trail (1.75 miles)

Three Lakes Trail (.75 miles)  
Cross Property Trail (2 miles)

**Cape Coral North Management Area**  
North Cape Flats Trailhead:  
North Cape Flats Trail (.5 miles)

**Pine Island Management Area**  
High Marsh Trailhead:  
Unimproved parking  
Hiking trail (2.0 miles)

## CONCEPTUAL LAND USE PLAN

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

### Site Planning and Design Process

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

Recreation and support facility improvements are being proposed within upland areas that have experienced past disturbance from human activity. Ruderal areas account for most locations, with the remainder proposed in mesic or scrubby flatwoods. Fragmentation of communities is minimized by locating sites on the periphery of management areas that utilize existing public or service roads for access.

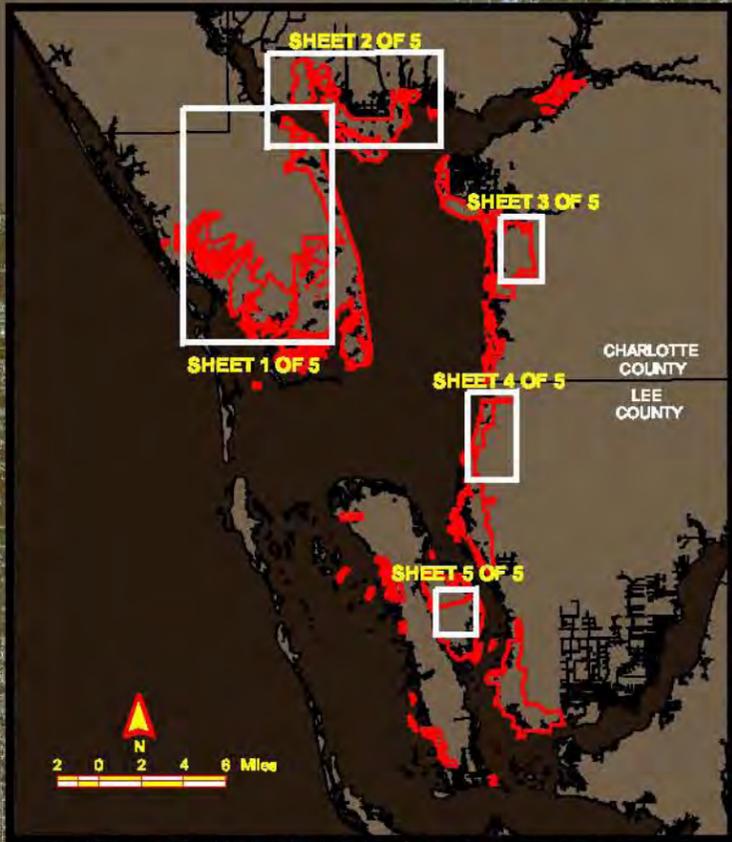
With the exception of improvements proposed near Sam Knight Creek, no known cultural sites are located within or adjacent to proposed development areas. Due to an incomplete knowledge of cultural site distribution at the preserve, and the likelihood of discovering new sites over time, archeological monitoring and coordination with the DHR during project development is essential to avoid or minimize impacts to cultural resources. Pre-development biological or archaeological surveys may be required to guide project boundaries. Final site locations may be adjusted based on information revealed during the site planning process

### **Potential Uses and Proposed Facilities**

Although the preserve's boundary configuration and shortage of upland communities constrains the provision of recreational facilities, improvements are possible that enhance the recreational enjoyment of the property and are consistent with the unit's preserve classification. Some proposed locations are isolated, with few adjacent residents and no staff presence nearby, and susceptible to vandalism. The distances between proposed use areas present operational challenges. Therefore, proposed projects and their components will be phased in over time as adjacent areas develop, security improves and preserve resources are able to meet increased operational needs. In addition, it is recommended that consideration be given to consolidating access points, where appropriate, as facilities are developed to assist with managing visitor access.

The conceptual land use plan includes boating facilities to enhance access to Charlotte Harbor and associated tidal creeks, and amenities geared toward expanding fishing, hiking, picnicking and wildlife observation opportunities. Additional support facilities are also recommended to meet the security, housing and operational needs of the preserve.

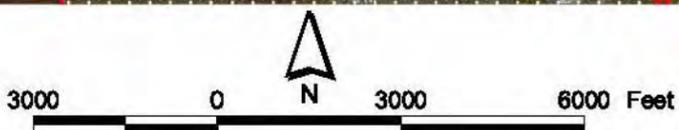
**Cape Haze Management Area.** A double-lane boat ramp is proposed at Cattle Dock Point on a dredged basin that provides access to the mouth of the Myakka River and the Gasparilla Sound - Charlotte Harbor Aquatic Preserve. Surrounding uplands have been heavily disturbed from past dredge and fill activity. The Trustees and SWFWMD hold 50/50 title interest in this area. Charlotte County has expressed interest in constructing, maintaining and operating the boat ramp. The County



**LEGEND**

- PROPOSED DEVELOPMENT AREA
- PROPOSED TRAILS
- EXISTING TRAILS
- PROPOSED FACILITIES
- PROTECTED ZONES
- STATE PARK BOUNDARY

CHARLOTTE HARBOR PRESERVE  
STATE PARK  
CAPE HAZE MANAGEMENT AREA



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

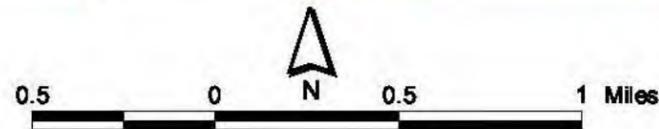
CONCEPTUAL  
LAND USE PLAN  
SHEET 1 OF 5



**LEGEND**

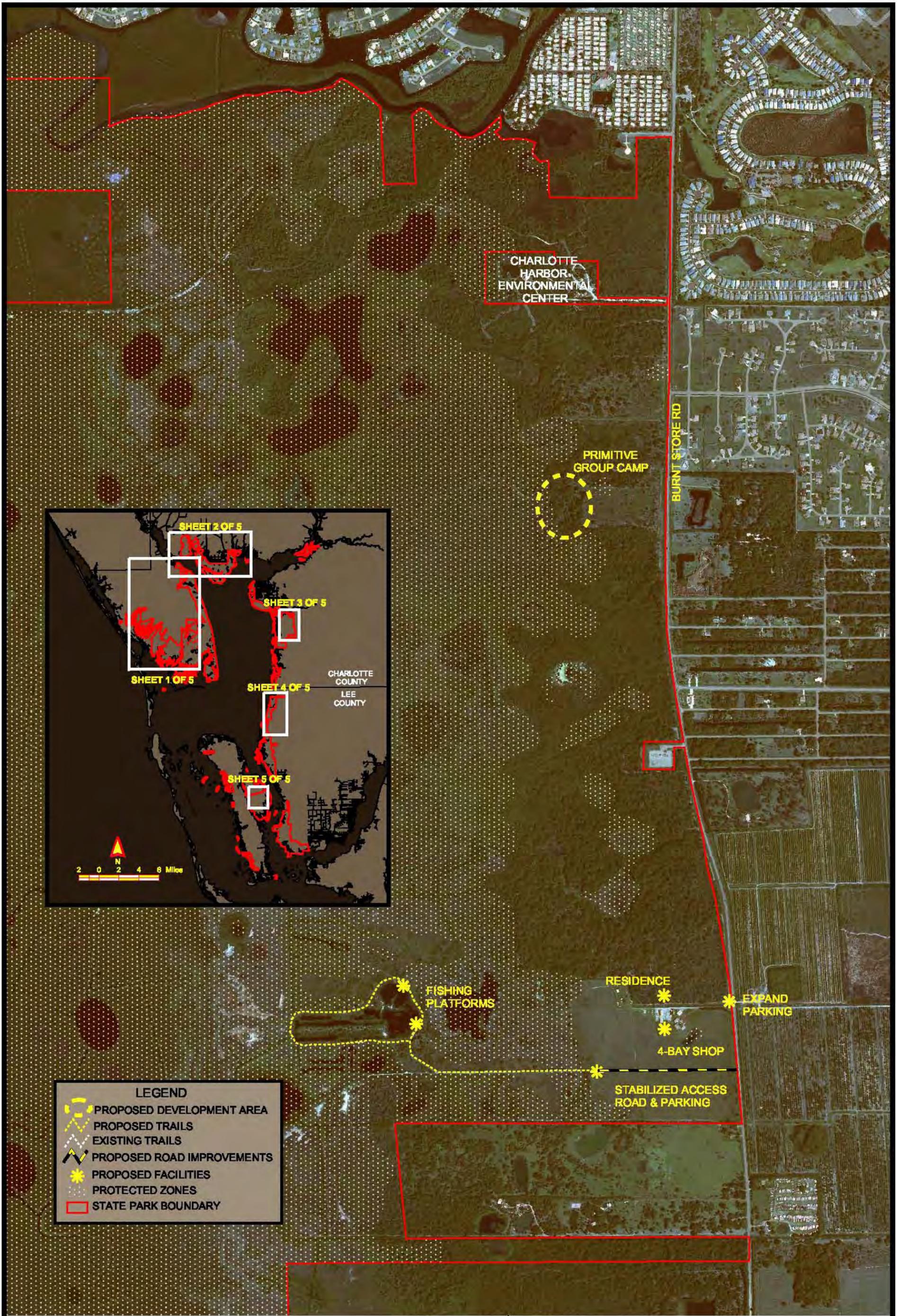
- PROPOSED DEVELOPMENT AREA
- PROPOSED FACILITIES
- ADJACENT CONSERVATION LANDS
- PROTECTED ZONES
- STATE PARK BOUNDARY

CHARLOTTE HARBOR PRESERVE  
STATE PARK  
PORT CHARLOTTE MANAGEMENT AREA



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

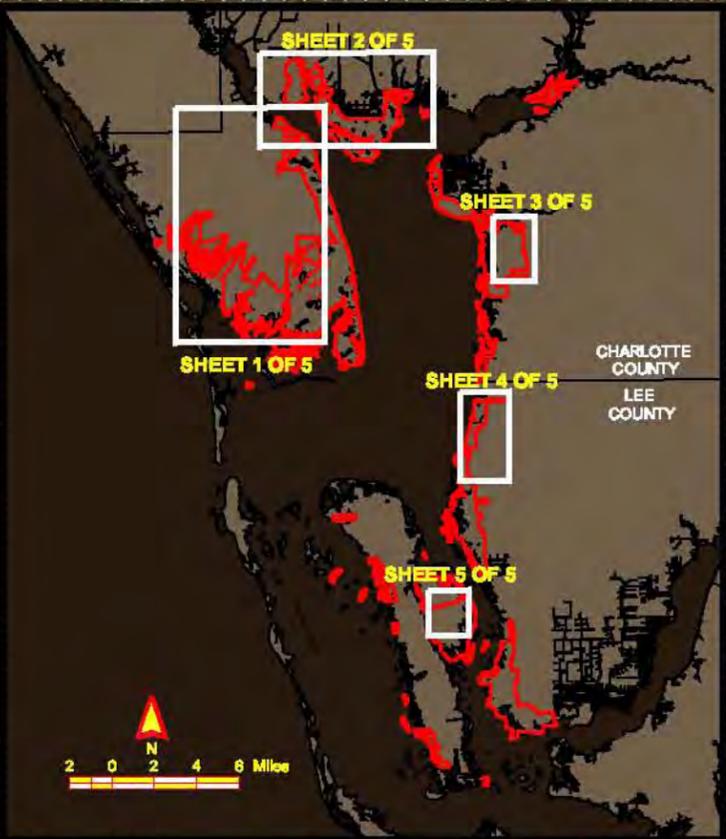
CONCEPTUAL  
LAND USE PLAN  
SHEET 2 OF 5



CHARLOTTE HARBOR ENVIRONMENTAL CENTER

PRIMITIVE GROUP CAMP

BURNT STORE RD



FISHING PLATFORMS

RESIDENCE

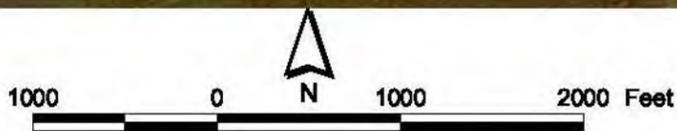
EXPAND PARKING

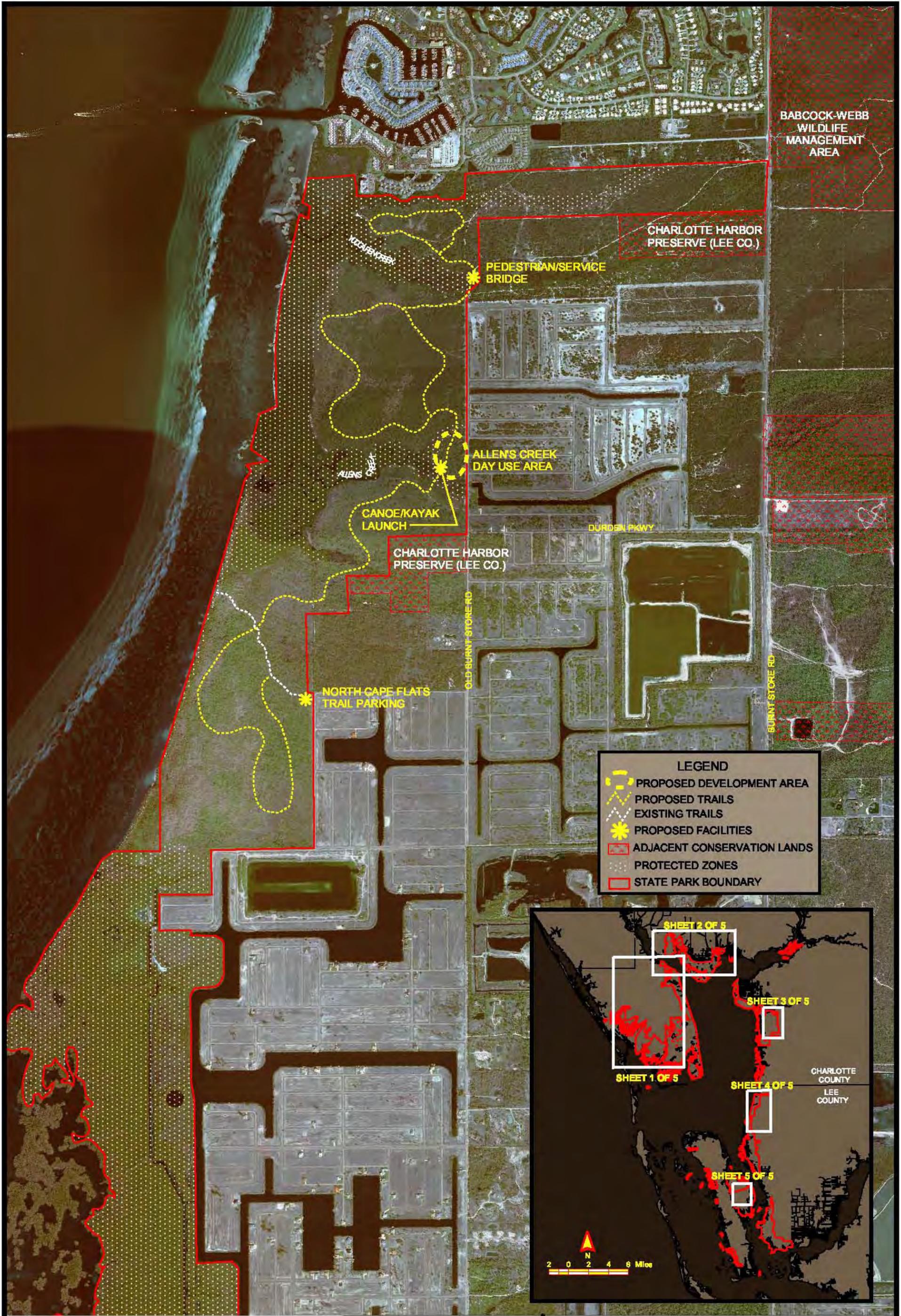
4-BAY SHOP

STABILIZED ACCESS ROAD & PARKING

**LEGEND**

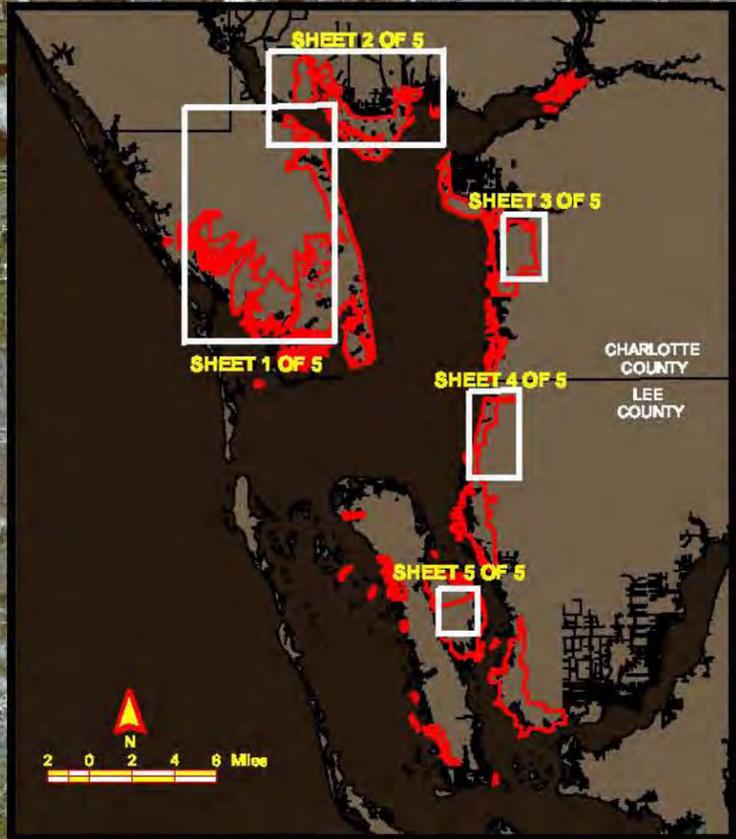
- PROPOSED DEVELOPMENT AREA
- PROPOSED TRAILS
- EXISTING TRAILS
- PROPOSED ROAD IMPROVEMENTS
- PROPOSED FACILITIES
- PROTECTED ZONES
- STATE PARK BOUNDARY



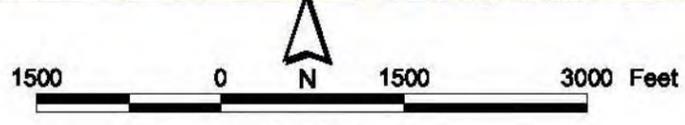


**LEGEND**

- PROPOSED DEVELOPMENT AREA
- PROPOSED TRAILS
- EXISTING TRAILS
- PROPOSED FACILITIES
- ADJACENT CONSERVATION LANDS
- PROTECTED ZONES
- STATE PARK BOUNDARY



**CHARLOTTE HARBOR PRESERVE STATE PARK  
CAPE CORAL NORTH MANAGEMENT AREA**



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



currently maintains a lock on an adjacent canal that empties into the basin. The Division is pursuing release of its leasehold interest in the project area (approximately 6.6 acres) so that the county can lease it directly from the Trustees and the SWFWMD. The potential exists to enhance birding opportunities and provide a vista of the mouth of the Myakka River in the vicinity of the proposed boat ramp site. Mitigation work in this area has created ponds, improved shoreline habitat, planted native vegetation and created an artificial mound. It is recommended that the boat ramp parking lot serve as a trailhead with the existing unimproved road providing pedestrian access to this area. Consideration will be given to providing boardwalk access to an observation platform on top of the mound. Successful implementation of this concept will require coordination with the SWFWMD and Charlotte County.

The Coral Creek Day Use Area is proposed on a borrow pit surrounded by scrubby flatwoods off Rotonda Boulevard South. Existing walk-throughs at gates 2 and 3 provide public access to the area with parking in the road right of way. Proposed improvements include a fishing platform, picnic facilities (one small and one medium shelter, scattered picnic tables and grills), parking area for up to 15 vehicles and a small restroom. A marked trail system through flatwoods and adjacent to the west branch of Coral Creek is recommended to provide up to 2.5 miles of designated hiking trail. An observation platform linked to the trail system is proposed that would provide views of the upper reaches of Coral Creek.

Opportunities also exist to coordinate with Charlotte County to link with the Pioneer Trail on the east branch of Coral Creek to provide access and extend hiking trails on preserve lands. Preserve staff will continue to coordinate with the county and other entities to facilitate hiking opportunities.

The Catfish Creek Trail is recommended to be expanded to a double-loop system that would provide over two miles of hiking opportunity. The proposed southern loop would meander through hydric hammock and would be a limited access trail passable during the dry season.

The Sargassum Scrub Day Use Area is proposed on a borrow pit surrounded by mesic flatwoods and ruderal areas off Rotonda Trace. Access to the area is currently provided by a walk-through at Gate 3 with parking in the road right of way. Proposed improvements include a shoreline canoe/kayak launch, picnic facilities (one small and one medium shelter, scattered tables and grills), access drive and parking area for up to 25 vehicles and a small restroom. A marked hiking trail circling the borrow pit and providing access to adjacent flatwoods communities is recommended to provide up to 1.5 miles of hiking opportunity. Due to the wet nature of the surrounding landscape, sections of the trail will require boardwalks to

allow for greater use throughout the year. Ideally, a connection can be made to the existing Sargassum Scrub Trail to the east to allow for consolidation of access points in this area.

A staff residence and shop area is proposed north of the Catfish Creek Trailhead, a short distance east of the Rotonda Trace and Highway 771 intersection. The location of residence, storage and maintenance facilities in the CHMA will improve security and assist with the operational needs of the northwest part of the preserve.

**Port Charlotte Management Area.** Improvements are recommended to provide access to Sam Knight Creek. A canoe/kayak launch, scenic overlook, access drive and parking for up to 15 vehicles are proposed within the flatwoods between two branches of the Creek. Access would be from Highway 776, a 4-lane divided highway, and may require roadway improvements to provide safe ingress/egress. The proposed overlook would entail constructing a boardwalk through tidal wetlands that culminates in an observation platform to provide views down the creek toward Tippecanoe Bay. The proposed use area location coincides with FMSF site CHOO463, a single artifact or isolated find. DHR review will be necessary to determine if additional survey work is needed prior to project implementation.

Charlotte County is constructing Sunrise Park adjacent to the north boundary of a portion of the PCMA between Sunrise and East Spring Lake Waterways. A canoe/kayak launch will be constructed on county land to provide access to Alligator Bay. Preserve management will continue to coordinate with Charlotte County as opportunities arise to explore the potential for using that access area for a trail system that would access preserve lands to the south.

**Punta Gorda Management Area.** Recreational improvements in this management area are focused on enhancing hiking, fishing and primitive camping opportunities. A primitive group camp is proposed among oaks and cabbage palms within a ruderal area approximately 1,000 feet east of Burnt Store Road and 2,000 feet south of the CHEC, Inc. The facility would provide opportunities for overnight stays for organized groups and include a restroom with outside showers, campfire circle and medium picnic shelter. Access would be from Burnt Store Road. Stabilization of the existing unimproved road into this area is necessary to accommodate vehicles without four wheel drive.

The Garrod Lakes are manmade features west of the preserve office complex that provide excellent fishing and wildlife observation opportunities. A stabilized road and parking area for up to 10 vehicles at the edge of existing pasture are recommended to get visitors within hiking distance of the lakes. A short hiking trail from the parking area is proposed that would provide access to the water. Sections of the trail may require boardwalks to allow for greater use throughout the year and

one area may have to be closed during colonial water bird nesting periods. Fishing platforms and wildlife overlooks/blinds should be developed at a minimum of two locations to control visitor access and minimize environmental disturbance.

The existing Datsun Trailhead parking lot is recommended to be expanded to accommodate up to 15 vehicles.

A second staff residence and additional shop facilities are proposed within the vicinity of the existing shop and maintenance compound.

**Cape Coral Management Area (North).** The Allen's Creek Day Use Area is proposed along the shoreline of Allen's Creek off Old Burnt Store Road in the north end of the management area. Proposed improvements include a canoe/kayak launch, picnic facilities (one small and one medium shelter, scattered tables and grills), parking area for up to 15 vehicles and a small restroom. It is recommended that up to 5 miles of marked hiking trail be established with bridged crossings of Allen's and Yucca Pen Creek and surrounding wetlands to expand the trail system and link with the North Cape Flats Trail. The Yucca Pen Creek bridge should be designed to accommodate an ATV for service access north of the creek. A second parking area for up to 10 vehicles is recommended just inside the preserve fence at gate 4 (North Cape Flats Trailhead) to accommodate visitors seeking direct access to the harbor shoreline.

There is the potential for a trail linkage with the adjacent Babcock-Webb Wildlife Management Area and Lee County managed lands in the future. Opportunities for connecting these properties with a hiking trail system require a cooperative effort between the Division and FFWCC and Lee County. Operational and/or resource management concerns may make such connections undesirable. Preserve staff will explore the potential of this concept with FFWCC and county staff during the current planning cycle.

**Pine Island Management Area.** Little Pine Island is undergoing restoration as part of a mitigation project with Mariner Properties, Inc. As natural conditions are restored, the scenic value of the landscape will improve and be more attractive for hiking and nature observation. The restoration process also provides opportunities for interpretation. A two-plus mile-hiking loop is proposed south of Highway 78 that would meander through mesic and wet flatwoods, and provide access to an observation platform with a vista over the adjacent tidal marshes. An additional trailhead parking area is recommended for up to 10 vehicles approximately 600 feet east of the existing Little Pine Island Trailhead at an access road used for mitigation work. Like the Little Pine Island Trail, this facility would be accessible during the driest parts of the year. Implementation of the trail is dependent on the progress of the mitigation work currently underway.

## Facilities Development

Preliminary cost estimates for the following list of proposed facilities are provided in Addendum 8. These cost estimates are based on the most cost-effective construction standards available at this time. The preliminary estimates are provided to assist the Division in budgeting future preserve improvements, and may be revised as more information is collected through the planning and design processes.

### Cape Haze Management Area

Cattle Dock Point boat ramp	Observation platform
Nature Trail (.25 mile)	Catfish Creek Trail expansion (+1 mi.)
➤ Coral Creek Day Use Area:	
Picnic shelters (1 small, 1 medium)	vehicles)
Scattered tables and grills	Small restroom.
Fishing platform	Hiking trail (2.5 miles)
Access drive & parking (up to 15	Elevated observation platform
➤ Sargassum Scrub Day Use Area:	
Canoe/kayak launch	vehicles)
Picnic shelters (1 small, 1 medium)	Small restroom
Scattered picnic tables and grills	Hiking trail (1.5 miles)
Access drive & parking (up to 25	
Staff residence	Shop facility

### Port Charlotte Management Area

➤ Sam Knight Creek Access:	
Canoe/kayak launch	Access drive and parking (up to 15
Observation platform	vehicles)

### Punta Gorda Management Area

Primitive Group Camp	
Restroom with outside showers	Medium shelter
Campfire circle	Stabilized access road
➤ Garrod Lakes Access:	
Stabilized access road & parking (up to 10 vehicles)	Fishing platforms/wildlife overlooks (2)
Hiking trail (.5 mi.)	
Expand Old Datsun Trailhead parking (up to 15 spaces)	
Staff residence	Shop facility

## **Cape Coral Management Area (North)**

### ➤ Allen's Creek Day Use Area:

Access drive and parking (up to 15 vehicles)

Canoe/kayak launch

Picnic shelters (1 small, 1 medium)

Scattered picnic tables and grills

Small restroom

Hiking trail (5 miles)

Allen's and Yucca Pen Creek bridges

North Cape Flats Trailhead parking (up to 10 vehicles)

## **Pine Island Management Area**

Hiking trail (+2 miles)

Observation platform

Access drive and parking (up to 10 vehicles)

### **Existing Use and Recreational Carrying Capacity**

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

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

### **Optimum Boundary**

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

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

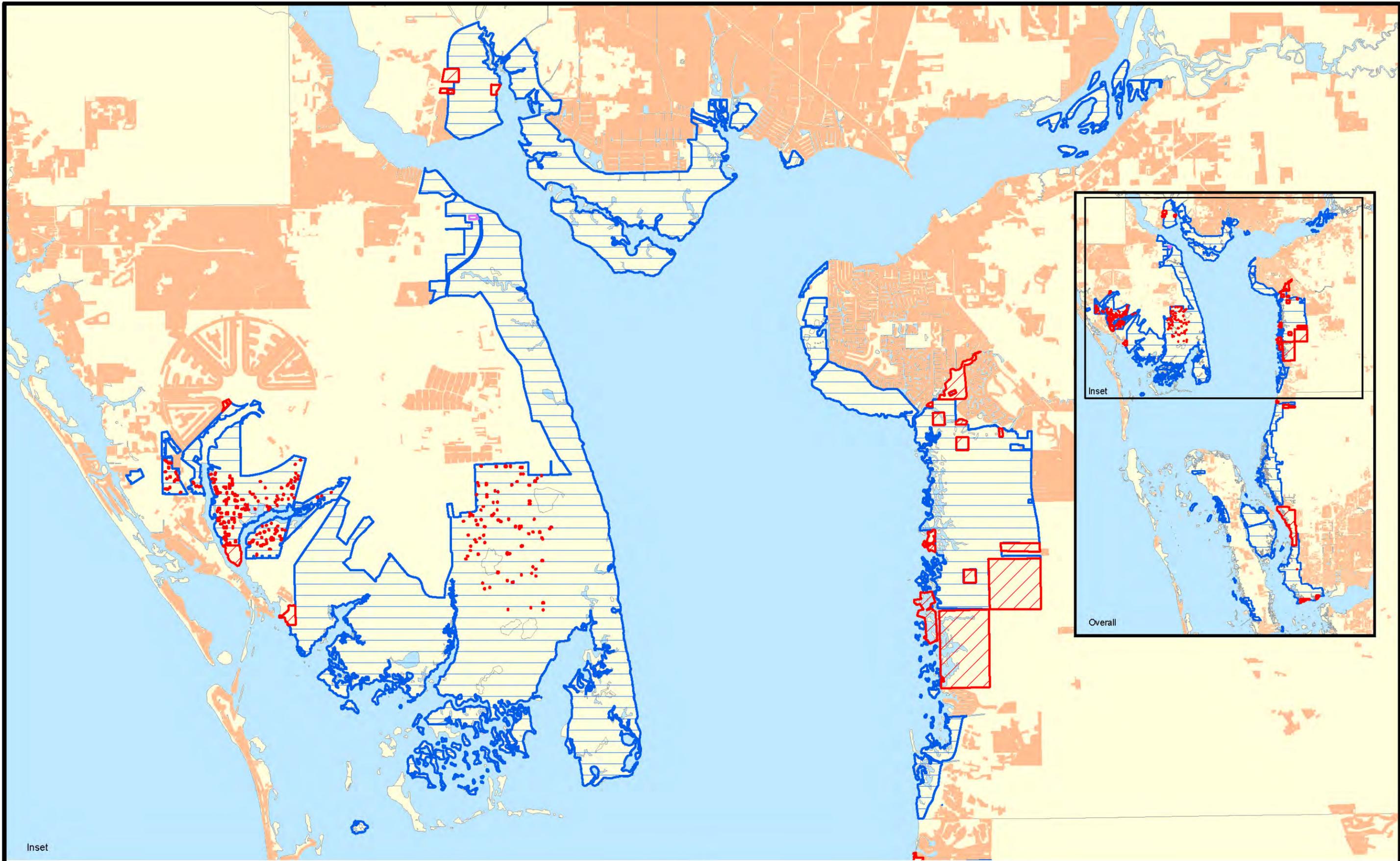
**Table 1—Existing Use and Recreation Carrying Capacity**

Activity/Facility	Existing Capacity		Proposed Additional Capacity		Estimated Recreational Capacity	
	One Time	Daily	One Time	Daily	One Time	Daily
<b>Cape Haze MA</b>						
Hiking	82	164	25	50	107	214
Canoeing/kayaking			10	20	10	20
Picnicking			112	224	112	224
Shoreline fishing	40	80			40	80
<b>Port Charlotte MA</b>						
Canoeing/kayaking			50	100	50	100
<b>Punta Gorda MA</b>						
Primitive Camping			30	30	30	30
Hiking	72	144	10	20	82	164
Shoreline fishing			18	36	18	36
<b>Cape Coral N. MA</b>						
Hiking	5	10	45	90	50	100
Shoreline fishing			13	26	13	26
Picnicking			56	112	56	112
Canoeing/kayaking			24	48	24	48
<b>Pine Island MA</b>						
Hiking	20	40	20	40	40	80
<b>TOTAL</b>	<b>219</b>	<b>438</b>	<b>413</b>	<b>799</b>	<b>632</b>	<b>1,234</b>

used as the basis for permit denial or the imposition of permit conditions.

The optimum boundary map reflects lands identified for direct management by the Division as part of the preserve. These parcels may include public as well as privately owned lands that improve the continuity of existing preserve lands, provide additional natural and cultural resource protection and/or allow for future expansion of recreational activities. Lands identified within the optimum boundary are limited to those with the potential for fee-simple acquisition.

A substantial amount of new acreage has been identified as desirable for direct management as part of the preserve. These lands include many separate parcels with

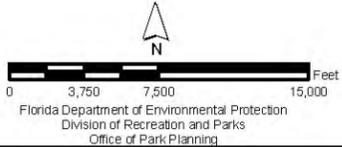


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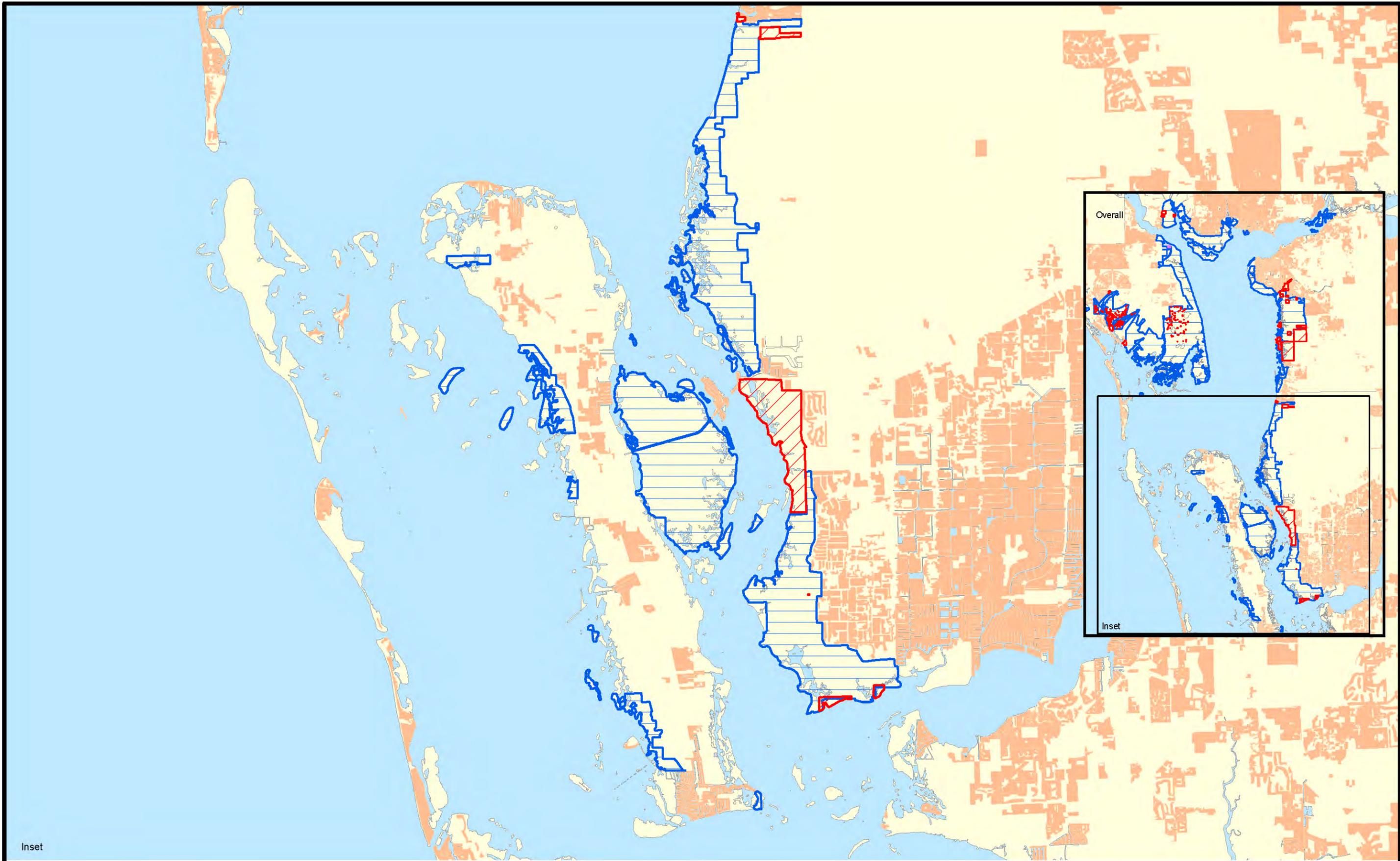
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CHARLOTTE HARBOR  
PRESERVE STATE PARK

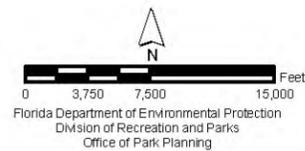


- LEGEND
- Park Boundary
  - Optimum Boundary
  - Area to be Released

OPTIMUM BOUNDARY  
MAP



CHARLOTTE HARBOR  
PRESERVE STATE PARK



- LEGEND
- Park Boundary
  - Optimum Boundary
  - Area to be Released

OPTIMUM BOUNDARY  
MAP

multiple owners and reflect the historic land subdivision of the area. The majority of these parcels are small inholdings that fragment the preserve and, if developed, would complicate resource management and preserve operations. Several larger parcels have been identified, particularly adjacent to the PGMA that would bring significant cultural resources under Division management or are in jeopardy of being developed for residential uses.

Charlotte County has approached the Division with an interest in constructing and operating a boat ramp at Cattle Dock Point. Approximately 6.6 acres have been identified as the project site area that would be managed by the county. The Division is pursuing release of its leasehold interest in the project site so that the county can lease the area directly from the Board of Trustees and the SWFWMD.

**Addendum 1 – Acquisition History and Advisory Group Documentation**



## Charlotte Harbor Preserve State Park Acquisition History

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### Purpose of Acquisition

The Board of Trustees of the Internal Improvement Trust Fund of the State of Florida (Trustees) has acquired Charlotte Harbor Preserve State Park primarily to help preserve the water quality of the estuary, protect habitat for the Florida Manatee and other rare wildlife, and provide residents of and visitors to the area with opportunities for boating, fishing, and other recreational pursuits.

### Nature and Sequence of Acquisition

On December 7, 1977, the Trustees acquired a fee simple title interest in a 40-acre property that constituted the initial area of Charlotte Harbor Preserve State Park (CHPSP), formerly known as Charlotte Harbor State Reserve or Charlotte Harbor State Buffer Preserve. The Trustees purchased this property from Thalma B. King for \$16,500, and the purchase was funded under the Environmentally Endangered Lands Trust Fund (EELTF). Since this initial acquisition, the Trustees has acquired several parcels through EELTF, CARL, P2000 and Florida Forever funding programs; the Southwest Florida Water Management District (SWFWMD); donations; settlement agreements ; and addition of unconveyed sovereign lands and added them to the park. See below.

<b>YEAR</b>	<b>GRANTOR</b>	<b>NUMBER OF ACRES</b>
1977.....	Vanderbilt.....	7,709 acres
1978.....	Punta Gorda Isles .....	3,009 acres
1979.....	Trust for Public Land.....	1,450 acres
1982.....	Trust for Public Land.....	1,075 acres
1984.....	Berg Donation.....	142 acres
1985.....	Pine Island Donation .....	140 acres
1986.....	GDC Donation .....	414 acres
1987.....	Trust for Public Land.....	2,421 acres
1989.....	Josslyn Island .....	1,870 acres
1992.....	Bidlack .....	515 acres
1994 .....	Trust for Public Land.....	1,613 acres
1995.....	Atlantic Gulf/SWFWMD.....	4,983 acres
1997.....	Venice Service Corporation .....	815 acres
1998.....	K. Garrod.....	341 acres
1999.....	New Jersey/Shrinners.....	414 acres
2000.....	St. Andrews & Impoundment Area, White Marsh and Pine Valley .....	5,655 acres
2001.....	Fitzgerald Donation.....	853 acres
2004.....	WCI Communities, Inc.....	26 acres

## Charlotte Harbor Preserve State Park Acquisition History

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### Lease Agreements

Trustees leased Charlotte Harbor State Reserve to the State of Florida Department of Environmental Protection, successor in interest to the State of Florida Department of Natural Resources, Division of Recreation and Parks (Division), under a 20-year lease, Lease No. 745-00010, on October 31, 1984. Four years later, on June 28, 1988, the Trustees changed Lease No. 745-00010 to Lease No. 3564 without making any changes to the terms and conditions of the lease. On February 20, 1989, the Division released its leasehold interest in Charlotte Harbor State Reserve; and on August 10, 1990, the Trustees assigned the preserve to the Division of State Lands, Bureau of Aquatic Preserves. On June 23, 1995, the Trustees leased Charlotte Harbor State Buffer Preserve to the Division of Marine Resources, Bureau of Coastal and Aquatic Managed Areas (CAMA), under Lease No. 4085. On December 15, 2003, CAMA transferred its leasehold interest in the buffer preserve to the Division. Upon assuming the management responsibility of Charlotte Harbor State Buffer Preserve, the Division changed the name of this buffer preserve to Charlotte Harbor Preserve State Park (CHPSP).

The Division currently manages CHPSP under two leases: Lease No. 4085 and Lease No. 4134. Lease No. 4085 is between the Trustees and the Division, and it is for the portion of CHPSP where the Trustees has 100% percent title ownership. This lease is for a period of fifty (50) years, commencing on June 23, 1995, and ending on June 22, 2045, unless sooner terminated as provided in the lease agreement.

Lease No. 4134, also a fifty year lease, is a three-party agreement between the Trustees and SWFWMD as co-lessors and the Division as lessee. This lease is for the portion of CHPSP, approximately 7,708 acres, in which the Trustees and the SWFWMD each has undivided 50% title interest.

Lease No. 4134 was originally entered into as an Intergovernmental Lease Agreement between the Trustees and the SWFWMD as co-lessors and the Division of Marine Resources as lessee on February 26, 1997. On December 13, 2003, CAMA, successor in interest to the Division of Marine Resources, transferred its leasehold interest in Lease No. 4134 to the Division. Lease No. 4134 will expire on February 25, 2047, unless sooner terminated as provided in the lease agreement.

### Title Interest

The Trustees hold 100 percent fee simple title interest in some portions of CHPSP, and the Trustees and the SWFWMD each has undivided 50 percent interest in the remaining portion of CHPSP.

## Charlotte Harbor Preserve State Park Acquisition History

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### Special Conditions on Use

Charlotte Harbor Preserve State Park is designated single-use to provide resource-based public outdoor recreation and other park related uses. Uses such as water resource development projects, water supply projects, storm-water management projects, and linear facilities and sustainable agriculture and forestry, unless specifically stated otherwise in the park unit management plan, are not consistent with the management purposes of the park.

### Outstanding Reservations

Outstanding rights, reservations and encumbrances that apply to Charlotte Harbor Preserve State Park, all or most of which are access easements, drainage easements or utilities easements, include the following:

INSTRUMENT: .....Easement  
INSTRUMENT HOLDER: .....Trustees  
BEGINNING DATE:.....April 24, 2006  
ENDING DATE:.....April 23, 2056  
OUTSTANDING RIGHTS, USES, ETC.:...The easement allows Charlotte County to install and maintain a 10-inch water main upon and across a portion of Charlotte Harbor Preserve State Park.

INSTRUMENT: .....Easement  
INSTRUMENT HOLDER: .....Trustees and SWFWMD  
BEGINNING DATE:.....June 10, 2005  
ENDING DATE:.....Perpetual  
OUTSTANDING RIGHTS, USES, ETC.:...The Trustees and the SWFWMD granted Charlotte Sarasota Holdings, LLC a non-exclusive easement for ingress and egress; installation, maintenance, repair and construction of private and public utility distribution systems; and installation, maintenance, repair and reconstruction of a drainage system over, upon and across a certain portion of Charlotte Harbor Preserve State Park.



## Charlotte Harbor Preserve State Park Advisory Group List

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The Honorable Robert Janes,  
Chair  
Lee County Board of  
County Commissioners  
P.O. Box 398  
Fort Myers, Florida 33902-0398

Represented by:  
Roger Clark  
Lee County Parks and Recreation  
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The Honorable Richard Loftus, Chair  
Charlotte County Board of  
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Charlotte County Administration  
Center  
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Represented by:  
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Port Charlotte, Florida 33980

Phillip Brouse  
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Department  
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Port Charlotte, Florida 33948

Johnny Hunter  
Charlotte County Pest Management  
Division  
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Port Charlotte, Florida 33980

The Honorable Larry Friedman, Mayor  
City of Punta Gorda  
326 West Marion Ave.  
Punta Gorda, Florida 33950

The Honorable Eric Feichthaler, Mayor  
City of Cape Coral  
P.O. Box 150027  
Cape Coral, Florida 33915-0027

Represented by:  
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Specialist  
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Land Resources Department  
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Represented by:  
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Southwest Florida Water Management  
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## Charlotte Harbor Preserve State Park Advisory Group List

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Port Charlotte Kayakers  
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Bokeelia, Florida 33922

Al Cheatham, President  
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Punta Gorda, Florida 33955

Paul Holmes, President  
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Punta Gorda, Florida 33950

## **Charlotte Harbor Preserve State Park Advisory Group Staff Report**

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The Advisory Group meeting to review the proposed land management plan for Charlotte Harbor Preserve State Park was held at the preserve administrative complex on February 2, 2007.

Chairman Robert Janes (Lee County Commission) was represented by Roger Clark. Chairman Richard Loftus (Charlotte County Commission) was represented by Phillip Brouse. Andy Stevens and Johnny Hunter were also present to represent Charlotte County interests. Mayor Eric Feichthaler (City of Cape Coral) was represented by Connie Jarvis and Kim Cressman. Gina Sowders (Southwest Florida Water Management District) was represented by Stephanie Green. Johnny Bryson (Florida Division of Forestry - Lee County) was represented by Kevin Podkowka. Mayor Larry Friedman (City of Punta Gorda), Ron Edenfield (Lee County Soil and Water Conservation District), Rick Christman (Florida Division of Forestry - Charlotte County), and Regina Eberwein (Florida Trail Association) were not in attendance. All other appointed Advisory Group members were present as well as Peter Traverso (Rotonda West Association, Inc.). Attending staff were Valinda Subic, Annette Nielsen, John Aspiolea, Jay Garner and Michael Kinnison.

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

### **Summary of Advisory Group Comments**

Liz Donley (Friends of the Charlotte Harbor Aquatic Preserves, Inc.) questioned whether statutory requirements related to public notice and review were met. Specifically, she was concerned that the public had less than 30 days to review and comment on the draft plan.

Roger Clark (Lee County Parks and Recreation) recommended making the draft plans available on the internet.

Tom Madsen (Rotonda West Association, Inc.) noted that the scope of the proposed Coral Creek restoration project was larger than those portions of the creek within the boundary of the preserve. He stressed the importance of close coordination between the Division of Recreation and Parks and the Southwest Florida Water Management District and felt the plan did not reflect this need. Mr. Madsen closed by stating that resident concerns over traffic associated with the proposed Coral Creek day use area had been sufficiently addressed at the previous evening's public meeting.

Peter Traverso (Rotonda West Association, Inc.) emphasized that significant water

## Charlotte Harbor Preserve State Park Advisory Group Staff Report

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quality issues would be associated with removal of the Coral Creek dam. He expressed support for encouraging use of the Coral Creek property as long as traffic issues were addressed.

Andy Stevens (Charlotte County Natural Resources Division) stated that his primary concern was related to hydrology. He was supportive of the general overview provided by the management plan and understood that more detailed information would come later.

Heather Stafford (Charlotte Harbor Aquatic Preserves) felt that the land acquisition history addendum was too brief and should be expanded to identify the major acquisitions comprising the preserve. She also suggested locating the phosphate dock at Boca Grande on a map in the plan.

Phillip Brouse (Charlotte County Parks and Recreation Department) suggested expanding the discussion of opportunities for connectivity with adjacent conservation lands, trails and blueways. He asked that canoe landing points and paddle-in campsites be considered as part of existing blueways. He indicated that the county may be moving forward with a canoe launch within the boundaries of Sunrise Park negating the need for such a facility on adjacent preserve lands. He discussed several other existing and planned county facilities in the vicinity and their relation to the preserve and suggested a possible land swap near GC Herring. He noted the ongoing coordination involved with developing a boat ramp at Cattle Dock Point and indicate that project was in the final stages of approval. He closed by stating the county was interested in improving future coordination of timber harvesting and other resource management activities.

Roger Clark (Lee County Parks and Recreation) noted that the plan lacked performance measures, timelines or accountability for management objectives. He indicated the need to add areas the county was interested in leasing to the preserve to the Optimum Boundary Map. He recommended the plan clarify the Division of Recreation and Park's management emphasis at the preserve and how management will be coordinated with the aquatic preserves. Heather Stafford stated that the memorandum of understanding between the Division and the Office of Coastal and Aquatic Managed Areas should be mentioned in the plan.

Stephanie Green (Southwest Florida Water Management District) provided no comment.

Kevin Podkowka (Division of Forestry - Lee County) recommend adding performance measures to help achieve stated management objectives. He stated that existing hog removal efforts were insufficient and suggested opening areas for hunting hogs to more effectively control their numbers. He provided an example of community descriptions

## Charlotte Harbor Preserve State Park Advisory Group Staff Report

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and desired future conditions from a Division of Forestry management plan and suggested this approach be considered by the Division of Recreation and Parks. He discussed universities as a potential resource to address cultural resource research needs and stressed the importance of ensuring research projects provide data summaries to their work. He recommended checking with the USDA WRP program for assistance with hydrological restoration projects. He was supportive of providing paddle-in primitive camping areas on islands and shoreline of the preserve. He added that it was possible to bolster the monitoring efforts of preserve staff with the Division of Forestry and other law enforcement agencies that conduct aerial reconnaissance of the area.

Al Cheatham (Charlotte Harbor Environmental Center, Inc.) questioned whether the plan should have more reference to acquisition. He noted that the plan does not mention that the preserve manager is on the board of the Center. He asked for clarification on the approach to managing fishing access and geocaching. He discussed the potential conflicts between power boating and paddle watercraft and emphasized the need to coordinate with law enforcement to ensure water safety. He supported the concept of hunting to remove hogs and establishing primitive camping at the preserve. He pointed out the importance of providing recreational access to public lands to maintain support for their acquisition and management.

Joe Bozzo (Florida Fish and Wildlife Conservation Commission) thought there were inaccuracies between species and habitat type codes on the species lists. He suggested clarifying which species have actually been observed at the preserve. He noted that the Nile monitor and iguana were not included in the animal species list. He recommended clarifying the location of Great Florida Birding Trail sites at the preserve. He stated that the Coyote should be identified as naturalized and was skeptical that the preserve provides habitat for the Florida panther.

Connie Jarvis (City of Cape Coral) suggested considering a canoe launch on Yucca Penn Creek. She stated that the City was interested in acquiring a doughnut-shaped parcel adjacent to the south Cape Coral Management Area. She indicated the City would like to discuss establishing a boat ramp for service access on a disjunct parcel of the preserve located off Old Burnt Store Road and across a canal in the north Cape Coral Management Area. She closed by offering City assistance with control of exotic plants.

Ryan Wheeler (Division of Historic Resources - Bureau of Archaeological Research) offered several suggestions on improving the organization of the cultural resources section. He felt that the plan needed to make a better distinction between the permit roles of the Division of Historic Resources and the Bureau of Archaeological Research. He recommended removing the reference to a temporary field station at Big Mound Key. He suggested the plan clarify the role of the preserve's part-time cultural resource specialist and requested annual permits for this person's work. He closed by stating

## Charlotte Harbor Preserve State Park Advisory Group Staff Report

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that the Division of Historic Resources has applied for another grant to map other cultural sites at preserve.

Paul Holmes (Peace River Audubon) urged caution in the design of facilities in the Garrod Lakes area due to the presence of rookeries. He disagreed with the recommendation to remove reference to the preserve providing panther habitat. He stated that the plan should include the improvements necessary for the connector trail between the Old Datsun Trail and the Charlotte Harbor Environmental Center. He stressed importance of improved coordination among government agencies and suggested a strategy workshop involving public and private interests that focuses on the preservation needs of the greater Charlotte Harbor area.

Liz Donley (Friends of Charlotte Harbor, Inc.) suggested the plan identify the preserve as an important component of a conservation corridor that stretches to Lake Okeechobee. She felt the plan was lacking in its discussion of partnering opportunities with the South Florida Water Management District and Florida Sea Grant that could provide funding. She indicated that the plan does not accurately reflect ongoing coordination with the National Estuary Program and the program's source of funding.

Dave Allen (Port Charlotte Kayakers) concurred with the need for greater interagency coordination and noted that the public does not differentiate between different government managing entities. He stated that it was difficult putting plan in context without comparison of progress with past plans, clear priorities, benchmarks or timeline. He discussed a project currently underway to survey the entire Charlotte County shoreline that will document conditions of vegetation. He expressed supports for canoe access at El Jobean, Sunrise Park, Cattle Dock Point and Sam Knight Creek and would like to see additional parking to provide trail access. He also discussed the need for better maps that identify the recreational opportunities in all of the Charlotte Harbor area. He closed by asking if the plan would impact "mosquito tunnels" (ditches with a canopy of mangroves that are used for paddling access).

Johnny Hunter (Charlotte County Environmental Services) stated that the County was interested in establishing a helipad at the preserve to bolster mosquito control efforts. He indicated that previous management had supported and that the project would involve mitigation of wetland impacts. He stated that the County may not be able to provide mosquito control to the preserve in the future as available vacant lands are developed.

### Staff Response and Recommendations

#### Requirements for Public Notice and Plan Review

Chapter 120, Florida Statutes, requires notice of public meetings to be published the Florida Administrative Weekly. Chapter 259, Florida Statutes, requires the development of a management plan with input from an advisory group, a public hearing, posting notice of the hearing on the property, advertisement of the meeting in a paper of general circulation and announcement at a local government body hearing. The planning process for Charlotte Harbor Preserve State Park has complied with these provisions.

Chapter 259 also requires that a management prospectus be made available to the public 30 days before the scheduled public hearing. It is important to note that a management prospectus is not the same as a management plan. A prospectus is developed as part of the acquisition process prior to property being acquired. It provides a very brief, general discussion of the qualifications for state acquisition, designates a managing agency, and identifies conditions affecting management intensity, provides a timetable for providing protection and security, and assesses the property's revenue potential. It does not identify purpose of acquisition, future land use, resource management needs, and other important aspects of management. Management prospectuses were not developed for the early acquisition programs under which most of the property that later became part of Charlotte Harbor Preserve State Park was acquired. The Florida Forever annual report does, however, include a management prospectus for lands that will be acquired in the future as part of the preserve. That prospectus was not made available prior to the public meeting. This will be corrected for future management plans involving properties with a management prospectus. The Division has always made copies of all draft management plans available upon request prior to public meetings. To further enhance opportunities for public review, future draft management plans will also be made available via the internet.

The 2006 Florida Forever Plan includes the Charlotte Harbor Estuary project description and management prospectus and can be read at: <http://www.dep.state.fl.us/lands/acquisition/FloridaForever/FFAnnual/Updates/B.CharlotteHarborEstuary.pdf>. The prospectus is located on pages 97 and 99.

#### Management Coordination

The plan will be revised to include a brief discussion of the Coral Creek restoration feasibility study, its relation to preserve lands, and clarify the Division's ongoing coordination with the Southwest Florida Water Management District.

## Charlotte Harbor Preserve State Park Advisory Group Staff Report

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The Division fully supports expanding recreational trail opportunities through linkages with adjacent conservation lands and has expressed this interest to Charlotte County in the past. The Division remains committed to providing trail connectivity and is open to working with all adjacent land managers. Plan language will be reviewed to ensure this commitment is clarified.

Plan will be revised to indicate that the preserve manager is a member of the CHEC, Inc. board of directors.

The Division routinely coordinates management activities with a number of government, non-profit and private sector entities. The plan identifies those active partners under the Management Coordination section and includes several goals and objectives devoted to continued management coordination in a number of areas. Staff believes the plan provides a clear commitment to developing and maintaining partnerships and accurately reflects the ongoing management coordination taking place. No additional changes are recommended.

**Mapping Issues.** The location of the phosphate dock will be identified on a map in the plan.

**Acquisition History.** The acquisition history will be revised to identify major additions to the preserve over time.

**Boating Access.** The concept of a canoe launch on preserve land adjacent to Sunrise Park will be removed given the County's intent to develop this facility on their property.

In 2003, the City of Cape Coral requested a lease for a boat ramp on a 6.22 acre site in Lee County. The DEP Division of State Lands responded that deed restrictions on that parcel prohibit the development of this type of facility. These legal restrictions still apply and preclude use of this property for such purposes.

**Camping.** Division staff considered developing primitive camping sites accessible by canoe/kayak during the planning process. Operational and resource protection concerns focused efforts in areas with road access and no suitable locations were identified. Text will be added to the plan that discusses the potential for establishing primitive camp sites and rest stops linked to existing blueways at the preserve in the future.

The plan will be revised to include a primitive group camp in the Punta Gorda Management Area (see enclosed revised Conceptual Land Use Plan). The camp will have limited facilities (restroom, outside showers, fire ring, open shelter) and be available to youth groups and others by reservation.

## Charlotte Harbor Preserve State Park Advisory Group Staff Report

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**Management Plan Content and Structure.** Recommendations for revising plan content to include more detailed performance measures in state park management plans will be taken under advisement.

**Hog Removal.** Hunting on state park lands is limited to state reserves. However, it should be noted that limited hog hunting was tried at the preserve when it was under management by the Office of Coastal and Aquatic Managed Areas. Florida Fish and Wildlife Commission managed hunts were allowed for three years with unsatisfactory results. Hog removal at the preserve will continue under the direction of Division staff.

**Species Lists.** Species lists will be reviewed for inclusiveness and accuracy and revised as necessary.

**Birding Trail Sites.** The locations of Great Florida Birding Sites at the preserve will be specified.

**Cultural Resources Section.** Detailed discussion of the establishment of a temporary research facility at Big Mound Key will be removed from the plan.

Permit requirements related to archaeological work at the preserve will be clarified in plan.

Specific reference to the role of the archeological specialist position will be removed. The listing of duties and responsibilities for specific positions is considered outside the purview of a unit management plan.

Suggestions to improve the format of this section will be reviewed and incorporated where deemed appropriate.

**Trails.** The final improvements for the trail connecting the Old Datsun Trail and CHEC, Inc. are in progress and will be completed soon.

**Helipad.** Staff have a number of reservations about establishing a helipad at the preserve to support Charlotte County mosquito control. Onsite loading of fuel and chemicals has the potential to impact preserve resources. The Division has a formal process for evaluating requests to use park lands for non-park purposes. To date, the Division of Recreation and Parks has not received such a request. Charlotte County would need to submit a proposal in writing for this concept to receive further consideration.

# Charlotte Harbor Preserve State Park Advisory Group Staff Report

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## **Addendum 2 – References Cited**



## Charlotte Harbor Preserve State Park References Cited

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## **Addendum 3 – Soils Descriptions**



## Charlotte Harbor Preserve State Park Soils Descriptions

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**(2) Canaveral, fine sand ,0-2% slope** – This is a nearly level, moderately well drained soil and somewhat poorly drained soil on low ridges. The available water capacity is low. Natural fertility is low. Permeability is very rapid. Natural vegetation consists of cabbage palm, seagrape, wild coffee, and an under story of vines and weeds. Brazilian pepper, an invasive exotic, may also be present.

**(6) Hallendale fine sand, 0-2% slope** -This is a nearly level, poorly drained soil on low, broad flatwood areas. The available water capacity is low. Natural fertility is low. Permeability is moderate or moderately rapid. Natural vegetation consists of saw palmetto, pineland threeawn, bluestem, panicums and south Florida slash pine.

**(7) Matlacha-urban land complex** -This complex consists of nearly level Matlacha gravely fine sand and areas of urban land. The depth of the water table varies with the amount of fill material and the extent of artificial drainage. Most of the natural vegetation has been removed. The existing vegetation consists of scattered slash pine and various weeds.

**(8) Hallendale fine sand, 0-2% slope, tidal** -This is a nearly level, poorly drained soil on the outer edges of tidal flats. The water table fluctuates with the tide. This soil is subject to tidal flooding. The available water capacity is low. Natural fertility is low. Permeability is moderately rapid. Natural vegetation consists of seashore saltgrass, black mangrove, batis and sea daisy. When in good or excellent condition, the saltwater marsh is dominated by smooth cordgrass, seashore saltgrass, and other grasses and forbs. Burning management is required to maintain these sites in their most desirable condition.

**(9) EauGallie sand, <1% slope** - This is a nearly level, poorly drained soil on flatwoods. The available water capacity is very low in the surface and subsurface layers and medium in the subsoil. Natural fertility is low. Permeability is rapid in the surface and subsurface layers and moderately slow or moderate in the subsoil. Natural vegetation consists of saw palmetto, fetterbush, pineland threeawn and south Florida slash pine.

**(10) Pompano fine sand, 0-1% slope**-This is a nearly level, poorly drained soil on sloughs. The available water capacity is very low. Natural fertility is low. Permeability is rapid. Natural vegetation consists of South Florida slash pine, chalky bluestem, pineland threeawn and runner oak.

**(11) Myakka fine sand, 0-2% slope** - This is a nearly level, poorly drained soil on broad flatwood areas. The available water capacity is medium in the subsoil and very low in the surface and subsurface layers. Natural fertility is low. Permeability is rapid in the surface and subsurface layers and moderate to moderately rapid in the subsoil. Natural vegetation consists of saw palmetto, fetterbush, pineland threeawn and south Florida slash pine.

## Charlotte Harbor Preserve State Park Soils Descriptions

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**(17) Felda fine sand, 0-2% slope** -This is a nearly level, poorly drained soil on broad, nearly level sloughs. The available water capacity is low in the surface and subsurface layers and medium in the subsoil. Natural fertility is low. Permeability is rapid in the surface and subsurface layers and moderate or moderately rapid in the subsoil. Natural vegetation consists of cabbage palm, pineland threeawn, south Florida slash pine, wax myrtle and maidencane.

**(13) Boca fine sand, 0-2% slope** -This is a nearly level, poorly drained soil on flatwoods. The available water capacity is low in the surface and subsurface layers and medium in the subsoil. Natural fertility is low. Permeability is rapid in the surface and subsurface layers and moderate in the subsoil. Natural vegetation consists of saw palmetto, pineland threeawn, south Florida slash pine and wax myrtle.

**(14) Valkaria fine sand, 0-1% slope** -This is a nearly level, very poorly drained soil on sloughs. The available water capacity is low. Natural fertility is low. Permeability is rapid. Natural vegetation consists of sparse saw palmetto, South Florida slash pine and maidencane. Melaleuca, and invasive exotic, may also be present.

**(15) Estero muck, 0-1% slope** -This is a nearly level, very poorly drained soil on broad tidal marsh areas. The water table fluctuates with the tide and is subject to tidal flooding. Natural vegetation consists of seashore saltgrass, batis, oxeye daisies, black mangrove and scattered red mangrove. When in good or excellent condition, the saltwater marsh is dominated by various saltgrass, and numerous other grasses and forbs. Burning is required to maintain these sites in their most desirable condition.

**(16) Peckish mucky fine sand, 0-1% slope** -This is a nearly level, very poorly drained soil on broad tidal swamp areas. This water level fluctuates with the tide and the soil is subject to tidal flooding. Natural vegetation consists of black mangrove, American mangrove and batis.

**(17) Daytona sand, 0-5% slope** -This is a nearly level to gently sloping, moderately well drained soil on low ridges on the flatwoods. The available water capacity is very low, except in the subsoil where it is medium. Natural fertility is low. Permeability is very rapid in the surface layer and moderately rapid in the subsoil. The natural vegetation consists of oaks, saw palmetto, south Florida slash pine and gallberry.

**(18) Matlacha gravelly fine sand, limestone substratum, 0-2% slope** -This is a nearly level, somewhat poorly drained soil that formed as a result of earthmoving operations in areas that are underlain by limestone bedrock. The available water capacity is low. Permeability is variable, but it is estimated to be moderately rapid-to-rapid in the fill material and rapid in the upper part of the underlying material. It is moderately slow in lower horizons. Natural fertility is estimated to be low. Most of the natural

## Charlotte Harbor Preserve State Park Soils Descriptions

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vegetation has been removed. The existing vegetation consists of South Florida slash pine, and various scattered weeds.

**(20) Terra Ceia muck, 0-1% slope** -This is a nearly level, very poorly drained organic soil on freshwater marsh areas. Available water capacity is medium. Natural fertility is moderate. Permeability is rapid. Natural vegetation consists of sawgrass, sand cordgrass and waxmyrtle.

**(23) Wulfert muck, 0-1% slope** -This is a nearly level, very poorly drained soil on broad tidal swamps. Areas are subject to tidal flooding and water table fluctuates with the tide. Natural vegetation consists of mangroves, needle rush, cordgrasses, and saltgrass. Burning is required to maintain these sites in their most desirable condition.

**(24) Kesson fine sand, 0-1% slope** -This is a nearly level, very poorly drained soil in broad tidal swamps. Areas are subject to tidal flooding. The water table fluctuates with the tide. Natural fertility is low. Permeability is moderately rapid. This soil has a high salt and sulfur content. Natural vegetation consists of black mangrove, batis, oxeye daisy and American mangrove.

**(26) Pineda fine sand, 0-1% slope** -This is a nearly level, poorly drained soil on sloughs. Natural fertility is low. Permeability is rapid in the surface and subsurface layers and the upper sandy part of the subsoil and slow, or very slow in the lower, loamy part of the subsoil. Natural vegetation consists of pineland threeawn, panicums, sedges, maidencane, wax myrtle, south Florida slash pine, and scattered clumps of saw palmetto.

**(27) Pompano fine sand, depression, <1% slope** -This is a nearly level, poorly drained soil in depressions. The available water capacity is low. Natural fertility is low. Permeability is rapid. A large part of the acreage is in natural vegetation: St. Johnswort and wax myrtle.

**(28) Immokalee sand, 0-2% slope** -This is a nearly level, poorly drained soil in flatwood areas. The available water capacity is medium in the subsoil and very low in the surface and subsurface layers. Natural fertility is low. Permeability is rapid in the surface and subsurface layers and moderate to moderately rapid in the subsoil. Natural vegetation consists of saw palmetto, fetterbush, pineland threeawn and south Florida slash pine.

**(29) Punta fine sand, 1-2% slope** -This is a nearly level, poorly drained soil that occurs on slightly elevated landscapes on flatwoods. The available water capacity is low. Natural fertility is low. Permeability is rapid in the surface and subsurface layers and moderate in the subsoil. Natural vegetation consists of sawpalmetto, South Florida slash pine, pineland threeawn, waxmyrtle and some scrub oak.

## Charlotte Harbor Preserve State Park Soils Descriptions

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**(33) Oldsmar sand, 0-2% slope** -This is a nearly level, poorly drained soil on low, broad, flatwoods areas. The available water capacity is low in the surface layer and medium in the subsoil. Natural fertility is low. Permeability is rapid in the surface and subsurface layers and moderate in the upper part of the subsoil, and slow or very slow in the lower part of the subsoil. Natural vegetation consists of sawpalmetto, South Florida slash pine, pineland threeawn and meadow beauty.

**(34) Malabar fine sand, 0-1% slope**-This is a nearly level, poorly drained soil on sloughs. The available water capacity is low in the surface and subsurface layers and the upper part of the subsoil and medium in the lower part of the subsoil. Natural fertility is low. Permeability is rapid in the surface and subsurface layers and the upper part of the subsoil and slow or very slow in the lower part of the subsoil. Natural vegetation consists of pineland threeawn, waxmyrtle, scattered sawpalmetto, maidencane, panicums and South Florida slash pine.

**(35) Wabasso sand, 0-2% slope** -This is a nearly level, poorly drained soil on flatwoods. The available water capacity is low in the surface and subsurface layers and medium in the subsoil. Natural fertility is low. Permeability is rapid in the surface and subsurface layers, moderate in the upper part of the subsoil, and slow or very slow in the lower part of the subsoil. Natural vegetation consists of sawpalmetto, South Florida slash pine, pineland threeawn, cabbage palm and bluestem.

**(37) Satellite fine sand 0-2% slope** - This is a nearly level, somewhat poorly drained soil on low knolls and ridges. Available water capacity is low. Natural fertility is low. Permeability is very rapid. Natural vegetation consists of Florida rosemary, sand live oak, saw palmetto, South Florida slash pine and pineland threeawn.

**(39) Isles fine sand, depressional, 0-1% slope** -This is a nearly level, poorly drained soil in depressions. The available water capacity is low. Permeability is rapid in the surface and subsurface layers and moderate in the subsoil. Natural fertility is low. Natural vegetation consists of cabbage palm, water oak and maidencane.

**(40) Anclote sand, depressional, <1% slope**-This is a nearly level, poorly drained soil in isolated depressions. The available water capacity is medium in the surface layer and low in the substratum. Natural fertility is medium. Permeability is rapid. Natural vegetation consists of cypress, leatherleaf fern, waxmyrtle, pickerelweed and greenbrier.

**(42) Wabasso sand, limestone substratum, 0-2% slope** -This is a nearly level, poorly drained soil on broad flatwoods. The available water capacity is low in the surface and subsurface layers and the upper part of the subsoil and medium in the lower part of the subsoil. Natural fertility is low. Permeability is rapid in the surface and subsurface

## Charlotte Harbor Preserve State Park Soils Descriptions

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layers and the upper part of the subsoil and. If is slow in lower part of the subsoil. Natural vegetation consists of saw palmetto, south Florida slash pine, dwarf huckleberry, cabbage palm, gallberry, andw pineland threeawn.

**(43) Smyrna fine sand, 0-2% slope** -This is a nearly level, poorly drained soil on flatwoods. The available water capacity is very low in the surface and subsurface layers and medium in the subsoil. Natural fertility is low. Permeability is rapid in the surface and subsurface layers and moderate to moderately rapid in the subsoil. Natural vegetation consists of saw palmetto, south Florida slash pine, wax myrtle, inkberry, dwarf huckleberry and pineland threeawn.

**(45) Copeland sandy loam, depression, <1% slope** -This is a nearly level, very poorly drained soil in depressions. The available water capacity is medium. Natural fertility is medium. Permeability is rapid in the surface layer and moderate in the subsoil. Natural vegetation consists of scattered cypress, wax myrtle, cabbage palm, fern, redroot and other water-tolerant plants.

**(50) Olsmar fine sand, limestone substratum, 0-2% slope** -This is a nearly level, poorly drained soil in the flatwoods. Natural fertility is low; permeability is rapid in the surface and subsurface layers, moderately slow in the upper part of the subsoil, and slow or very slow in the lower part of the subsoil. The natural vegetation consists of saw palmetto, South Florida slash pine, inkberry and pineland threeawn.

**(53) Myakka fine sand, depression, <1% slope** -This is a nearly level, poorly drained soil in depressions. The available water capacity is very low in the surface and subsurface layers and medium in the subsoil. Natural fertility is low. Permeability is rapid in the surface and subsurface layers and moderate to moderately rapid in the subsoil. Natural vegetation consists of scattered cypress, St. Johnswort, sedges, maidencane, sand cordgrass and wax myrtle. Non-native vegetation includes melaleuca.

**(56) Isles muck, 0-1% slope** -This is a nearly level, very poorly drained soil in tidal swamps. Areas are subject to tidal flooding and water table fluctuates with the tide. Natural vegetation consists of red and black mangrove, batis and sea purslane. When in good or excellent condition, the saltwater marsh is dominated by cordgrasses, saltgrass, and other grasses and forbs. Burning is required to maintain these sites in their most desirable condition.

**(57) Boca fine sand, tidal, <1% slope** -This is a nearly level, poorly drained saline that is subject to tidal flooding. The available water capacity is low in the surface and subsurface layers and upper part of the subsoil and medium or high in the lower part of the subsoil. Natural fertility is low because of the excess sodium throughout the profile. Permeability is rapid in the surface and subsurface layers and the upper part of the

## Charlotte Harbor Preserve State Park Soils Descriptions

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subsoil and moderate in the lower part of the subsoil. Natural vegetation consists of buttonbush, sea daisy, seashore saltgrass, saltwort, scattered black and white mangrove and scattered cabbage palm. Brazilian pepper and invasive exotic species may also be scattered here.

**(63) Malabar fine sand, high, 0-2% slope** -This is a nearly level, poorly drained soil in the flatwoods. The available water capacity is low in the surface and subsurface layers and medium in the subsoil. Natural fertility is low. Permeability is rapid in the surface and subsurface layers and the sandy part of the subsoil and moderately slow in the lower, loamy part of the subsoil. Natural vegetation consists of saw palmetto, cabbage palm, South Florida slash pine, wax myrtle and pineland threeawn.

**(69) Matlacha gravelly fine sand, 0-2% slope** -This is a nearly level, somewhat poorly drained soil formed by filling and earthmoving operations. The available water capacity is variable, but it is estimated to be low. Permeability is variable within short distances, but it is estimated to be moderately rapid-to-rapid in the fill material and rapid in the underlying material. Natural fertility is estimated to be low. Most of the natural vegetation has been removed. The existing vegetation consists of South Florida Slash Pine and various scattered weeds.

**Addendum 4 – Plant And Animal List**



## Charlotte Harbor Preserve State Park – Plants

Common Name	<i>Scientific Name</i>	Primary Habitat (For Designated Species)
Red maple .....	<i>Acer rubrum</i>	
Rosary pea * .....	<i>Abrus precatorius</i>	
Earleaf acacia * .....	<i>Acacia auriculiformis</i>	
Sweet acacia .....	<i>Acacia farnesiana</i>	
Barbedwire cactus .....	<i>Acanthocereus pentagonus</i> .....	3,16
Golden leather fern .....	<i>Acrostichum aureum</i> .....	35,65
Giant leather fern .....	<i>Acrostichum danaeifolium</i> .....	35,65
Shyleaf .....	<i>Aeschynomene Americana</i>	
Saltmarsh false foxglove .....	<i>Agalinis maritima</i>	
Sisal hemp * .....	<i>Agave sisalana</i>	
Woman’s tongue * .....	<i>Albizia crenata</i>	
Chaff flower .....	<i>Alternanthera maritima</i>	
Southern amaranth .....	<i>Amaranthus australis</i>	
Florida amaranth.....	<i>Amaranthus floridanus</i>	
Common ragweed .....	<i>Ambrosia artemisiifolia</i>	
Coastal ragweed.....	<i>Ambrosia hispida</i>	
Toothcups.....	<i>Ammannia latifolia</i>	
Flase indigo bush .....	<i>Amorpha fruticosa</i>	
Muhly grass .....	<i>Amphicarpum muhlenbergianum</i>	
Bushy bluestem .....	<i>Andropogon glomeratus var. pumilus</i>	
Broomsedge .....	<i>Andropogon virginicus</i>	
Pond apple .....	<i>Annonia glabra</i>	
Shoebuttton ardisia * .....	<i>Ardisia elliptica</i>	
Marlberry .....	<i>Ardisia escallonioides</i>	
Longleaf threeawn .....	<i>Aristida affinis</i>	
Pineland threeawn.....	<i>Aristida spicifomis</i>	
Hillsborough threeawn .....	<i>Aristida stricta</i>	
Wire grass.....	<i>Aristida beyrichiana</i>	
Butterflyweed .....	<i>Asclepias tuberosa</i>	
Butterflyweed .....	<i>Asclepias longiolius</i>	
Dwarf Pawpaw.....	<i>Asimonia pygmaea</i>	
Pawpaw .....	<i>Asimonia reticulata</i>	
Common asparagus-fern * .....	<i>Asparagus setaceus</i>	
Marsh aster.....	<i>Aster laterifolius</i>	
White-topped aster .....	<i>Aster tortifolius</i>	
Sand atriplex .....	<i>Atriplex cristata</i>	
Black mangrove.....	<i>Avicennia germinans</i>	
Saltwater false willow .....	<i>Baccharis angustifolia</i>	
Saltbush .....	<i>Baccharis halimifolia</i>	
Water-hyssop.....	<i>Bacopa caroliniana</i>	

\* Non-native Species

## Charlotte Harbor Preserve State Park – Plants

Common Name	Scientific Name	Primary Habitat (For Designated Species)
Coastal water-hyssop .....	<i>Bacopa monnieri</i>	
Saltwort.....	<i>Batis maritima</i>	
Tarflower .....	<i>Befaria racemosa</i>	
Beggar-ticks.....	<i>Bidens alba var. radiata</i>	
Spanish needle.....	<i>Bidens pilosa</i>	
Toothed mid-sorus fern.....	<i>Blechnum serrulatum</i>	
Red spiderling .....	<i>Boerhavia diffusa</i>	
Doll's daisy.....	<i>Boltonia diffusa</i>	
Sea daisies; sea oxeye .....	<i>Borrichia frutescens</i>	
Para grass* .....	<i>Brachiaria mutica</i>	
American blueheart .....	<i>Buchnera americana</i>	
Saffron plum .....	<i>Bumelia celestrina</i>	
Burmanna.....	<i>Burmanna capitata</i>	
Gumbo-limbo.....	<i>Bursera simaruba</i>	
Gray nicker.....	<i>Caesalpinia bonduc</i>	
Coastal searocket.....	<i>Cakile lanceolata</i>	
American beautyberry.....	<i>Callicarpa americana</i>	
Pale grass pink.....	<i>Calopogon pallidus</i>	
Grass pink .....	<i>Calopogon pulchella</i>	
Florida bellflower.....	<i>Campanula floridana</i>	
Canna lily .....	<i>Canna flaccida</i>	
Jamaica caper-tree .....	<i>Capparis cynophallophora</i>	
Limber caper .....	<i>Capparis flexuosa</i>	
Goatweed .....	<i>Capraria biflora</i>	
Bird pepper .....	<i>Capsicum annuum</i>	
Sedge.....	<i>Carex vexans</i>	
Deer tongue.....	<i>Carphephorus odoratissimus</i>	
Hairy deer tongue .....	<i>Carphephorus paniculatus</i>	
Papaya * .....	<i>Carica papaya</i>	
Australian-pine * .....	<i>Casuarina equisetifolia</i>	
Suckering Australian pine * .....	<i>Casuarina glauca</i>	
Madagascar periwinkle * .....	<i>Catharanthus roseus</i>	
Spiny hackberry .....	<i>Celtis ehrenbergiana (pallida)</i> .....	16
Iguana hackberry .....	<i>Celtis iguanaea</i> .....	16
Coast sandspur.....	<i>Cenchrus incertus</i>	
Sandspur.....	<i>Cenchrus tribuloides</i>	
Coinwort* .....	<i>Centella asiatica</i>	
Erect coinwort.....	<i>Centella erecta</i>	
Spurred butterfly-pea .....	<i>Centrosema virginianum</i>	
Buttonbush.....	<i>Cephalanthus occidentalis</i>	

\* Non-native Species

## Charlotte Harbor Preserve State Park – Plants

Common Name	<i>Scientific Name</i>	Primary Habitat (For Designated Species)
Partridge pea.....	<i>Chamaecrista fasciculata</i>	
Wild sensitive-plant.....	<i>Chamaecrista nictitans var. aspera</i>	
Dixie sandmat.....	<i>Chamaesyce bombensis</i>	
Pill-pod sandmat.....	<i>Chamaesyce hirta</i>	
Tropical sandmat .....	<i>Chamaesyce hypericifolia</i>	
Hyssop-leaf sandmat.....	<i>Chamaesyce hyssopifolia</i>	
Musk grass .....	<i>Chara sp.</i>	
Mexican tea *.....	<i>Chenopodium ambrosioides</i>	
Snowberry .....	<i>Chiococca alba</i>	
Coco-plum.....	<i>Chrysobalanus icaco</i>	
Satinleaf .....	<i>Chrysophyllum olivaeforme</i>	16
Coastal plain goldenaster.....	<i>Chrysopsis scabrella</i>	
Yellow thistle .....	<i>Cirsium horridulum</i>	
Sour orange; grapefruit *.....	<i>Citrus spp.</i>	
Sawgrass.....	<i>Cladium jamaicense</i>	
Pine hyacinth .....	<i>Clematis baldwinii</i>	
Tread-softly.....	<i>Cnidioscolus stimulosus</i>	
Pigeon plum.....	<i>Coccoloba diversifolia</i>	
Seagrape .....	<i>Coccoloba uvifera</i>	
Coconut palm *.....	<i>Cocos nucifera</i>	
Wild taro *.....	<i>Colocasia esculenta</i>	
Recumbant day-flower.....	<i>Commelina diffusa</i>	
Erect day-flower .....	<i>Commelina erecta</i>	
Buttonwood .....	<i>Conocarpus erectus</i>	
Geiger tree.....	<i>Cordia sebastena</i>	16
Tickseed.....	<i>Coreopsis floridana</i>	
Leavenworth's tickseed.....	<i>Coreopsis leavenworthii</i>	
String-lily.....	<i>Crinum americanum</i>	
Shakeshake *.....	<i>Crotalaria incana</i>	
Low rattlebox.....	<i>Crotalaria pumila</i>	
Rabbit-bells .....	<i>Crotalaria rotundifolia</i>	
Rattlebox.....	<i>Crotalaria pallida</i>	
Rabbit-bells .....	<i>Crotalaria spectabilis</i>	
Tropical croton .....	<i>Croton glandulosus var. floridanus</i>	
Carrotwood *.....	<i>Cupaniopsis anacardioides</i>	
Palay rubber vine *.....	<i>Cryptostegia grandiflora</i>	
Milkweed vine.....	<i>Cynanchum scoparium</i>	
Bermudagrass *.....	<i>Cynodon dactylon</i>	
Poorland flatsedge .....	<i>Cyperus compressus</i>	
Baldwin's flatsedge.....	<i>Cyperus croceus</i>	

\* Non-native Species

## Charlotte Harbor Preserve State Park – Plants

Common Name	Scientific Name	Primary Habitat (For Designated Species)
Umbrellasedge *	<i>Cyperus involucratus</i>	
Alabama swamp flatsedge	<i>Cyperus ligularis</i>	
Flat-leaf flatsedge	<i>Cyperus planifolius</i>	
Many-spike flatsedge	<i>Cyperus polystachyos</i>	
Pine-barren flatsedge	<i>Cyperus retrorsus</i>	
Four-angle flatsedge	<i>Cyperus tetragonus</i>	
Crowfootgrass *	<i>Dactyloctenium aegyptium</i>	
Coin-vine	<i>Dalbergia ecastaphyllum</i>	
Indian rosewood*	<i>Dalbergia sisso</i>	
Whitetassels	<i>Dalea carnea</i>	
Beautiful pawpaw	<i>Deeringothamnus pulchellus</i>	8,15
Beggar ticks	<i>Desmodium paniculatum</i>	
Needleleaf witchgrass	<i>Dichantheium aciculare</i>	
White-top sedge	<i>Dichromenia colorata</i>	
Cardinal flower	<i>Dicliptera assurgens</i> var. <i>vahliana</i>	
Crabgrass	<i>Digitaria villosa</i>	
Diodia	<i>Diodia teres</i>	
Buttonweed	<i>Diodia virginiana</i>	
Winged yam *	<i>Dioscorea alata</i>	
Air potato *	<i>Dioscorea bulbifera</i>	
Saltgrass	<i>Distichlis spicata</i>	
Pink sundew	<i>Drosera capillaris</i>	
Golden dewdrop*	<i>Durantia repens</i>	
Twinflower	<i>Dyschoriste oblongifolia</i>	
Sedges	<i>Eleocharis</i> spp.	
Elephant foot	<i>Elephantopus elatus</i>	
Tampa butterfly orchid	<i>Encyclia tampensis</i>	15,65
Fireweed	<i>Erechtites hieraciifolius</i>	
Plume grass	<i>Erianthus giganteus</i>	
Daisy fleabane	<i>Erigeron strigosus</i>	
Hatpins	<i>Eriocaulon compressum</i>	
Black torch	<i>Erithalis fruticosa</i>	
Golden beach creeper	<i>Ernodea littoralis</i>	3
Southeastern coralbean	<i>Erythrina herbacea</i>	
White stopper	<i>Eugenia axillaris</i>	
Redberry stopper	<i>Eugenia confusa</i>	16
Spanish stopper	<i>Eugenia foetida</i>	
Red stopper	<i>Eugenia rhombia</i>	16
Wild coco	<i>Eulophia alta</i>	8
Dogfennel	<i>Eupatorium capillifolium</i>	

\* Non-native Species

## Charlotte Harbor Preserve State Park – Plants

Common Name	<i>Scientific Name</i>	Primary Habitat (For Designated Species)
False-fennel .....	<i>Eupatorium leptophyllum</i>	
Semaphore eupatorium.....	<i>Eupatorium mikanioides</i>	
Florida spurge.....	<i>Euphorbia polyphylla</i>	
Saltmarsh fingergrass .....	<i>Eustachys glauca</i>	
Pinewoods fingergrass .....	<i>Eustachys petraea</i>	
Seaside gentian.....	<i>Eustoma exaltatum</i>	
Bushy goldenrod.....	<i>Euthamia minor</i>	
Creeping morning-glory .....	<i>Evolvulus alsinoides</i>	
Princewood .....	<i>Exostema caribaeum</i>	
Florida strangler fig .....	<i>Ficus aurea</i>	
Shortleaf fig.....	<i>Ficus citrifolia</i>	
Indian laurel; Cuban laurel * .....	<i>Ficus microcarpa</i>	
Carolina fimbry .....	<i>Fimbristylis caroliniana</i>	
Hurricanegrass .....	<i>Fimbristylis cymosa</i>	
Marsh fimbry .....	<i>Fimbristylis spadicea</i>	
Florida yellowtops .....	<i>Flaveria floridana</i>	
Narrowleaf yellowtops.....	<i>Flaveria linearis</i>	
Florida privet .....	<i>Forestiera segregata</i>	
Pop ash .....	<i>Fraxinum caroliniana</i>	
Umbrella sedge.....	<i>Fuirena scirpoidea</i>	
Blanket flower.....	<i>Gaillardia pulchella</i>	
Butterfly pea.....	<i>Galactia elliotii</i>	
Wild red bean .....	<i>Galactia regularis</i>	
Downy milk-pea.....	<i>Galactia volubilis</i>	
Southern gaura .....	<i>Gaura angustifolia</i>	
Seven-year apple .....	<i>Genipa clusiifolia</i>	
Gentian .....	<i>Gentian sp.</i>	
Rabbit tobacco.....	<i>Gnaphalium obtusifolium</i>	
Loblolly bay .....	<i>Gordonia lasianthus</i>	
Wild cotton.....	<i>Gossypium hirsutum</i> .....	3,16
Hedge hyssop .....	<i>Gratiola ramosa</i>	
Long-horned orchid.....	<i>Habenaria quinqueseta</i>	
Firebush.....	<i>Hamelia patens</i>	
Prickly-apple cactus.....	<i>Harrisia aboriginum</i> .....	3,16
Pine-barren frostweed.....	<i>Helianthemum corymbosum</i>	
West coast dune sunflower.....	<i>Helianthus debilis subsp. vestitus</i>	
Scorpion-tail.....	<i>Heliotropium angiospermum</i>	
Seaside heliotrope .....	<i>Heliotropium curassavicum</i>	
Pineland heliotrope.....	<i>Heliotropium polyphyllum</i>	
Bladder mallow .....	<i>Herissantia crispa</i>	

\* Non-native Species

## Charlotte Harbor Preserve State Park – Plants

Common Name	Scientific Name	Primary Habitat (For Designated Species)
Camphorweed .....	<i>Heterotheca subaxillaris</i>	
Seaside hibiscus * .....	<i>Hibiscus tiliaceus</i>	
Coastal plain hawkweed .....	<i>Hieracium megacephalon</i>	
Round-leaf bluet .....	<i>Houstonia procumbens</i>	
Many-flower marsh pennywort .....	<i>Hydrocotyle umbellata</i>	
Broad-leaf spider-lily .....	<i>Hymenocallis latifolia</i>	
Round pod St. John's wort .....	<i>Hypericum cistifolium</i>	
Peel bark St. John's wort .....	<i>Hypericum fasciculatus</i>	
Pineweeds St. John's wort .....	<i>Hypericum gentianoides</i>	
Myrtleleaf St. John's wort .....	<i>Hypericum myrtifolium</i>	
Four petal St. John's wort .....	<i>Hypericum tetrapetalum</i>	
Musk mint .....	<i>Hyptis alata</i>	
Dahoon holly .....	<i>Ilex cassine</i>	
Gallberry .....	<i>Ilex glabra</i>	
Yaupon holly .....	<i>Ilex vomitoria</i>	
Cogon grass * .....	<i>Imperata cylindrica</i>	
Moonflower .....	<i>Ipomoea alba</i>	
Railroad-vine .....	<i>Ipomoea pes-caprae subsp. brasiliensis</i>	
Cypress vine * .....	<i>Ipomoea quamoclit</i>	
Glade morning-glory .....	<i>Ipomoea sagittata</i>	
Beach morning-glory .....	<i>Ipomoea violacea</i>	
Blue flag .....	<i>Iris hexigona</i>	
Jacaranda * .....	<i>Jacaranda acutifolia</i>	
Joewood .....	<i>Jacquinia keyensis</i> .....	16
Soft rush .....	<i>Juncus effuses</i>	
Black rush .....	<i>Juncus roemerianus</i>	
Needle rush .....	<i>Juncus scirpoides</i>	
Southern red cedar .....	<i>Juniperus silicicola</i>	
Water willow .....	<i>Justicia sp.</i>	
Saltmarsh mallow .....	<i>Kosteletzkya virginica</i>	
Carolina edroot .....	<i>Lachnanthes caroliniana</i>	
White-headed bogbutton .....	<i>Lachnocaulon anceps</i>	
White-headed bogbutton .....	<i>Lachnocaulon anceps glabrum</i>	
White mangrove .....	<i>Laguncularia racemosa</i>	
Shrub verbena * .....	<i>Lantana camara</i>	
Pineland lantana .....	<i>Lantana depressa</i> .....	8,15
Wild sage .....	<i>Lantana involucrata</i>	
Spreading pinweed .....	<i>Lechea divaricata</i> .....	8
Pineland pinweed .....	<i>Lechea sessiliflora</i>	
Duckweed .....	<i>Lemna spp.</i>	

\* Non-native Species

## Charlotte Harbor Preserve State Park – Plants

Common Name	Scientific Name	Primary Habitat (For Designated Species)
Poorman's-pepper.....	<i>Lepidium virginicum</i>	
Spangle-top grass.....	<i>Leptochloa</i> sp.	
Leadtrees * .....	<i>Leucaena leucocephala</i>	
Blazing star.....	<i>Liatris gracilis</i>	
Gopher-apple.....	<i>Licania michauxii</i>	
Carolina sea-lavender.....	<i>Limonium carolinianum</i>	
Yellowseed false pimpernel.....	<i>Lindernia dubia</i> var. <i>anagallidea</i>	
Piedmont false pimpernel.....	<i>Lindernia monticola</i>	
Frog fruit.....	<i>Lippia nodiflora</i>	
Sweetgum.....	<i>Liquidambar styraciflua</i>	
Glade lobelia .....	<i>Lobelia grandulosa</i>	
Pineland lobelia .....	<i>Lobelia homophylla</i>	
White lobelia .....	<i>Lobelia paludosa</i>	
Wingleaf primrosewillow .....	<i>Ludwigia decurrens</i>	
Seaside primrosewillow .....	<i>Ludwigia maritima</i>	
Smallfruit primrosewillow .....	<i>Ludwigia microcarpa</i>	
Peruvian primrosewillow* .....	<i>Ludwigia peruviana</i>	
Creeping primrosewillow.....	<i>Ludwigia repens</i>	
Christmasberry.....	<i>Lycium carolinianum</i>	
Tomato * .....	<i>Lycopersicon esculentum</i>	
Clubmoss.....	<i>Lycopodium elopecuroides</i>	
Clubmoss.....	<i>Lycopodium carolinianum</i>	
Roserush.....	<i>Lygodesmia aphylla</i>	
Japanese climbing fern*.....	<i>Lygodium japonicum</i>	
Old World climbing fern * .....	<i>Lygodium microphyllum</i>	
Rusty lyonia .....	<i>Lyonia fruticosa</i>	
Fetter bush.....	<i>Lyonia lucida</i>	
Sweetbay magnolia.....	<i>Magnolia virginiana</i>	
False mallow .....	<i>Malvastrum corchorifolium</i>	
Texas wax-mallow .....	<i>Malvastrum penduliflorum</i>	
Mastic.....	<i>Mastichodendron feetidissimum</i>	
Florida mayten .....	<i>Maytenus phyllanthoides</i> .....	3,65,83
Axil-flower .....	<i>Mecardonia acuminata</i>	
Melaleuca * .....	<i>Melaleuca quinquenervia</i>	
Melanthera .....	<i>Melanthera aspera</i>	
Chinaberry * .....	<i>Melia azedarach</i>	
Chocolate-weed.....	<i>Melochia corchorifolia</i>	
Bretonica peluda .....	<i>Melochia spicata</i>	
Creeping cucumber.....	<i>Melothria pendula</i>	
Florida Keys hemp vine .....	<i>Mikania cordifolia</i>	

\* Non-native Species

## Charlotte Harbor Preserve State Park – Plants

Common Name	<i>Scientific Name</i>	Primary Habitat (For Designated Species)
Climbing hempvine .....	<i>Mikania scandens</i>	
Wild balsam-apple * .....	<i>Momordica charantia</i>	
Horsemint .....	<i>Monarda punctata</i>	
Mulberry .....	<i>Morus rubra</i>	
Muhley grass .....	<i>Muhlenbergia capillaris</i>	
Asiatic dewflower .....	<i>Murdannia spirata</i>	
Simpson’s stopper .....	<i>Myrcianthes fragrans</i> .....	16
Wax myrtle .....	<i>Myrica cerifera</i>	
Myrsine .....	<i>Myrsine guianensis</i>	
Tuberous sword fern * .....	<i>Nephrolepis cordifolia</i>	
Swamp tupelo .....	<i>Nyssa sylvatica biflora</i>	
Evening primrose .....	<i>Oenothera humifusa</i>	
Hand fern .....	<i>Ophioglossum palmatum</i>	
Woodsgrass .....	<i>Oplismenus hirtellus</i>	
Prickly-pear cactus .....	<i>Opuntia humifusa</i>	
Erect prickly-pear cactus .....	<i>Opuntia stricta</i> var. <i>stricta</i> .....	16
Wild olive .....	<i>Osmanthus americanus</i>	
Cinnamon fern .....	<i>Osmunda cinnamomea</i> .....	36,48
Royal fern .....	<i>Osmunda regalis</i> var. <i>spectabilis</i> .....	36,48
Water cowbane .....	<i>Oxypolis filiformis</i>	
Beaked panicum .....	<i>Panicum anceps</i>	
Maidencane .....	<i>Panicum hemitomon</i>	
Guinea grass * .....	<i>Panicum maximum</i>	
Broomcord millet * .....	<i>Panicum miliaceum</i>	
Torpedo grass * .....	<i>Panicum repens</i>	
Redtop panicum .....	<i>Panicum rigidulum</i>	
Panic grass .....	<i>Panicum tenerum</i>	
Switchgrass .....	<i>Panicum virgatum</i>	
Virginia creeper .....	<i>Parthenocissus quinquefolia</i>	
Knotgrass .....	<i>Paspalum distichum</i>	
Bahiagrass * .....	<i>Paspalum notatum</i>	
Gulfdune paspalum .....	<i>Paspalum monostachyum</i>	
Corky-stemmed passionflower .....	<i>Passiflora suberosa</i>	
Lemongrass .....	<i>Pectis glaucescens</i>	
Red bay .....	<i>Persea palustris</i>	
Golden polypody .....	<i>Phlebodium aureum</i>	
Mistletoe .....	<i>Phoradendron serotinum</i>	
Common reed .....	<i>Phragmites palustris</i>	
Drummond’s leafflower .....	<i>Phyllanthus abnormis</i>	
Chamber bitter .....	<i>Phyllanthus urinaria</i>	

\* Non-native Species

## Charlotte Harbor Preserve State Park – Plants

Common Name	<i>Scientific Name</i>	Primary Habitat (For Designated Species)
Carpetweed.....	<i>Phyla nodiflora</i>	
Drummond's leaf-flower.....	<i>Phyllanthus abnormis</i>	
Coastal ground-cherry .....	<i>Physalis angustifolia</i>	
Pokeberry .....	<i>Phytolacca americana</i>	
Pennyroyal .....	<i>Piloblephis rigida</i>	
Butterwort .....	<i>Pinguicula</i> sp.	
Slash pine .....	<i>Pinus elliottii</i>	
Piriqueta .....	<i>Piriqueta caroliniana</i>	
Jamaica dogwood.....	<i>Piscidia piscipula</i>	
Devil's-claws .....	<i>Pisonia aculeata</i>	
Blackbead .....	<i>Pithecellobium keyense</i>	
Cat's-claw .....	<i>Pithecellobium unguis-cati</i>	
Golden aster .....	<i>Pityopsis graminifolia</i>	
Resurrection fern.....	<i>Pleopeltis polypodioides</i> var. <i>michauxiana</i>	
Stinking camphorweed .....	<i>Pluchea foetida</i>	
Shrubby camphorweed .....	<i>Pluchea odorata</i>	
Rosy camphorweed .....	<i>Pluchea rosea</i>	
Rose pogonia.....	<i>Pogonia ophioglossoides</i>	
Wild poinsettia .....	<i>Poinsettia heterophylla</i>	
Baldwin's milkwort .....	<i>Polygala baldwinii</i>	
Boykin's milkwort.....	<i>Polygala boykinii</i>	
Tall milkwort .....	<i>Polygala cymosa</i>	
Showy milkwort.....	<i>Polygala grandiflora</i>	
Orange milkwort.....	<i>Polygala lutea</i>	
Bachelor buttons.....	<i>Polygala nana</i>	
Low pinebarren milkwort.....	<i>Polygala ramosa</i>	
Yellow milkwort.....	<i>Polygala rugelii</i>	
Coastal milkwort.....	<i>Polygala setacea</i>	
Swamp smartweed .....	<i>Polygonum hydropiperoides</i>	
Resurrection fern .....	<i>Polypodium polypoides</i>	
Pickerel weed.....	<i>Pontederia cordata</i>	
Mermaid weed .....	<i>Proserpinaca pectinata</i>	
Shrt-becked balrush.....	<i>Psilocarya nitans</i>	
Strawberry guava * .....	<i>Psidium cattleianum</i>	
Guava * .....	<i>Psidium guajava</i>	
Whisk fern.....	<i>Psilotum nudum</i>	
Wild coffee .....	<i>Psychotria nervosa</i>	
Bracken .....	<i>Pteridium aquilinum</i> var. <i>caudatum</i>	
Coastal blackroot; rabbit-tobacco .....	<i>Pterocaulon pycnostachyum</i>	

\* Non-native Species

## Charlotte Harbor Preserve State Park – Plants

Common Name	<i>Scientific Name</i>	Primary Habitat (For Designated Species)
Blackroot.....	<i>Pterocaulon virgatum</i>	
Hairline mock bishop's-weed.....	<i>Ptilimnium capillaceum</i>	
Sand live oak.....	<i>Quercus geminata</i>	
Scrub oak.....	<i>Quercus inopina</i>	
Laurel oak.....	<i>Quercus laurifolia</i>	
Myrtle oak.....	<i>Quercus myrtifolia</i>	
Runner oak.....	<i>Quercus pumila</i>	
Live oak.....	<i>Quercus virginiana</i>	
White indigo-berry.....	<i>Randia aculeata</i>	
Buttercup.....	<i>Ranunculus</i> sp.	
Myrsine.....	<i>Rapanea punctata</i>	
Rubber vine*.....	<i>Rhabdadenia biflora</i>	
Savannah meadowbeauty.....	<i>Rhexia alifanus</i>	
Nuttall's meadowbeauty.....	<i>Rhexia nuttallii</i>	
Pale meadowbeauty.....	<i>Rhexia mariana</i>	
Red mangrove.....	<i>Rhizophora mangle</i>	
Downy rosemyrtle *.....	<i>Rhodomyrtus tomentosa</i>	
Winged sumac.....	<i>Rhus copallina</i>	
Red Natalgrass *.....	<i>Rhynchelytrum repens</i>	
Shortbristle beaksedge.....	<i>Rhynchospora breviseta</i>	
Anglestem beaksedge.....	<i>Rhynchospora caduca</i>	
Bunched beaksedge.....	<i>Rhynchospora cephalantha</i>	
Chapman's beakedge.....	<i>Rhynchospora chapmanii</i>	
Fringed beaksedge.....	<i>Rhynchospora ciliaris</i>	
Star rush.....	<i>Rhynchospora colorata</i>	
Swampforest beakedge.....	<i>Rhynchospora decurrens</i>	
Spreading beakedge.....	<i>Rhynchospora divergens</i>	
Fascicled beaksedge.....	<i>Rhynchospora fascicularis</i>	
Fernalds beaksedge.....	<i>Rhynchospora fernaldii</i>	
Threadleaf beaksedge.....	<i>Rhynchospora filifolia</i>	
Gray's beaksedge.....	<i>Rhynchospora grayi</i>	
Narrowfruit horned beaksedge.....	<i>Rhynchospora inundata</i>	
Giant whitetop.....	<i>Rhynchospora latifolia</i>	
Southern beaksedge.....	<i>Rhynchospora microcarpa</i>	
Plumed beaksedge.....	<i>Rhynchospora plumose</i>	
Tracy's beaksedge.....	<i>Rhynchospora tracyi</i>	
Wright's beaksedge.....	<i>Rhynchospora wrightiana</i>	
Mexican clover*.....	<i>Ricardia scabra</i>	
Castor bean *.....	<i>Ricinus communis</i>	
Rouge berry.....	<i>Rivina humilis</i>	

\* Non-native Species

## Charlotte Harbor Preserve State Park – Plants

Common Name	<i>Scientific Name</i>	Primary Habitat (For Designated Species)
Blackberry .....	<i>Rubus</i> sp.	
Black-eyed susan.....	<i>Rudbeckia hirta</i>	
Britton’s wild petunia* .....	<i>Ruellia brittoniana</i>	
Carolina wild petunia.....	<i>Ruellia caroliniensis</i>	
Wild petunia .....	<i>Ruellia</i> sp.	
Widgeon-grass.....	<i>Ruppia maritima</i>	
Cabbage palm.....	<i>Sabal palmetto</i>	
Rose gentian.....	<i>Sabatia grandiflora</i>	
Glenwood grass.....	<i>Sacciolepis striata</i>	
Arrowhead .....	<i>Sagittaria graminea</i>	
Duck potatoe.....	<i>Sagittaria latifolia</i>	
Perennial glasswort.....	<i>Salicornia perennis</i>	
Glasswort .....	<i>Salicornia virginica</i>	
Carolina willow .....	<i>Salix caroliniana</i>	
Blue sage.....	<i>Salvia azurea</i>	
Tropical sage.....	<i>Salvia coccinea</i>	
Lyyre-leaf sage.....	<i>Salvia lyrata</i>	
Elderberry .....	<i>Sambucus simpsonii</i>	
Water pimpernel .....	<i>Samolus ebracteatus</i>	
Pineland pimpernel .....	<i>Samolus valerandi</i> subsp. <i>parviflorus</i>	
African bowstring hemp * .....	<i>Sansevieria hyacinthoides</i>	
Soapberry .....	<i>Sapindus saponaria</i>	
Chinese tallow tree * .....	<i>Sapium sebiferum</i>	
White vine .....	<i>Sarcostemma clausum</i>	
Penny royal .....	<i>Satureja rigida</i>	
Inkberry .....	<i>Scaevola plumieri</i> .....	3
Beach naupka * .....	<i>Scaevola taccada</i> var. <i>sericea</i>	
Schefflera * .....	<i>Schefflera actinophylla</i>	
Brazilian pepper * .....	<i>Schinus terebinthifolius</i>	
Florida bluestem.....	<i>Schizachyrium</i> sp.	
Sunny-bell .....	<i>Schoenolirion albiflorum</i>	
Black sedge.....	<i>Schoenus nigricans</i>	
Sensitive briar .....	<i>Schrankia microphylla</i>	
Salmarsh bulrush.....	<i>Scirpus robustus</i>	
Bulrush .....	<i>Scirpus cyperinus</i>	
Baldwin’s nutrush.....	<i>Scleria baldwinii</i>	
Fewflower nutrush .....	<i>Scleria ciliata</i> var. <i>pauciflora</i>	
Riverswamp nutrush.....	<i>Scleria hirtella</i>	
Netted nutrush .....	<i>Scleria reticularia</i>	
Tall nutgrass .....	<i>Scleria triglomerata</i>	

\* Non-native Species

## Charlotte Harbor Preserve State Park – Plants

Common Name	Scientific Name	Primary Habitat (For Designated Species)
Low nutrush .....	<i>Scleria verticillata</i>	
Scullcap.....	<i>Scutellaria microphylla</i>	
Saw palmetto .....	<i>Serenoa repens</i>	
Rattlebox* .....	<i>Sesbania punicea</i>	
Bladderpod.....	<i>Sesbania vesicaria</i>	
Shoreline sea-purslane .....	<i>Sesuvium portulacastrum</i>	
Coastal foxtail .....	<i>Setaria corrugata</i>	
Coral foxtail.....	<i>Setaria macrosperma</i>	
Knotroot foxtail .....	<i>Setaria parviflora</i>	
Wireweed .....	<i>Sida acuta</i>	
Cordate wireweed.....	<i>Sida cordifolia</i>	
Saffron-plum.....	<i>Sideroxylon celastrinum</i>	
False mastic .....	<i>Sideroxylon foetidissimum</i>	
Narrow-leaf blue-eyed grass .....	<i>Sisyrinchium angustifolium</i>	
Ear-leaf greenbrier .....	<i>Smilax auriculata</i>	
Saw greenbrier.....	<i>Smilax bona-nox</i>	
Laurel greenbrier.....	<i>Smilax lauridolia</i>	
Bullbrier .....	<i>Smilax rotundifolia</i>	
Common nightshade .....	<i>Solanum americanum</i>	
Black nightshade .....	<i>Solanum chenopodioides</i>	
Wetland nighshade * .....	<i>Solanum tampicense</i>	
Tropical soda apple * .....	<i>Solanum virum</i>	
Chapman's goldenrod .....	<i>Solidago odora var. chapmanii</i>	
Seaside goldenrod.....	<i>Solidago sempervirens</i>	
Yellow necklace pod .....	<i>Sophora tomentosa var. truncata</i>	
Sand cordgrass .....	<i>Spartina bakeri</i>	
Sphagnum moss .....	<i>Sphagnum sp.</i>	
Saltmeadow cordgrass .....	<i>Spartina patens</i>	
Florida ladies tresses.....	<i>Spiranthes brevilabris</i> .....	8,15
Scarlet ladies tresses .....	<i>Spiranthes orchoides</i>	
Ladies tresses .....	<i>Spiranthes sp.</i>	
Coral dropseed .....	<i>Sporobolus domingensis</i>	
Smutgrass * .....	<i>Sporobolus indicus</i>	
Smutgrass * .....	<i>Sporobolus indicus var. pyramidalis</i>	
Seashore dropseed .....	<i>Sporobolus virginicus</i>	
St. Augustinegrass * .....	<i>Stenotaphrum secundatum</i>	
Corkwood.....	<i>Stillingia aquatica</i>	
Sea blite.....	<i>Suaeda linearis</i>	
Bay-cedar.....	<i>Suriana maritima</i>	
West Indian mahogany .....	<i>Swietenia mahagoni</i>	

\* Non-native Species

## Charlotte Harbor Preserve State Park – Plants

Common Name	Scientific Name	Primary Habitat (For Designated Species)
Queen palm *	<i>Syagrus romanzoffiana</i>	
Annual saltmarsh aster	<i>Symphotrichum subulatum</i>	
Bantam buttons	<i>Syngonanthus flavidulus</i>	
Java plum *	<i>Syzygium cumini</i>	
Bald cypress	<i>Taxodium distichum</i>	
Bahama elder	<i>Tacoma stans</i>	
Hoary pea	<i>Tephrosia chrysophylla</i>	
Tetrazygia	<i>Tetrazygia bicolor</i>	
Alligator flag	<i>Thalia geniculata</i>	
Widespread maiden fern	<i>Thelypteris kunthii</i>	
Marsh fern	<i>Thelypteris palustris var. pubescens</i>	
Portia tree *	<i>Thespesia populnea</i>	
Medusahead air plant	<i>Tillandsia balbisiana</i>	15,36
Giant air plant	<i>Tillandsia fasciculata var. densispica</i>	36
Twisted air plant	<i>Tillandsia flexuosa</i>	36
Wild pine	<i>Tillandsia paucifolia</i>	
Small ball-moss	<i>Tillandsia recurvata</i>	
Southern needleleaf air plant	<i>Tillandsia setacea</i>	
Spanish moss	<i>Tillandsia usneoides</i>	
Spreading air plant	<i>Tillandsia utriculata</i>	15,36
Eastern poison ivy	<i>Toxicodendron radicans</i>	
Spiderwort	<i>Tradescantia sp.</i>	
Puncture vine *	<i>Tribulus cistoides</i>	
Forked bluecurls	<i>Trichostema dichotomum</i>	
Coat buttons *	<i>Tridax procumbens</i>	
Southern cattail	<i>Typha domingensis</i>	
Wild alamanda	<i>Urechites lutes</i>	
Caesar's weed *	<i>Urena lobata</i>	
Para grass *	<i>Urochloa mutica</i>	
Horned bladderwort	<i>Utricularia conuta</i>	
Zigzag bladderwort	<i>Utricularia subulata</i>	
Darrow's blueberry	<i>Vaccinium darrowii</i>	
Shiny blueberry	<i>Vaccinium myrsinites</i>	
Deerberry	<i>Vaccinium stamineum</i>	
White crownbeard	<i>Verbesina virginica</i>	
Giant ironweed	<i>Vernonia gigantea</i>	
Four-leaf vetch	<i>Vicia acutifolia</i>	
Piedmont cow-pea	<i>Vigna luteola</i>	
Periwinkle *	<i>Vinca rosea</i>	
Lanceleaf violet	<i>Viola lanceolata</i>	

\* Non-native Species

## Charlotte Harbor Preserve State Park – Plants

Common Name	<i>Scientific Name</i>	Primary Habitat (For Designated Species)
Summer grape .....	<i>Vitis aestivalis</i>	
Southern fox grape.....	<i>Vitis rotundifolia</i>	
Shoestring fern.....	<i>Vittaria lineata</i>	
Waltheria .....	<i>Waltheria indica</i>	
Wedalia * .....	<i>Wedalia trilobata</i>	
Virginia chain fern .....	<i>Woodwardia virginica</i>	
Tallowwood; Hog-plum.....	<i>Ximenia americana</i>	
Coastal plain yelloweyed grass.....	<i>Xyris ambigua</i>	
Shortleaf yelloweyed grass.....	<i>Xyris brevifolia</i>	
Carolina yelloweyed grass.....	<i>Xyris caroliniana</i>	
Savannah yelloweyed grass .....	<i>Xyris flabelliformis</i>	
Richard’s yelloweyed grass .....	<i>Xyris jupicai</i>	
Tall yelloweyed grass .....	<i>Xyris platylepis</i>	
Small’s yelloweyed grass .....	<i>Xyris smalliana</i>	
Elliott's yelloweyed grass.....	<i>Xyris elliottii</i>	
Spanish dagger .....	<i>Yucca aloifolia</i>	
Coontie.....	<i>Zamia pumila</i> .....	8,15
Hercules-club.....	<i>Zanthoxylum clava-herculis</i>	
Wild lime .....	<i>Zanthoxylum fagara</i>	
Zepher lily .....	<i>Zephyranthes atamasco</i>	
Lawn orchid * .....	<i>Zeuxine strateumatica</i>	

\* Non-native Species

Charlotte Harbor Preserve State Park – Animals

Common Name	Scientific Name	Primary Habitat (For All Species)
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FISH

Gulf sturgeon.....	<i>Acipenser oxyrinchus desotoi</i> .....	52,77
Nurse shark.....	<i>Ginglymostoma cirratum</i> .....	77
Bull shark.....	<i>Carcharhinus leucas</i> .....	77
Blacktip shark .....	<i>Carcharhinus limbatus</i> .....	77
Sandbar shark.....	<i>Carcharhinus plumbeus</i> .....	77
Bonnethead shark .....	<i>Sphyrna tiburo</i> .....	77
Southern stingray .....	<i>Dasyatis americana</i> .....	77
Spotted eagle ray .....	<i>Aetobatis narinari</i> .....	77
Ladyfish.....	<i>Elops saurus</i> .....	77
Tarpon.....	<i>Megalops atlantica</i> .....	77
Common snook .....	<i>Centropomus undecimalis</i> .....	77
Trumpet fish .....	<i>Aulostomus maculatus</i> .....	77
Goliath grouper .....	<i>Epinephelus itajara</i> .....	77
Gag grouper .....	<i>Mycteroperca microlepis</i> .....	77
Cobia .....	<i>Rachycentron canadum</i> .....	77
Blue runner .....	<i>Caranx crysos</i> .....	77
Jack crevalle .....	<i>Caranx hippos</i> .....	77
Florida pompano.....	<i>Trachinotus carolinus</i> .....	77
Gray snapper .....	<i>Lutjanus griseus</i> .....	77
White grunt.....	<i>Haemulon plumieri</i> .....	77
Pinfish.....	<i>Lagodon rhomboides</i> .....	77
Sheepshead .....	<i>Lagodon rhomboides</i> .....	77
Spotted seatrout .....	<i>Cynoscion nebulosus</i> .....	77
Black drum.....	<i>Pogonias cromis</i> .....	77
Red drum.....	<i>Sciaenops ocellatus</i> .....	77
Striped mullet.....	<i>Mugil cephalus</i> .....	77
Spanish mackerel .....	<i>Scomberomorus maculatus</i> .....	77
Gulf flounder .....	<i>Paralichthys albigutta</i> .....	77
Puffer.....	<i>Sphoeroides nephelus</i> .....	77

AMPHIBIANS

Southern cricket frog .....	<i>Acris gryllus</i> .....	8
Oak toad .....	<i>Bufo quercicus</i> .....	8
Southern toad .....	<i>Bufo terrestris</i> .....	7,8
Eastern narrowmouth toad.....	<i>Gastrophryne carolinensis</i> .....	8,15
Green treefrog.....	<i>Hyla cinerea</i> .....	8,36
Pinewoods treefrog.....	<i>Hyla femoralis</i> .....	8
Barking treefrog.....	<i>Hyla gratiosa</i> .....	8

\* Non-native Species

Charlotte Harbor Preserve State Park – Animals

Common Name	Scientific Name	Primary Habitat (For All Species)
Squirrel treefrog .....	<i>Hyla squirella</i> .....	7,8
Cuban treefrog* .....	<i>Osteopilus septentrionalis</i> .....	83
Southern chorus frog .....	<i>Pseudacris nigrita</i> .....	8
Little grass frog.....	<i>Pseudacris ocularis</i> .....	8
Gopher frog.....	<i>Rana capito</i> .....	8
Bullfrog.....	<i>Rana catesbeiana</i> .....	8
Pig frog .....	<i>Rana grylio</i> .....	8
Southern leopard frog .....	<i>Rana sphenoccephala</i> .....	8

REPTILES

American alligator .....	<i>Alligator mississippiensis</i> .....	36,77
American crocodile.....	<i>Crocodylus acutus</i> .....	77
Common snapping turtle.....	<i>Chelydra serpentina serpentina</i> .....	36,42
Box turtle .....	<i>Terrapene carolina</i> .....	8,36,42
Ornate diamondback terrapin.....	<i>Malaclemys terrapin macrospilota</i> .....	77
Florida softshell turtle .....	<i>Apalone ferox</i> .....	36
Florida snapping turtle.....	<i>Chelydra serpentine</i> .....	36,42
Striped mud turtle.....	<i>Kirosternon baurii palmarum</i> .....	76
Florida mud turtle.....	<i>Kirosternon subrubrum stenindach</i> .....	76
Florida cooter .....	<i>Pseudemys floridana floridana</i> .....	36,42
Florida redbelly turtle .....	<i>Pseudemys nelsoni</i> .....	36,42
Stinkpot turtle.....	<i>Sternotherus odoratus</i> .....	36,42
Gopher tortoise.....	<i>Gopherus polyphemus</i> .....	3,8,14,15
Atlantic green turtle.....	<i>Chelonia mydas</i> .....	70
Atlantic loggerhead .....	<i>Caretta caretta</i> .....	70
Atlantic ridley .....	<i>Lepidochelys kempii</i> .....	70
Green anole .....	<i>Anolis carolinensis carolinensis</i> .....	8,15,36
Six-lined racerunner .....	<i>Cnemidophorus sexlineatus sexlineatus</i> .....	15
Ground skink.....	<i>Scincella lateralis</i> .....	16
Southeastern fivelined skink .....	<i>Eumeces inexpectatus</i> .....	15,16
Brown basilisk lizard* .....	<i>Basiliscus vittatus</i> .....	15,83
Mexican spiny -tailed iguana* .....	<i>Ctenosaura pectinata</i> .....	15,83
Eastern slender glass lizard .....	<i>Ophisaurus attenuatus longicaudus</i> .....	14
Island glass lizard .....	<i>Ophisaurus compressus</i> .....	14
Eastern glass lizard .....	<i>Ophisaurus ventralis</i> .....	14
Worm lizard .....	<i>Rhineura floridana</i> .....	14
Nile monitor lizard*.....	<i>Varanus niloticus</i> .....	83
Eastern hognosed snake.....	<i>Heterodon platirhinos</i> .....	8,15
Mangrove water snake.....	<i>Nerodia fasciata compressicauda</i> .....	77
Brown water snake .....	<i>Nerodia taxispilote</i> .....	36,42

\* Non-native Species

Charlotte Harbor Preserve State Park – Animals

Common Name	Scientific Name	Primary Habitat (For All Species)
Peninsula ribbon snake .....	<i>Thamnophis sauritus sackeni</i> .....	8,14,42
Garter snake .....	<i>Thamnophis sirtalis sirtalis</i> .....	8,14,16,36
Florida pine snake.....	<i>Pitnophis melanoleucus mugitus</i> .....	8,15
Southern rignnecked snake .....	<i>Diadophis punctatus punctatus</i> .....	8,14,36
Southern black racer .....	<i>Coluber constrictor priapus</i> .....	3,8,36,42,83
Eastern coachwhip.....	<i>Masticophis flagellum flagellum</i> .....	8
Eastern indigo snake.....	<i>Drymarchon corais couperi</i> .....	8,15,42,83
Eastern coral snake .....	<i>Micrurus fulvius fulvuis</i> .....	8,15,83
Red rat snake .....	<i>Elaphe guttata guttata</i> .....	8,14,15,36
Yellow rat snake .....	<i>Elaphe obsoleta quadrivittata</i> .....	8,83
Florida kingsnake.....	<i>Lampropeltis getula</i> .....	8,15
Scarlet kingsnake.....	<i>Lampropeltis triangulum elapsoides</i> .....	8,15,36,42
Eastern diamondback .....	<i>Crotalus adamanteus</i> .....	3,8,14,15
Rattlesnake		
Dusky pigmy rattlesnake.....	<i>Sistrurus miliarius barbouri</i> .....	8,15

**BIRDS**

Common loon.....	<i>Gavia immer</i> .....	65
Horned grebe.....	<i>Podiceps auritus</i> .....	65
Pied-billed grebe .....	<i>Podilymbus podiceps</i> .....	47,65
American white pelican .....	<i>Pelecanus erythrorhynchos</i> .....	65OF
Eastern brown pelican.....	<i>Pelecanus occidentalis carolinensis</i> .....	65,OF
Northern gannet.....	<i>Sula bassanus</i> .....	79
Double-crested cormorant .....	<i>Phalacrocorax auritus</i> .....	65
Anhinga .....	<i>Anhinga anhinga</i> .....	OF
Magnificent frigatebird .....	<i>Fregata magnificens</i> .....	OF
Great blue heron.....	<i>Ardea herodias</i> .....	65
Green heron .....	<i>Butorides virescens</i> .....	65,66
Cattle egret.....	<i>Bubulcus ibis</i> .....	83,OF
Little blue heron .....	<i>Egretta caerulea</i> .....	65,66
Reddish egret.....	<i>Egretta rufescens</i> .....	65,66
Great egret.....	<i>Ardea alba</i> .....	65,66
Snowy egret .....	<i>Egretta thula</i> .....	65,66
Tricolored heron.....	<i>Egretta tricolor</i> .....	65,66
Black-crowned night heron .....	<i>Nycticorax nycticorax</i> .....	65,66
Yellow-crowned night heron .....	<i>Nyctanassa violacea</i> .....	65,66
Wood stork.....	<i>Mycteria americana</i> .....	OF
Glossy ibis .....	<i>Plegadis falcinellus</i> .....	65OF
White ibis.....	<i>Eudocimus albus</i> .....	65,66,83

\* Non-native Species

## Charlotte Harbor Preserve State Park – Animals

Common Name	Scientific Name	Primary Habitat (For All Species)
Roseate spoonbill .....	<i>Ajaia ajaja</i> .....	65,66
American bittern .....	<i>Botaurus tentiginosus</i> .....	65
Least bittern .....	<i>Ixobrychus exilis</i> .....	65
Wood duck.....	<i>Aix sponsa</i> .....	52 OF
Mottled duck.....	<i>Anas fulvigula</i> .....	OF
Blue-winged teal .....	<i>Anas discors</i> .....	52
Green-winged teal.....	<i>Anas crecca</i> .....	52,65
American wigeon.....	<i>Anas americana</i> .....	65
Norther shoveler .....	<i>Anas clypeata</i> .....	65
Mallard .....	<i>Anas platyrhynchos</i> .....	52,65
Gadwall .....	<i>Anas strepera</i> .....	65
Canvasback .....	<i>Aythya valisineria</i> .....	65
Lesser scaup.....	<i>Aythya affinis</i> .....	65
Redhead.....	<i>Aythya Americana</i> .....	65
Ring-necked duck .....	<i>Aythya collaris</i> .....	47,65
Ruddy duck .....	<i>Oxyura jamaicensis</i> .....	65
Bufflehead .....	<i>Bucephala albeola</i> .....	52,65
Red-breasted merganser .....	<i>Mergus serrator</i> .....	65
Hooded merganser .....	<i>Lophodytes cucullatus</i> .....	65
Turkey vulture.....	<i>Cathartes aura</i> .....	OF
Black vulture.....	<i>Coragyps atratus</i> .....	OF
Swallow-tailed kite .....	<i>Elanoides forficatus</i> .....	OF
Snail kite .....	<i>Rostrhamus sociabilis</i> .....	81
Sharp-shinned hawk.....	<i>Accipiter striatus</i> .....	OF
Cooper's hawk .....	<i>Accipiter cooperii</i> .....	OF
Red-tailed hawk .....	<i>Buteo jamaicensis</i> .....	8,15,36,42
Red-shouldered hawk .....	<i>Buteo lineatus</i> .....	8,14,15
Broad-winged hawk .....	<i>Buteo platypterus</i> .....	8,15,42
Short-tailed hawk.....	<i>Buteo brachyurus</i> .....	8,15,36,42
Southern bald eagle .....	<i>Haliaeetus leucocephalus</i> .....	8,15,42
Northern harrier.....	<i>Circus cyaneus</i> .....	OF
Osprey.....	<i>Pandion haliaetus</i> .....	3,42,65,67OF
Peregrine falcon.....	<i>Falco peregrinus tundrius</i> .....	OF
Merlin.....	<i>Falco columbarius</i> .....	OF
American kestrel .....	<i>Falco sparverius</i> .....	OF
Northern bobwhite .....	<i>Colinus virginianus</i> .....	8,83
Wild turkey .....	<i>Meleagris gallopavo</i> .....	8,15,36
Sora.....	<i>Porzana carolina</i> .....	47,65
Clapper rail .....	<i>Rallus longirostris</i> .....	47,65
Virginia rail .....	<i>Rallus limicola</i> .....	47,52

\* Non-native Species

Charlotte Harbor Preserve State Park – Animals

Common Name	Scientific Name	Primary Habitat (For All Species)
Purple gallinule .....	<i>Porphyryla martinica</i> .....	47
Common moorhen.....	<i>Gallinula chloropus</i> .....	47
American coot.....	<i>Fulica americana</i> .....	47
Limpkin .....	<i>Aramus guarauna</i> .....	47
Sandhill crane .....	<i>Grus canadensis</i> .....	83
American oystercatcher.....	<i>Haematopus palliatus</i> .....	59
Semipalmated plover.....	<i>Charadrius semipalmatus</i> .....	59
Piping plover .....	<i>Charadrius melodus</i> .....	59
Southeastern snowy plover .....	<i>Charadrius alexandrinus tenuirostris</i> .....	59
Wilson's plover .....	<i>Charadrius wilsonia</i> .....	59
Killdeer .....	<i>Charadrius vociferus</i> .....	83
Black-bellied plover .....	<i>Pluvialis squatarola</i> .....	59
Ruddy turnstone .....	<i>Arenaria interpres</i> .....	59
Common snipe .....	<i>Gallinago gallinago</i> .....	47
Long-billed curlew.....	<i>Numenius americanus</i> .....	59,OF
Whimbrel.....	<i>Numenius phaeopus</i> .....	59
Spotted sandpiper.....	<i>Actitis macularia</i> .....	59
Greater yellowlegs .....	<i>Tringa melanoleuca</i> .....	59
Lesser yellowlegs .....	<i>Tringa flavipes</i> .....	59
Willet.....	<i>Catoptrophorus semipalmatus</i> .....	59
Red knot .....	<i>Calidris canutus</i> .....	59
Pectoral sandpiper .....	<i>Calidris melanotos</i> .....	59
Dunlin .....	<i>Calidris alpina</i> .....	59
Semipalmated sandpiper .....	<i>Calidris pusilla</i> .....	59
Western sandpiper.....	<i>Calidris mauri</i> .....	59
Sanderling .....	<i>Calidris alba</i> .....	59
Stilt sandpiper.....	<i>Calidris himantopus</i> .....	59
White-rumped sandpiper .....	<i>Calidris fuscicollis</i> .....	59
Least sandpiper .....	<i>Calidris minutilla</i> .....	59
Short-billed dowitcher.....	<i>Limnodromus griseus</i> .....	59
Long-billed dowitcher.....	<i>Limnodromus scolopaceus</i> .....	59
Marbled godwit.....	<i>Limosa fedoa</i> .....	59
Red-necked phalarope.....	<i>Phalaropus lobatus</i> .....	59
American woodcock.....	<i>Scolopax minor</i> .....	47
American avocet.....	<i>Recurvirostra americana</i> .....	65
Black-necked stilt .....	<i>Himantopus mexicanus</i> .....	59
Great black-backed gull .....	<i>Larus marinus</i> .....	59
Lesser black-backed gull.....	<i>Larus fusca</i> .....	59
Herring gull .....	<i>Larus argentatus</i> .....	59,OF
Ring-billed gull.....	<i>Larus delawarensis</i> .....	59,OF

\* Non-native Species

Charlotte Harbor Preserve State Park – Animals

Common Name	Scientific Name	Primary Habitat (For All Species)
Laughing gull .....	<i>Larus atricilla</i> .....	59,OF
Bonaparte's gull.....	<i>Larus philadelphia</i> .....	OF
Gull-billed tern .....	<i>Sterna nilotica</i> .....	OF
Forster's tern .....	<i>Sterna forsteri</i> .....	59
Common tern.....	<i>Sterna hirundo</i> .....	59
Bridled tern .....	<i>Sterna anaethetus</i> .....	OF
Least tern.....	<i>Sterna antillarum</i> .....	59
Royal tern .....	<i>Sterna maxima</i> .....	59
Sandwich tern.....	<i>Sterna sandwicensis</i> .....	59
Caspian tern.....	<i>Sterna caspia</i> .....	59
Black tern.....	<i>Chlidonias niger</i> .....	59
Black skimmer .....	<i>Rynchops niger</i> .....	59
Mourning dove.....	<i>Zenaida macroura</i> .....	8,14,15,42
Eurasian collared dove* .....	<i>Streptopelia decaocto</i> .....	83
Common ground-dove.....	<i>Columbina passerina</i> .....	8,83
Rock dove.....	<i>Columba livia</i> .....	83
Budgerigar* .....	<i>Melopsittacus undulatus</i> .....	OF
Mangrove cuckoo.....	<i>Coccyzus minor</i> .....	66
Yellow-billed cuckoo .....	<i>Coccyzus americanus</i> .....	66
Black-billed cuckoo .....	<i>Coccyzus erythrophthalmus</i> .....	66
Smooth-billed ani .....	<i>Crotophaga ani</i> .....	83
Barn owl .....	<i>Tyto alba</i> .....	7,36,42
Eastern screech-owl .....	<i>Otus asio</i> .....	8,14,15,36
Great horned owl .....	<i>Bubo virginianus</i> .....	8,15,36
Florida burrowing owl.....	<i>Athene cunicularia floridana</i> .....	83
Barred owl.....	<i>Strix varia</i> .....	8,15,36,42
Chuck-will's-widow .....	<i>Caprimulgus carolinensis</i> .....	8,14,15
Whip-poor-will.....	<i>Caprimulgus vociferous</i> .....	15
Common nighthawk.....	<i>Chordeiles minor</i> .....	OF
Chimney swift .....	<i>Chaetura pelagica</i> .....	OF
Ruby-throated hummingbird.....	<i>Archilochus colubris</i> .....	OF
Rufous hummingbird.....	<i>Selasphorus rufus</i> .....	8,83
Belted kingfisher .....	<i>Ceryle alcyon</i> .....	OF
Northern flicker.....	<i>Colaptes auratus</i> .....	8,15,83
Pileated woodpecker .....	<i>Dryocopus pileatus</i> .....	8,15,36,42
Red-bellied woodpecker .....	<i>Melanerpes carolinus</i> .....	8,15,16,83
Yellow-bellied sapsucker .....	<i>Sphyrapicus varius</i> .....	8,15,36,42
Downy woodpecker .....	<i>Picoides pubescens</i> .....	8,15
Hairy woodpecker .....	<i>Picoides villosus</i> .....	8,15
Gray kingbird .....	<i>Tyrannus dominicensis</i> .....	15,83

\* Non-native Species

Charlotte Harbor Preserve State Park – Animals

Common Name	Scientific Name	Primary Habitat (For All Species)
Eastern kingbird .....	<i>Tyrannus tyrannus</i> .....	83
Western kingbird .....	<i>Tyrannus verticalis</i> .....	83
Scissor-tailed flycatcher.....	<i>Tyrannus forficatus</i> .....	8,83
Great crested flycatcher.....	<i>Myiarchus crinitus</i> .....	8,15
Yellow-bellied flycatcher .....	<i>Empidonax flaviventris</i> .....	8,15
Eastern phoebe .....	<i>Sayornis phoebe</i> .....	8,15
Eastern wood-pewee .....	<i>Contopus virens</i> .....	8,15
Tree swallow.....	<i>Tachycineta bicolor</i> .....	OF
Bank swallow.....	<i>Riparia riparia</i> .....	OF
Northern rough-winged swallow.....	<i>Stelgidopteryx serripennis</i> .....	OF
Barn swallow .....	<i>Hirundo rustica</i> .....	OF
Cliff swallow .....	<i>Hirundo pyrrhonota</i> .....	OF
Purple martin.....	<i>Progne subis</i> .....	OF
Blue jay .....	<i>Cyanocitta cristata</i> .....	8,14,15
Florida scrub jay .....	<i>Aphelocoma coerulescens</i> .....	14,15
American crow .....	<i>Corvus brachyrhynchos</i> .....	8,15,36,42,83
Fish crow .....	<i>Corvus ossifragus</i> .....	65,66
Tufted titmouse .....	<i>Parus bicolor</i> .....	8
Brown creeper.....	<i>Certhia americana</i> .....	8
Brown-headed nuthatch .....	<i>Sitta pygmaea</i> .....	8
House wren.....	<i>Troglodytes aedon</i> .....	8
Carolina wren.....	<i>Thryothorus ludovicianus</i> .....	8
Marsh wren.....	<i>Cistothorus palustris</i> .....	65
Sedge wren.....	<i>Cistothorus platensis</i> .....	65
Northern mockingbird .....	<i>Mimus polyglottos</i> .....	8,83
Gray catbird .....	<i>Dumetella carolinensis</i> .....	8,15,36,42,83
Brown thrasher.....	<i>Toxostoma rufum</i> .....	8
American robin.....	<i>Turdus migratorius</i> .....	8,15,36,42,83
Wood thrush.....	<i>Hylocichla mustelina</i> .....	8,15,16
Hermit thrush.....	<i>Catharus guttatus</i> .....	8,15
Swainson's thrush .....	<i>Catharus ustulatus</i> .....	8,15
Gray-cheeked thrush .....	<i>Catharus minimus</i> .....	36
Veery .....	<i>Catharus fuscescens</i> .....	36
Eastern bluebird .....	<i>Sialia sialis</i> .....	83
Blue-gray gnatcatcher.....	<i>Polioptila caerulea</i> .....	8,36,42
Ruby-crowned kinglet.....	<i>Regulus calendula</i> .....	8,15
Cedar waxwing .....	<i>Bombycilla cedrorum</i> .....	8
Loggerhead shrike .....	<i>Lanius ludovicianus</i> .....	8,15,36,83
European starling* .....	<i>Sturnus vulgaris</i> .....	83
White-eyed vireo.....	<i>Vireo griseus</i> .....	8,15,36

\* Non-native Species

Charlotte Harbor Preserve State Park – Animals

Common Name	Scientific Name	Primary Habitat (For All Species)
Yellow-throated vireo.....	<i>Vireo flavifrons</i> .....	8,15
Blue-headed vireo .....	<i>Vireo solitarius</i> .....	8
Black-whiskered vireo .....	<i>Vireo altiloquus</i> .....	36,83
Black and white warbler .....	<i>Mniotilta varia</i> .....	36
Prothonotary warbler .....	<i>Protonotaria citrea</i> .....	36
Swainson's warbler .....	<i>Limnothlypis swainsonii</i> .....	36
Worm-eating warbler .....	<i>Helmitheros vermivorus</i> .....	36
Goldenwinged warbler .....	<i>Vermivora chrysoptera</i> .....	8,36
Tennessee warbler.....	<i>Vermivora peregrine</i> .....	8,83
Blue-winged warbler .....	<i>Vermivora pinus</i> .....	8,83
Nashville warbler.....	<i>Vermivora ruficapilla</i> .....	83
Orange-crowned warbler.....	<i>Vermivora celata</i> .....	8,15
Northern parula .....	<i>Parula americana</i> .....	8,15
Bay-breasted warbler.....	<i>Dendroica castanea</i> .....	8,15
Cerulean warbler.....	<i>Dendroica cerulean</i> .....	8,15
Blackburnian warbler .....	<i>Dendroica fusca</i> .....	8,15
Yellow warbler .....	<i>Dendroica petechia</i> .....	36
Pine warbler.....	<i>Dendroica pinus</i> .....	8,15
Magnolia warbler.....	<i>Dendroica magnolia</i> .....	8,15
Cape May warbler.....	<i>Dendroica tigrina</i> .....	8,15
Black-throated blue warbler .....	<i>Dendroica caerulescens</i> .....	8,15
Yellow-rumped warbler.....	<i>Dendroica coronata</i> .....	8,15,36
Black-throated green warbler.....	<i>Dendroica virens</i> .....	36
Yellow-throated warbler .....	<i>Dendroica dominica</i> .....	36
Blackpoll warbler .....	<i>Dendroica striata</i> .....	36
Prairie warbler .....	<i>Dendroica discolor</i> .....	8
Palm warbler.....	<i>Dendroica palmarum</i> .....	8
Kentucky warbler.....	<i>Oporomis formosus</i> .....	8,15
Connecticut warbler .....	<i>Oporomis agilis</i> .....	8
Mourning warbler.....	<i>Oporomis Philadelphia</i> .....	8
Ovenbird .....	<i>Seiurus aurocapillus</i> .....	8,36
Northern waterthrush .....	<i>Seiurus noveboracensis</i> .....	36
Louisiana waterthrush .....	<i>Seiurus motacilla</i> .....	36
Common yellowthroat .....	<i>Geothlypis trichas</i> .....	8
Hooded warbler .....	<i>Wilsonia citrina</i> .....	36
Wilson’s warbler .....	<i>Wilsonia pusilla</i> .....	8,15
American redstart .....	<i>Setophaga ruticilla ruticilla</i> .....	36
Bobolink.....	<i>Dolichonyx oryzivorus</i> .....	83
Red-winged blackbird.....	<i>Agelaius phoeniceus</i> .....	47,65
Brown-headed cowbird.....	<i>Molothrus ater</i> .....	83

\* Non-native Species

Charlotte Harbor Preserve State Park – Animals

Common Name	Scientific Name	Primary Habitat (For All Species)
Boat-tailed grackle .....	<i>Quiscalus major</i> .....	65,83
Common grackle .....	<i>Quiscalus quiscula</i> .....	83
Orchard oriole .....	<i>Icterus spurius</i> .....	36,83
Baltimore oriole .....	<i>Icterus galbula</i> .....	36,83
Scarlet tanager .....	<i>Piranga olivacea</i> .....	8,83
Summer tanager .....	<i>Piranga rubra</i> .....	36
Northern cardinal .....	<i>Cardinalis cardinalis</i> .....	8,36,83
Rose-breasted grosbeak .....	<i>Pheucticus ludovicianus</i> .....	83
Indigo bunting .....	<i>Passerina cyanea</i> .....	36,83
Painted bunting .....	<i>Passerina ciris</i> .....	36,83
Rufous-sided towhee .....	<i>Pipilo erythrophthalmus</i> .....	15,36,83
Bachman’s sparrow .....	<i>Aimophila awstivialis</i> .....	8,15
Grasshopper sparrow .....	<i>Ammodramus bairdii</i> .....	8,15,65
Sharp-tailed sparrow .....	<i>Ammodramus caudacutus</i> .....	8,15
Henslow’s sparrow .....	<i>Ammodramus henslowii</i> .....	8
LeConte’s sparrow .....	<i>Ammodramus leconteii</i> .....	8
Seaside sparrow .....	<i>Ammodramus maritimus</i> .....	65
Swamp sparrow .....	<i>Melospiza georgiana</i> .....	65
Song sparrow .....	<i>Melospiza melodia</i> .....	65
House sparrow .....	<i>Passer domesticus</i> .....	83
Savannah sparrow .....	<i>Passerculus sandwichensis</i> .....	65
Lark sparrow .....	<i>Chondestes grammacus</i> .....	83
Fox sparrow .....	<i>Pooecetes gramineus</i> .....	83
Chipping sparrow .....	<i>Spizella passerine</i> .....	8,83
Field sparrow .....	<i>Spizella pusilla</i> .....	83
White-throated sparrow .....	<i>Zonotrichia albicollis</i> .....	83
White-crowned sparrow .....	<i>Zonotrichia leucophrys</i> .....	83
Eastern meadowlark .....	<i>Sturnella magna</i> .....	83
Dickcissel .....	<i>Spiza americana</i> .....	8,15
Pine siskin .....	<i>Carduelis pinus</i> .....	83
American goldfinch .....	<i>Carduelis tristis</i> .....	83

MAMMALS

Big brown bat .....	<i>Eptesicus fuscus</i> .....	OF
Yellow bat .....	<i>Lasiurus intermedius</i> .....	OF
Seminole bat .....	<i>Lasiurus seminolus</i> .....	OF
Evening bat .....	<i>Nycticeius humeralis</i> .....	OF
Eastern pipistrelle bat .....	<i>Pipistrellus subflavus</i> .....	OF
Brazilian free-tailed bat .....	<i>Tadarida brasiliensis</i> .....	OF

\* Non-native Species

## Charlotte Harbor Preserve State Park – Animals

Common Name	Scientific Name	Primary Habitat (For All Species)
Virginia opossum.....	<i>Didelphis virginiana</i> .....	8,15,16,36,42,83
Eastern cottontail rabbit .....	<i>Sylvilagus floridanus</i> .....	8,15,83
Marsh rabbit.....	<i>Sylvilagus palustris</i> .....	65
Gray squirrel.....	<i>Sciurus carolinensis</i> .....	8,15,36,42
Fox squirrel .....	<i>Sciurus niger</i> .....	8,15
Southern flying squirrel .....	<i>Glacomys volans</i> .....	8
House mouse .....	<i>Mus musculus</i> .....	83
Cotton mouse.....	<i>Peromyscus gossypinus</i> .....	8,15
Hispid cotton rat .....	<i>Sigmodon hispidus</i> .....	36,42,65,66
Insular cotton rat .....	<i>Sigmodon hispidus insulicola</i> .....	36,42,65,66
Black rat* .....	<i>Rattus rattus</i> .....	36,42,65,66
Eastern woodrat .....	<i>Neotoma floridana</i> .....	8,15,16
Eastern mole .....	<i>Scalopus aquaticus</i> .....	8,15
Striped skunk.....	<i>Mephitis mephitis</i> .....	8,15,36,42
Spotted skunk.....	<i>Spilogale putorius</i> .....	8,15,36,42
Raccoon.....	<i>Procyon lotor</i> .....	8,15,36,42,83
River otter.....	<i>Lutra canadensis</i> .....	47,65,66
Florida long-tailed weasel.....	<i>Mustela frenata peninsulae</i> .....	8,15
Southern mink .....	<i>Mustela frenata mink</i> .....	8,15,47
Florida panther .....	<i>Felis concolor coryi</i> .....	
Bobcat.....	<i>Felis rufus</i> .....	8,15
West Indian manatee .....	<i>Trichechus manatus</i> .....	60,65
Atlantic bottle-nosed dolphin .....	<i>Tursiops truncatus</i> .....	60,65
Gray fox .....	<i>Urocyon cinereoargenteus</i> .....	8,15,36,42,66
Coyote(naturalized).....	<i>Canis latrans</i> .....	8,16,36,42,66
Feral hog* .....	<i>Sus scrofa</i> .....	8,36,42,83
Florida black bear.....	<i>Ursus americanus floridanus</i> .....	8,15,,36,42,65
White-tailed deer.....	<i>Odocoileus virginianus</i> .....	8,15,65

\* Non-native Species

## Habitat Codes

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### **Terrestrial**

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

### **Palustrine**

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

### **Lacustrine**

44. Clastic Upland Lake
45. Coastal Dune Lake
46. Coastal Rockland Lake

### **Lacustrine**

47. Flatwood/Prairie Lake
48. Marsh Lake
49. River Floodplain Lake
50. Sandhill Upland Lake
51. Sinkhole Lake
52. Swamp Lake

### **Riverine**

53. Alluvial Stream
54. Blackwater Stream
55. Seepage Stream
56. Spring-Run Stream

### **Estuarine**

57. Estuarine Algal Bed
58. Estuarine Composite Substrate
59. Estuarine Consolidated Substrate
60. Estuarine Coral Reef
61. Estuarine Grass Bed
62. Estuarine Mollusk Reef
63. Estuarine Octocoral Bed
64. Estuarine Sponge Bed
65. Estuarine Tidal Marsh
66. Estuarine Tidal Swamp
67. Estuarine Unconsolidated Substrate
68. Estuarine Worm Reef

### **Marine**

69. Marine Algal Bed
70. Marine Composite Substrate
71. Marine Consolidated Substrate
72. Marine Coral Reef
73. Marine Grass Bed
74. Marine Mollusk Reef
75. Marine Octocoral Bed
76. Marine Sponge Bed
77. Marine Tidal Marsh
78. Marine Tidal Swamp
79. Marine Unconsolidated Substrate
80. Marine Worm Reef

### **Subterranean**

81. Aquatic Cave
82. Terrestrial Cave

### **Miscellaneous**

83. Ruderal
84. Developed

## Habitat Codes

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**Addendum 5 – Designated Species List**



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

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

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

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

### **FNAI GLOBAL RANK DEFINITIONS**

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

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

- SU = due to lack of information, no rank or range can be assigned (e.g., SUT2).  
S? = not yet ranked (temporary)  
N = Not currently listed, nor currently being considered for listing, by state or federal agencies.

### **LEGAL STATUS**

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

- LE = Listed as Endangered Species in the List of Endangered and Threatened Wildlife and Plants under the provisions of the Endangered Species Act. Defined as any species that is in danger of extinction throughout all or a significant portion of its range.  
PE = Proposed for addition to the List of Endangered and Threatened Wildlife and Plants as Endangered Species.  
LT = Listed as Threatened Species. Defined as any species that is likely to become an endangered species within the near future throughout all or a significant portion of its range.  
PT = Proposed for listing as Threatened Species.  
C = Candidate Species for addition to the list of Endangered and Threatened Wildlife and Plants. Defined as those species for which the USFWS currently has on file sufficient information on biological vulnerability and threats to support proposing to list the species as endangered or threatened.  
E(S/A) = Endangered due to similarity of appearance.  
T(S/A) = Threatened due to similarity of appearance.

### **STATE**

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

- LE = Listed as Endangered Species by the FFWCC. Defined as a species, subspecies, or isolated population which is so rare or depleted in number or so restricted in range of habitat due to any man-made or natural factors that it is in immediate danger of extinction or extirpation from the state, or which may attain such a status within the immediate future.  
LT = Listed as Threatened Species by the FFWCC. Defined as a species, subspecies, or isolated population which is acutely vulnerable to environmental alteration, declining in number at a rapid rate, or whose range or habitat is decreasing in area at a rapid rate and as a consequence is destined or very likely to become an endangered species within the foreseeable future.  
LS = Listed as Species of Special Concern by the FFWCC. Defined as a population which warrants special protection, recognition, or consideration because it has an inherent significant vulnerability to habitat modification, environmental alteration, human disturbance, or substantial human exploitation which, in the foreseeable future, may result in its becoming a threatened species.

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

- LE = Listed as Endangered Plants in the Preservation of Native Flora of Florida Act. Defined as species of plants native to the state that are in imminent danger of extinction within the state, the survival of which is unlikely if the causes of a decline in the number of plants continue, and includes all species determined to be endangered or threatened pursuant to the Federal Endangered Species Act of 1973, as amended.  
LT = Listed as Threatened Plants in the Preservation of Native Flora of Florida Act. Defined as species native to the state that are in rapid decline in the number of plants within the state, but which have not so decreased in such number as to cause them to be endangered.

Charlotte Harbor Preserve State Park Designated Species – Plants

Common Name/ <i>Scientific Name</i>	Designated Species Status		
	FDACS	USFWS	FNAI
Triangle cactus <i>Acanthocereus tetragonus</i>	LT		
Golden leather fern <i>Acrostichum aureum</i>	LT		G5/S3
Giant leather fern <i>Acrostichum danaeifolium</i>	CE		
Iguana hackberry <i>Celtis iguanaea</i>	LE		G5/S1
Spiny hackberry <i>Celtis ehrenbergiana</i>	LE		G4/S1
Southern lip fern <i>Cheilanthes microphylla</i>	LE		G5/S3
Satinleaf <i>Chrysophyllum oliviforme</i>	LT		
Geiger tree <i>Cordia globosa</i>	LE		
Beautiful pawpaw <i>Deeringothamnus rugelii</i> var. <i>pulchellus</i>	LE	LE	G1/S1
Carolina scalystem <i>Elytraris caroliniensis</i> var. <i>angustifolia</i>			G4T2/S2
Butterfly orchid <i>Encyclia tampensis</i>			
Sanibel lovegrass <i>Eragrostis tracyi</i>	LE		
Redberry stopper <i>Eugenia confusa</i>	LE		G4G5/S2S3
Red stopper <i>Eugenia rhombea</i>		LE	G5/S1
Florida pinewood privet <i>Forestiera segregata</i> var. <i>pinetorum</i>			G4T2/S2
Wild cotton <i>Gossypium hirsutum</i>	LE		G4G5/S3
Aboriginal pricklyapple <i>Harrisia arboriginum</i>	LE		G1/S1
Joewood <i>Jacquinia keyensis</i>		LT	G4/S3
Pineland lantana <i>Lantana depressa</i>	LE		G2T1/S1
Nodding pinweed <i>Lechea cernua</i>		LT	G3/S3

**Charlotte Harbor Preserve State Park Designated Species – Plants**

<b>Common Name/ Scientific Name</b>	<b>Designated Species Status</b>		
	<b>FDACS</b>	<b>USFWS</b>	<b>FNAI</b>
Spreading pinweed <i>Lechea divericata</i>		LE	G2/S2
Simpson's stopper <i>Myrcianthes fragrans</i>		LT	
Florida beargrass <i>Nolina atopocarpa</i>	LT		G3/G3
Hand fern <i>Ophioglossum palmatum</i>	LE		G4/S2
Prickly pear cactus <i>Opuntia stricta</i>		LT	
Cinnamon fern <i>Osmunda cinnamomea</i>			
Royal fern <i>Osmunda regalis</i>			
Rose pogonia <i>Pogonia ophioglossoides</i>	LT		
Inkberry <i>Scaevola plumieri</i>		LT	
Small ladies' tresses <i>Spiranthes brevilabris</i>		LE	
Scrub stylisma <i>Stylisma abditum</i>		LE	
			G3/S3
Reflexed wild pine <i>Tillandsia balbisiana</i>		LT	
Stiff-leaved wild pine <i>Tillandsia fasciculata</i>		LE	
Banded airplant <i>Tillandsia flexuosa</i>		LT	
			G5/S3
Giant airplant <i>Tillandsia utriculata</i>		LE	
Florida coontie <i>Zamia floridana</i>		CE	

**Charlotte Harbor Preserve State Park Designated Species – Animals**

<b>Common Name/ Scientific Name</b>	<b>Designated Species Status</b>		
	<b>FFWCC</b>	<b>USFWS</b>	<b>FNAI</b>
<b>FISH</b>			
Gulf sturgeon <i>Acipenser oxyrinchus desotoi</i>		LT	G3T2/S2
Common snook <i>Centropomus undecimali</i>			
<b>AMPHIBIANS</b>			
Florida gopher frog <i>Rana capito aeseopus</i>			G3G4/S3
<b>REPTILES</b>			
American alligator <i>Alligator mississippiensis</i>		LT(S/A)	G5/S4
American crocodile <i>Crocodylus acutus</i>	LE	LE	G2/S1
Gopher tortoise <i>Gopherus polyphemus</i>			G3/S3
Atlantic green turtle <i>Chelonia mydas mydas</i>	LE	LE	G3/S2
Atlantic hawksbill <i>Eretmochelys imbricata</i>	LE	LE	G3/S1
Atlantic loggerhead <i>Caretta caretta</i>	LT	LT	G3/S3
Atlantic ridley <i>Lepidochelys kempi</i>	LE	LE	G1/S1
Florida scrub lizard <i>Sceloporus woodi</i>			G3/S3
Eastern indigo snake <i>Drymarchon corais couperi</i>	LT	LT	G4T3/S3
Eastern diamondback rattlesnake <i>Crotalus adamanteus</i>			G4/S3
<b>BIRDS</b>			
Brown pelican <i>Pelecanus occidentalis</i>			G4/S3
Little blue heron <i>Egretta caerulea</i>			G5/S4
Reddish egret <i>Egretta rufescens</i>			G5/S2
Snowy egret			

Charlotte Harbor Preserve State Park Designated Species – Animals

Common Name/ Scientific Name	Designated Species Status		
	FFWCC	USFWS	FNAI
<i>Egretta thula</i> Tricolored heron			G5/S3
<i>Egretta tricolor</i>			G5/S4
Wood stork			
<i>Mycteria americana</i>	LE	LE	G4/S2
White ibis			
<i>Eudocimus albus</i>			G5/S4
Roseate spoonbill			
<i>Ajaia ajaja</i>			G5/S2
Swallow-tailed kite			
<i>Elanoides forficatus</i>			G5/S2
Snail kite			
<i>Rostrhamus sociabilis plumbeus</i>	LE	LE	G4G5T2/S2
Short-tailed hawk			
<i>Buteo brachyurus</i>			G4G5/S1
Southern bald eagle			
<i>Haliaeetus leucocephalus</i>	LT	LT	G4/S3
Osprey			
<i>Pandion haliaetus</i>			G5/S3S4
Peregrine falcon			
<i>Falco peregrinus</i>		LE	G4/S2
Audubon's crested caracara			
<i>Caracara cheriway</i>	LT	LT	G5/S2
Florida sandhill crane			
<i>Grus canadensis pratensis</i>		LT	G5T2T3/S2S3
Limpkin			
<i>Aramus guarauana</i>			G5/S3
American oystercatcher			
<i>Haematopus palliatus</i>			G5/S2
Snowy plover			
<i>Charadrius alexandrinus</i>		LT	G4/S1
Piping plover			
<i>Charadrius melodus</i>	LT	LT	G3/S2
Wilson's plover			
<i>Charadrius wilsonia</i>			G5/S2
Least tern			
<i>Sterna antillarum</i>	LT		G4/S3
Sandwich tern			
<i>Sterna sandvicensis</i>			G5/S2

**Charlotte Harbor Preserve State Park Designated Species – Animals**

<b>Common Name/ Scientific Name</b>	<b>Designated Species Status</b>		
	<b>FFWCC</b>	<b>USFWS</b>	<b>FNAI</b>
Royal tern <i>Sterna maxima</i>			G5/S3
Black skimmer <i>Rynchops niger</i>			G5/S3
Mangrove cuckoo <i>Coccyzus minor</i>			G5/S3
Florida burrowing owl <i>Athene cunicularia floridana</i>			G4T3/S3
Florida scrub-jay <i>Aphelocoma coerulescens</i>	LT	LT	G2/S2
<b>MAMMALS</b>			
Florida (Wagner’s) mastiff bat <i>Eumops glaucinus floridanus</i>		LE	G5T1/S1
Sherman’s fox squirrel <i>Sciurus niger shermani</i>			G5T3/S3
Pine Island rice rat <i>Oryzomys palustris planirostris</i>			G5T1Q/S1
Sanibel Island rice rat <i>Oryzomys palustris sanibeli</i>	LS		G5T1Q/S1
Round-tailed muskrat <i>Neofiber alleni</i>			G3/S3
Florida black bear <i>Ursus americanus floridanus</i>	LT		G5T2/S2
South Florida mink <i>Mustela vison mink</i>	LT		G5T2Q/S1
Florida panther <i>Puma concolor coryi</i>	LE	LE	G5T1/S1
West Indian manatee <i>Trichechus manatus</i>	LE	LE	G2/S2

## Charlotte Harbor Preserve State Park Designated Species – Animals

<b>Common Name/ <i>Scientific Name</i></b>	<b><u>Designated Species Status</u></b>		
	<b>FFWCC</b>	<b>USFWS</b>	<b>FNAI</b>

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**Addendum 6 – Florida Master Site File List Of Cultural Sites**



**Charlotte Harbor Preserve State Park Florida Master Site File Listed Cultural Sites**

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<b>FMSF #</b>	<b>Site Name</b>	<b>Period</b>	<b>Site Type</b>
CH00009	Catfish Point	Twentieth century American, 1900-present Caloosahatchee IIA, A.D. 500-800 Caloosahatchee IIB, A.D. 800-1200 Caloosahatchee III, A.D. 1200-1350 Glades, 1000 B.C.-A.D. 1700 Perico Island Prehistoric	Prehistoric shell midden
CH00010	Big Mound Key	Twentieth century American, 1900-present Caloosahatchee IIA, A.D. 500-800 Caloosahatchee IIB, A.D. 800-1200 Caloosahatchee III, A.D. 1200-1350 Glades, 1000 B.C.-A.D. 1700 Perico Island Prehistoric	Prehistoric shell mound Vey large, complex architecture
CH00013	No name	Glades, 1000 B.C.-A.D. 1700 Perico Island	Not Evaluated by Recorder
CH00014	No name	Prehistoric Safety Harbor	Not Evaluated by Recorder
CH00016	Boggess Ridge	Weeden Island II	Prehistoric shell mound Large mortuary site
CH00017	Hollenbeck site	Caloosahatchee IIB, A.D. 800-1200 Caloosahatchee III, A.D. 1200-1350 Glades, 1000 B.C.-A.D. 1700 Perico Island	Prehistoric shell midden

**Charlotte Harbor Preserve State Park Florida Master Site File Listed Cultural Sites**

<b>FMSF #</b>	<b>Site Name</b>	<b>Period</b>	<b>Site Type</b>
CH00019	No name	Spanish-First or Second	Not Evaluated by Recorder
CH00020	No name	Glades, 1000 B.C.-A.D. 1700 Perico Island	Not Evaluated by Recorder
CH00023	Phonso's camp sites	St. Johns II, A.D. 800-1500 Historic, c. 1920-1930	Indeterminate
CH00024	Phonso's camp sites	Historic, c. 1920-1930	Indeterminate
CH00034	No name	American, 1821-present	Not Evaluated by Recorder
CH00035	No name	Glades, 1000 B.C.-A.D. 1700 Perico Island	Not Evaluated by Recorder
CH00036	Turtle Bay 1	Caloosahatchee IIA, A.D. 500-800 Glades, 1000 B.C.-A.D. 1700 Perico Island Prehistoric	Prehistoric shell midden Prehistoric shell mound(s)
CH00037	Turtle Bay 2	Late Archaic Caloosahatchee, 500 B.C.- 1700 A.D. Caloosahatchee I, 500 B.C. - 500 A.D. Caloosahatchee IIA, A.D. 500-800 Caloosahatchee IIB, A.D. 800-1200 Glades, 1000 B.C.-A.D. 1700 Perico Island Prehistoric with pottery	Prehistoric midden(s) Prehistoric shell mound(s)
CH00039	Turtle Bay 3	Glades, 1000 B.C.-A.D. 1700 Perico Island	Not Evaluated by Recorder Moonshine camp in 1920s

**Charlotte Harbor Preserve State Park Florida Master Site File Listed Cultural Sites**

<b>FMSF #</b>	<b>Site Name</b>	<b>Period</b>	<b>Site Type</b>
CH00040	Sisters 1	Glades, 1000 B.C.-A.D. 1700 Perico Island	Not Evaluated by Recorder
CH00048	Cape Haze site	Glades, 1000 B.C.-A.D. 1700 Glades II, A.D. 750-1200 Glades III, A.D. 1000-1700 Perico Island Safety Harbor, A.D. 1000-1500 St. Johns II, A.D. 800-1500 Spanish-First or Second	
CH00049	Half-way site	Indeterminate 900-1100 A.D.	Prehistoric shell midden
CH00051	Old Cattle Dock Point	Glades, 1000 B.C.-A.D. 1700 Perico Island Safety Harbor, A.D. 1000-1500	Not Evaluated by Recorder Eroded
CH00058	Sisters 2	Caloosahatchee I, 500 B.C. - 500 A.D. Caloosahatchee IIA, A.D. 500-800 Glades, 1000 B.C.-A.D. 1700 Perico Island	Prehistoric shell midden
CH00060	Hog Island 1	Glades, 1000 B.C.-A.D. 1700 Perico Island Unspecified on form by the recorder	Artifact scatter-low density ( < 2 per sq meter) Not Evaluated by Recorder
CH00069	No name	Caloosahatchee IIA, A.D. 500-800 Caloosahatchee IIB, A.D. 800-1200 Glades, 1000 B.C.-A.D. 1700 Indeterminate	Prehistoric shell midden Prehistoric mound(s) Historic refuse Artifact scatter-dense ( > 2 per sq meter) Eligible for NRHP

**Charlotte Harbor Preserve State Park Florida Master Site File Listed Cultural Sites**

<b>FMSF #</b>	<b>Site Name</b>	<b>Period</b>	<b>Site Type</b>
CH00070	Huckaby Creek Midden	Indeterminate	More Work Recommended
CH00071	Muddy Cove 1	Glades, 1000 B.C.-A.D. 1700 Glades II, A.D. 750-1200	Prehistoric shell midden Ceramic scatter Not Evaluated by Recorder
CH00072	Muddy Cove 2	Caloosahatchee IIB, A.D. 800-1200 Caloosahatchee III, A.D. 1200-1350 Glades, 1000 B.C.-A.D. 1700 Glades II, A.D. 750-1200	Prehistoric shell mound(s) Eligible for NRHP
CH00074	No name	Archaic, 8500 B.C.-1000 B.C. Early Archaic	Not Evaluated by Recorder
CH00087	Cameron Island	Glades II, A.D. 750-1200 Safety Harbor, A.D. 1000-1500 Weeden Island 2	Specialized site for procurement of raw materials Prehistoric shell midden
CH00089	No name	Prehistoric Caloosahatchee IIB 800-1200 A.D.	Preservation Recommended Not Evaluated by Recorder
CH00090	No name	Prehistoric Caloosahatchee IIB 800-1200 A.D.	Preservation Recommended Not Evaluated by Recorder
CH00091	No name	Prehistoric with pottery Caloosahatchee IIB 800-1200 A.D.	Preservation Recommended Not Evaluated by Recorder
CH00092	No name	Prehistoric Caloosahatchee IIB 800-1200 A.D.	Preservation Recommended Not Evaluated by Recorder
CH00093	No name	Prehistoric with pottery Artifact scatter-low density (< 2 per sq meter)	Unspecified on form by the recorder

**Charlotte Harbor Preserve State Park Florida Master Site File Listed Cultural Sites**

<b>FMSF #</b>	<b>Site Name</b>	<b>Period</b>	<b>Site Type</b>
CH00347	No name	Caloosahatchee I, 500 B.C.-500 A.D.	Prehistoric shell midden Prehistoric shell mound(s) Eligible for NRHP
CH00349	No name	Caloosahatchee I, 500 B.C.-500 A.D. Caloosahatchee IV, A.D. 500-800 Historic Prehistoric with pottery	Inundated land site Prehistoric shell midden Redeposited site (from this location) Ceramic scatter Ineligible for NRHP
CH00350	Grassy Point	Historic Prehistoric with pottery Prehistoric	Not Evaluated by Recorder
CH00351	Fish Hook	Caloosahatchee IIA, A.D. 500-800 Glades, 1000B.C.-A.D. 1700 Prehistoric with pottery	Campsite (prehistoric) Land-terrestrial Prehistoric midden(s) Historic refuse Eligible for NRHP
CH00352	Negash	Caloosahatchee IIB, A.D. 800-1200 Glades, 1000 B.C.-A.D. 1700 Prehistoric with pottery	Prehistoric midden(s) Historic refuse Artifact scatter-dense (>2 per sq meter)
CH00353	Dubois	Caloosahatchee IIA, A.D. 500-800 Glades, 1000 B.C.-A.D. 1700 Prehistoric with pottery	Prehistoric midden(s) Historic refuse Tidal-estuarine Prehistoric shell mound(s) Eligible for NRHP
CH00354	No name	Caloosahatchee IIA, A.D. 500-800 Caloosahatchee IIB, A.D. 800-1200 Prehistoric with pottery	River/Stream/Creek-riverine Eligible for NRHP
CH00355	Cockroach	Twentieth century American, 1900-present Caloosahatchee IIB, A.D. 800-1200 Glades, 1000 B.C.-A.D. 1700 Prehistoric with pottery	Land-terrestrial Prehistoric midden(s) Historic refuse Artifact scatter-dense (> 2 per sq meter) Not Evaluated by Recorder

**Charlotte Harbor Preserve State Park Florida Master Site File Listed Cultural Sites**

<b>FMSF #</b>	<b>Site Name</b>	<b>Period</b>	<b>Site Type</b>
CH00356	Whidden Branch	Late Archaic Caloosahatchee I, 500 B.C. - 500 A.D. Caloosahatchee IIA, A.D. 500-800 Caloosahatchee IIB, A.D. 800-1200 Glades, 1000 B.C.-A.D. 1700 Prehistoric with pottery	Land-terrestrial Prehistoric midden(s) Prehistoric mound(s) Historic refuse Eligible for NRHP
CH00357	Silcox North	Caloosahatchee IIB, A.D. 800-1200 Glades, 1000 B.C.-A.D. 1700 Historic Prehistoric	Land-terrestrial Prehistoric midden(s) Prehistoric shell mound(s) Historic refuse Not Evaluated by Recorder
CH00358	Silcox	Caloosahatchee IIA, A.D. 500-800 Glades, 1000 B.C.-A.D. 1700 Prehistoric with pottery	Prehistoric midden(s) Historic refuse Prehistoric shell ring Artifact scatter-dense ( > 2 per sq meter) Eligible for NRHP
CH00359	Black's Island	Caloosahatchee IIB, A.D. 800-1200 Prehistoric with pottery	Prehistoric shell midden Prehistoric shell mound(s) Eligible for NRHP
CH00360	Lime Key	Twentieth century American, 1900-present Caloosahatchee IIB, A.D. 800-1200 Historic Prehistoric with pottery	Prehistoric shell midden Prehistoric shell mound(s) Eligible for NRHP
CH00361	Fines Key	Caloosahatchee IIA, A.D. 500-800 Caloosahatchee IIB, A.D. 800-1200 Caloosahatchee III, A.D. 1200-1350 Historic Prehistoric with pottery Prehistoric	Land-terrestrial Prehistoric shell midden Prehistoric shell mound(s) Not Evaluated by Recorder

## Charlotte Harbor Preserve State Park Florida Master Site File Listed Cultural Sites

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FMSF #	Site Name	Period	Site Type
CH00362	Cotton Key	Caloosahatchee III, A.D. 1200-1350 Caloosahatchee IV, A.D. 1350-1500 Prehistoric with pottery	Prehistoric shell midden Prehistoric shell mound(s) Eligible for NRHP
CH00450	Little Lake	Caloosahatchee I, 500 B.C. - 500 A.D. Caloosahatchee IIA, A.D. 500-800 Glades, 1000 B.C.-A.D. 1700 Weeden Island, A.D. 450-1000	Land-terrestrial Prehistoric midden(s) Historic refuse Artifact scatter-low density ( < 2 per sq meter) Eligible for NRHP
CH00463	No name	Prehistoric lacking pottery	Ineligible for NRHP
CH00464	No name	Prehistoric lacking pottery	Ineligible for NRHP
CH00478	No name	Prehistoric with pottery	Single artifact or isolated find Ineligible for NRHP
CH00479	Acline Village	Twentieth century American, 1900-present Caloosahatchee IIA, A.D. 500-800 Caloosahatchee IIB, A.D. 800-1200 Glades, 1000 B.C.-A.D. 1700	Habitation (prehistoric) Land-terrestrial Prehistoric midden(s) Artifact scatter-dense ( > 2 per sq meter) Eligible for NRHP
CH00480	Gartree	Glades, 1000 B.C.-A.D. 1700 Prehistoric	Prehistoric midden(s) Historic refuse Variable density scatter of artifacts Ineligible for NRHP
CH00481	Black Cow	American, 1821-present Caloosahatchee IIB, A.D. 800-1200 Glades, 1000 B.C.-A.D. 1700	Prehistoric midden(s) Historic refuse Artifact scatter-dense ( > 2 per sq meter) Eligible for NRHP

**Charlotte Harbor Preserve State Park Florida Master Site File Listed Cultural Sites**

<b>FMSF #</b>	<b>Site Name</b>	<b>Period</b>	<b>Site Type</b>
CH00482	Kessel Run	Late Archaic Glades, 1000 B.C.-A.D. 1700	Prehistoric midden(s) Historic refuse Artifact scatter-dense ( > 2 per sq meter) Variable density scatter of artifacts Eligible for NRHP
CH00483	Mid-Lake	Caloosahatchee I, 500 B.C. - 500 A.D. Glades, 1000 B.C.-A.D. 1700	Prehistoric midden(s) Historic refuse Artifact scatter-dense ( > 2 per sq meter) Prehistoric shell mound(s) Eligible for NRHP
CH00484	Cicada Lake	Late Archaic Caloosahatchee I, 500 B.C. - 500 A.D. Caloosahatchee IIA, A.D. 500-800 Glades, 1000 B.C.-A.D. 1700	Land-terrestrial Prehistoric midden(s) Historic refuse Artifact scatter-dense ( > 2 per sq meter) Eligible for NRHP
CH00485	Cicada Point	Caloosahatchee IIA, A.D. 500-800 Glades, 1000 B.C.-A.D. 1700	Land-terrestrial Prehistoric midden(s) Historic refuse Prehistoric shell scatter Eligible for NRHP
CH00486	Creek Bend	Twentieth century American, 1900-present American, 1821-present Caloosahatchee IIA, A.D. 500-800 Glades, 1000 B.C.-A.D. 1700 Prehistoric with pottery	Land-terrestrial Prehistoric midden(s) Historic refuse River/Stream/Creek- riverine Ceramic scatter Eligible for NRHP
CH00487	Bumblebee	Caloosahatchee IIA, A.D. 500-800 Glades, 1000 B.C.-A.D. 1700	Prehistoric midden(s) Historic refuse Artifact scatter-dense ( > 2 per sq meter) Tidal-estuarine Prehistoric shell mound(s) Eligible for NRHP

**Charlotte Harbor Preserve State Park Florida Master Site File Listed Cultural Sites**

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<b>FMSF #</b>	<b>Site Name</b>	<b>Period</b>	<b>Site Type</b>
CH00488	Prop-wash	Caloosahatchee IIA, A.D. 500-800 Caloosahatchee IIB, A.D. 800-1200 Glades, 1000 B.C.-A.D. 1700	Prehistoric midden(s) Historic refuse Redeposited site (from this location) Ceramic scatter Artifact scatter-dense ( > 2 per sq meter) Ineligible for NRHP
CH00489	No name	Twentieth century American, 1900-present	Habitation (prehistoric) Land-terrestrial Insufficient Information
CH00490	No name	Twentieth century American, 1900-present	Homestead Land-terrestrial Historic refuse Variable density scatter of artifacts Insufficient Information
CH00491	No name	Twentieth century American, 1900-present	Homestead Land-terrestrial Insufficient Information
CH00492	No name	Twentieth century American, 1900-present	Land-terrestrial Insufficient Information
CH00496	No name	Twentieth century American, 1900-present	Historic refuse Artifact scatter-low density ( < 2 per sq meter) Insufficient Information
CH00497	Muddy Cove 3	Glades, 1000 B.C.-A.D. 1700 Prehistoric with pottery	Specialized site for procurement of raw materials Prehistoric midden(s) Artifact scatter-dense ( > 2 per sq meter) Tidal-estuarine Insufficient Information

**Charlotte Harbor Preserve State Park Florida Master Site File Listed Cultural Sites**

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<b>FMSF #</b>	<b>Site Name</b>	<b>Period</b>	<b>Site Type</b>
CH00506	Buck Thorn	Caloosahatchee I, 500 B.C. - 500 A.D. Caloosahatchee IIA, A.D. 500-800	Prehistoric shell midden Saltwater-marine-"low energy" Wetland-palustrine- sometimes flooded Eligible for NRHP
CH00647	Cape Haze Stump Still #1	Historic, 1920-1930	Rusted cast iron, still parts, charcoal
LL00009	Sword Point 1	Safety Harbor, A.D. 1000- 1500 Weeden Island, A.D. 450- 1000	Prehistoric shell midden Not Evaluated by Recorder
LL00026	St. James East	Prehistoric	Prehistoric shell mound(s) Not Evaluated by Recorder
LL00028	Regla Island	Prehistoric	Prehistoric midden(s) Prehistoric shell mound(s) Not Evaluated by Recorder
LL00029	Cora Key	Prehistoric	Prehistoric burial(s) Prehistoric shell midden Not Evaluated by Recorder
LL00030	Hooker Key	Caloosahatchee IIA, A.D. 500-800 Caloosahatchee IIB, A.D. 800-1200 Caloosahatchee III, A.D. 1200-1350 European Prehistoric with pottery	Prehistoric burial mound(s) Prehistoric shell midden Prehistoric mound(s) Prehistoric shell mound(s) Not Evaluated by Recorder

**Charlotte Harbor Preserve State Park Florida Master Site File Listed Cultural Sites**

<b>FMSF #</b>	<b>Site Name</b>	<b>Period</b>	<b>Site Type</b>
LL00032	Josslyn Island	Caloosahatchee I, 500 B.C. - 500 A.D. Caloosahatchee IIA, A.D. 500-800 Caloosahatchee IIB, A.D. 800-1200 Caloosahatchee III, A.D. 1200-1350 Glades I, 1000 B.C.-A.D. 750 Glades II, A.D. 750-1200 Glades III, A.D. 1000-1700	Specialized site for procurement of raw materials Habitation (prehistoric) Platform mound (prehistoric) Prehistoric shell midden Prehistoric midden(s) Eligible for NRHP
LL00064	Bird Rookery Keys	Prehistoric (Late Weeden Island, Mississippian)	Prehistoric shell midden
LL00065	Mason Island	Twentieth century American, 1900-present Caloosahatchee IIA, A.D. 500-800 Caloosahatchee IIB, A.D. 800-1200 Caloosahatchee III, A.D. 1200-1350 Caloosahatchee IV, A.D. 1350-1500 Glades, 1000 B.C.-A.D. 1700 Historic Prehistoric	Prehistoric shell midden Prehistoric mound(s) Prehistoric shell mound(s) Not Evaluated by Recorder
LL00088	Caloosahatchee Mouth 1	Belle Glade, 700 B.C.-A.D. 1700 Glades III, A.D. 1000-1700 Leon-Jefferson Other	Ceramic scatter Saltwater-marine-"low energy" Insufficient Information
LL00089	Glover Bight 1	Other Weeden Island, A.D. 450-1000	Prehistoric midden(s) Ceramic scatter Saltwater-marine-"low energy" Ineligible for NRHP
LL00090	Caloosahatchee Mouth 2	Prehistoric with pottery	Ceramic scatter Not Evaluated by Recorder

**Charlotte Harbor Preserve State Park Florida Master Site File Listed Cultural Sites**

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<b>FMSF #</b>	<b>Site Name</b>	<b>Period</b>	<b>Site Type</b>
LL00091	Sword Point 2	Glades, 1000 B.C.-A.D. 1700 Leon-Jefferson Weeden Island, A.D. 450- 1000	Not Evaluated by Recorder
LL00756	Cape Coral Canal	Glades	Canal
LL00773	McCardle Island	Glades, 1000 B.C.-A.D. 1700	Not Evaluated by Recorder
LL00774	Reckem's Point	Glades, 1000 B.C.-A.D. 1700	Eroded village site
LL00776	No name	Prehistoric	Not Evaluated by Recorder
LL01412	Underhill Point	Prehistoric (Late Weeden Island, Mississippian)	Prehistoric shell midden
LL01913	No name	Weeden Island, A.D. 450- 1000	Prehistoric shell midden Artifact scatter-dense ( > 2 per sq meter)
LL02023	No name	Prehistoric	Insufficient Information Prehistoric shell midden Not Evaluated by Recorder

## **Addendum 7 – Timber Management Analysis**



## **Charlotte Harbor Preserve State Park Timber Management Analysis**

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**PURPOSE.** This document is intended to fulfill the timber assessment requirement for Charlotte Harbor State Buffer Preserve (CHSBP) as required by Section 1. Section 253.036, Florida Statutes. The goal of this *Timber Assessment* is to evaluate the potential and feasibility of utilizing silvicultural techniques in assisting managers in achieving objectives at CHSBP.

**HISTORICAL PROSPECTIVE.** Mature pine trees dominated the pre-Columbian Florida landscape. Since the arrival of European man, the upland ecosystems have been severely impacted. Pine timber was cut and not replanted. Installation of a system of roads, ditches and drainage canals altered the hydrology. Wildfires once burned frequently across the forests. These naturally occurring, low intensity fires kept the pine flatwoods open and grassy. Eventually people began building homes, farms and businesses in the area. With the need to protect these structures from burning, fire suppression became a priority. Since the early to mid 1900's, natural wildland fires have been aggressively extinguished. Elimination of fires has radically changed the plant and animal diversity in fire dependent communities and increased fuel loads.

Old-growth timber does not live forever. A continuous supply of young regeneration is necessary to replace older trees as they die off. Lack of low intensity lightning-season fires promotes heavy undergrowth. Shading from this dense vegetation limits the ability of pine trees to reproduce. Accumulated vegetation fuels higher intensity fires than occurred naturally and hot fires kill young pine trees. Combined these factors result in not enough young trees available to maintain the pine component of healthy mesic flatwoods communities.

Historically, most of the commercially valuable trees found on this tract would have been south Florida slash pines (*Pinus elliotti* var. *densa*) (SFSP). Some longleaf pines (*Pinus palustris*) (LLP) may have been found on higher ground. The vast majority of the native habitats have been altered through changes in hydroperiod following ditching and the elimination of frequent lightning season fires. Exotic plant pests such as Brazilian pepper (*Schinus terebinthifolius*), Punk trees (*Melaleuca quinquenervia*), and Australian pines (*Casuarina* spp.) have colonized the altered ecosystems.

### **RESTORATION AND SILVICULTURAL MANAGEMENT GUIDELINES**

#### **OBJECTIVES**

Restoration of native ecosystems and processes is a primary goal on CHSBP. Land managers around Florida thought that reintroduction of periodic fire would restore the pine flatwoods to a pre-historic condition. While the use of prescribed burns is one of land managers' most essential management tools, it has done little to reduce the height and density of saw palmetto or control invasive exotics. Therefore, managers have had to resort to mechanical and chemical control methods.

## Charlotte Harbor Preserve State Park Timber Management Analysis

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Pulling a roller-drum chopper behind a heavy tractor has proven effective at reducing saw palmetto and encouraging grass and herbaceous growth. However, to facilitate the chopping, some trees may need to be removed. Timber harvests and plantings will be used to restore natural pine species at densities and age distributions believed to exist prior to European settlement of the area.

Forest health will also be a factor used to determine silvicultural needs. Listed species (such as fox squirrels, red-cockaded woodpeckers, and bald eagles), that may now or in the future occur on CHSBP, depend on healthy pine stands for their survival. Stands of over-crowded pine trees become prime targets for pine beetle attacks. These infestations can then build to levels that threaten old growth timber. Thinning young trees to reasonable stocking densities helps maintain vigorous growth and avoid unhealthy insect population escalation. Healthy trees are much less likely to suffer severe insect or disease attacks.

The distance to many of the wood product markets limits the value and marketability of some diameter class trees. However, there are some markets nearby and demand changes. Timber harvesting can provide another source of money to low-income workers and revenue for management needs. So attempts should be made to utilize as many trees that need to be removed as possible. At the same time, any harvest activity must protect the water quality of the Charlotte Harbor and its tributaries.

NOTE: ALL TIMBER MANAGEMENT ACTIVITIES MUST COMPLY WITH THE CURRENT VERSION OF THE SILVICULTURE BEST MANAGEMENT PRACTICES MANUAL (BMP'S) FOR PUBLIC LANDS AND OUTSTANDING FLORIDA WATERS (OFW).

**EXISTING CONDITIONS AND MANAGEMENT PRESCRIPTIONS.** There are approximately 6,500 acres of mesic flatwoods communities on the Preserve. Exact acreage figures for Florida Natural Area Inventory (FNAI) natural community types as related to their management needs are not currently available. A timber stand description of currently and potentially forested areas is needed. This stand description will group areas within the tract into stands with similar management needs by species composition, age, stocking levels, and growth. Information necessary for wildlife and ecosystem management can also be gathered and compiled in this process. For proper planning and management of the timber resource, this should be completed within the next five years. The following are general observations and management options for various stands observed on CHSBP.

**Pine Stands** –South Florida slash pine (SFSP) is the most prevalent of pine species observed growing on the Preserve. However, a few longleaf pines (LLP) were found growing mixed in with the South Florida slash on higher elevations. All pines occurred in natural stands of varying sizes and densities.

A useful measurement of stand stocking and density is its Basal Area per acre (BA).

## Charlotte Harbor Preserve State Park Timber Management Analysis

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Basal Area is the cross sectional area (in square feet) of a tree measured four and one-half feet above the ground. Fully stocked pine stands have enough trees per acre of a size large enough to utilize the growing space without causing over-crowding.

A South Florida slash pine stand with 70 to 100 square feet of Basal Area per acre (BA) is fully stocked. Most of the stands found on the Preserve have less than 30 square feet of BA. with 50+ year-old trees. But, the BA ranged as high as 140 sq. ft. in small isolated stands.

Thinning of pine stands with 50 sq. ft. BA or less will only be done where necessary to facilitate roller-drum chopping for saw-palmetto control. A stand being thinned back to 20 to 30 sq. ft. BA is equivalent to a shelterwood cut. This combined with the roller-drum chopping and periodic low intensity prescribed fire should encourage establishment of adequate pine regeneration.

**Cape Coral Management Unit-** One block of SFSP is primarily an uneven-aged stand with a 20-30 sq. ft. BA of mostly 12 to 14 inch DBH trees close to the paved road. However, farther from the road, the BA climbs to approximately 80-100 sq. ft. of 4 to 7 inch DBH saplings. This block is bordered on the north by a residential area. To safely reintroduce and maintain fire in the system, a firebreak has been created along the boundary.

**Recommendation** – The dense clusters of small diameter trees should be thinned to allow a tractor with roller-drum chopper to treat the saw palmettos. Smaller clumps of these trees in areas with minimal palmetto growth should be left to simulate islands of natural regeneration. Clusters or individual trees should be far enough apart to allow the tractor and chopper to operate without damage to the remnant trees.

One pass with a single-drum chopper, followed in 4 to 8 weeks by a growing season prescribed burn, should be enough to reduce the saw palmetto problem. Two passes, with the second being perpendicular to the first, may be necessary in heavy roughs. Maintain a 3 to 5 year prescribed burn cycle.

Reducing the palmetto competition and maintaining frequent fire will probably allow SFSP to regenerate more successfully than it has since fire was excluded. The resulting stands of small trees will likely need thinning when the BA reaches 100 or more sq. ft. which may take 15 to 25 years.

To protect the residences to the north, all trees in a 25 to 30 foot wide strip along the boundary may need to be removed. This will allow a wide, clean firebreak to be established. The harvest could be conducted as a salvage sale or in conjunction with the thinning of the adjacent stand.

## Charlotte Harbor Preserve State Park Timber Management Analysis

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**Port Charlotte West Management Unit (Tippicanoe West)-** This area is west of Tippicanoe Bay and Sam Knight Creek. There is a network of dirt roads that has dense stands of young, sapling and small pulpwood sized SFSP growing on the road shoulders and ditches. Some of the roads will be maintained for access within the block. Others will have the ditches filled in an effort to reestablish sheet-flow.

Within this block, there are also strands of large diameter (12+ in. DBH) with BA exceeding 100 sq. ft. This over-crowding can easily result in the beginning of pine beetle infestations and the lost of these attractive stands.

**Recommendation** – The small diameter trees should be removed entirely from areas that need roadwork. Most of these trees would have to be sold as fence post or pulpwood. The larger diameter trees should be thinned to 40 to 60 sq. ft. BA to maintain a healthy stand. The mechanical action of thinning the large trees in this fashion helps control overgrown saw palmettos and allows fire to be safely reintroduced into the ecosystem. Also, the increased sunlight to the forest floor stimulates native grass and forb production.

**Cape Haze Management Unit-** This area has stands of chip-n-saw sized (10 in. DBH) or larger SFSP with a few sawtimber-sized LLP on the higher elevations. Again, the palmettos are dense and reintroducing fire into the system can be dangerous.

**Recommendations-** Thin the strands of SFSP and mixed SFSP/LLP to 40 – 60 sq. ft. BA. The mechanical action of removing some of the trees will help make prescribed burning easier and safer for nearby homes. Roller-drum chopping of saw palmettos may also be needed to reduce the fire danger and improve the habitat. Chopping may require even lower BA's. A decision as to the most appropriate thinning operation will have to be made on a block-by-block basis. During any thinning operation, longleaf pines (especially those 10" DBH or larger) should be left for potential RCW cavity trees.

**Scrub-** Presence of the endangered scrub jay is a species often used as an indicator of a healthy scrub community. There have been rare sightings of these endearing birds in the Tippicanoe Tract. They are also known to inhabit the Cape Haze Management Unit (Boggas Ridge). Given the amount of overgrown scrub and scrubby-flatwoods on CHSBP, scrub jays could be restored to healthy numbers with proper habitat management. In these scrubs, the pine timber generally averages less than 10 sq. ft. BA.

**Recommendations-** Scrub communities require periodic disturbance to remain healthy. This disturbance can be mechanical such as chopping, logging, and prescribed burning or any combination of treatments. There is generally not enough timber to economically justify logging these scrub stands except in areas adjacent to stands of higher density that are going to be thinned. Therefore, scrub stands should be broken up into manageable sized blocks. Then, blocks should be chopped and burned on a 5 to 12 year

cycle, depending on re-growth. Treatments should be spaced and timed so that there are always recently burned blocks near blocks that are reaching maturity.

**Improved pasture-** Pasture grasses burn readily during the dry winter season. However, they tend to green-up and increase in moisture content during the growing season. This fact makes reintroducing lightning season fires into these stands difficult at best. Often attempts to return pastures to a more natural system requires establishing plants that both shade out the grass and provides leaf litter to carry fire. Planting of long-needled varieties of pine trees can accomplish both of these goals.

### Restoration Alternatives

1) Herbicide meandering strips approximately 30" wide by 12' apart using Roundup or other grass killer. Plant bareroot or containerized slash pine seedlings at approximately 5' X 12' spacing (726 trees per acre). This site prep method can be expensive (currently up to \$50 per acre), but it helps insure greater survival of expensive seedlings than with no site preparation. Approximate total cost - \$130 per acre for bareroot seedlings. Add an additional \$70 per acre if containerized seedlings are used. Spot herbicide treatment and mixing of hand planted Longleaf and South Florida slash pine tubelings in groups should make as natural looking stand as possible.

2) Scalp meandering strips approximately 24 to 30" wide by 12' apart. Scarring of the land can be kept to a minimum if the scalper is set to a depth of no more than 2" to 3". This will retard the sod, but not disturb too much soil. Plant as above. Scalping is the preferred method of tree planting where depth of sod, soil moisture and vegetative competition is a concern. Approximate total cost - \$90 per acre for bareroot and \$185 for containerized seedlings.

The number of surviving seedlings should be determined after the first and second growing seasons. If survival rates are less than 50%, a decision will have to be made whether re-planting is necessary. Is it better to fill in the holes in the stand through supplemental planting or to live with lower tree densities through the first thinning? The answer will depend on the total number of seedlings surviving and their spatial arrangement. Large holes in a stand lend themselves to replanting.

**Thinning Alternatives.** To maintain healthy, vigorously growing trees and assuming 50% or greater survival, the planted South Florida slash pines should be thinned to 60 - 70 sq. ft. of basal area per acre (BA) in 15 to 25 years. The first thinning should be initiated when the live crown in a majority of dominant and co-dominant trees has been reduced to approximately 1/3 of their total height. This will help insure a healthy stand of trees, open up the canopy, and allow sunlight to reach the forest floor. The added sunlight and disturbance promote wildlife forage production. Stands should continue to be thinned back to 60 - 70 sq. ft. BA each time they reach 100 sq. ft. or more. Under

## Charlotte Harbor Preserve State Park Timber Management Analysis

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this type of harvest schedule, the primary products removed from the first thinning would be pulpwood. The second thinning would yield primarily chip-n-saw sized (8" - 14" DBH) stems.

If survival rates exceed 50%, the trees may be more crowded causing accelerated crown loss and slower diameter growth. In this part of the state, fence post harvesting operations take smaller diameter trees than pulpwood cutters. Since the harvest can be made at a younger stand age (10 - 15 years), percent live crown ratios and growth rates can be sustained. Products derived from a fence post thinning are usually of lesser value than a pulpwood cut. Although, due to the greater cost of hauling to pulpwood markets, the closer fence post markets may be comparable. In addition, chip-n-saw diameters will be reached five to ten years sooner with this type of early stand thinning.

**Tidal Swamp-** Stands containing a mixture of mangrove species normally dominate tidal swamps. These stands are intermingled with strands of slash pine in the coastal grasslands and salt tolerant grasses of the tidal marshes. Invading Brazilian pepper is displacing natural vegetation in all of these communities. Also, Australian pine (*Casuarina* sp.) and punk tree (*Melaleuca quinquenervia*) have created problems in some areas. Numerous clusters of recently established melaleuca were observed in several locations throughout the preserve.

**Recommendations-** These areas will not be expected to be prime producers of pine timber. However, the need may arise occasionally to harvest portions of some stands to stop insect infestations, etc. Care will have to be exercised to preserve water quality. The most pressing management need is control of Brazilian pepper and other invasive exotics. Eradication efforts are extremely expensive. They require the extensive use of hand labor and herbicides. Serious control also requires periodic re-treatment and constant surveillance. Frequent prescribed fire should be considered as a useful tool in long-term control strategies. Any timber harvesting needed in these communities should be followed soon after and on a continuing basis by prescribed burns.

**Salvage Sales** - On occasion, small volumes of wood may need to be removed due to fire, windstorm, insect or other damage. The decision whether or not to harvest the affected timber will depend on the threat to the surrounding stands, risk of collateral ecological damage, and the volume/value of the trees involved. For example, small, isolated lightning-strike beetle kills are a natural part of a healthy ecosystem and normally would not be cut. However, if a drought caused the insect infestation to spread, the infected trees and a buffer zone might have to be removed.

**SUMMARY.** In rapidly urbanizing areas of the state, public lands are often the only refuges for native plant and animal communities. Restoring and maintaining these ecosystems is an important function of land managers. Saleable timber is a byproduct of good ecosystem management. Timber harvests can be carefully designed to protect

## Charlotte Harbor Preserve State Park Timber Management Analysis

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water quality and create openings in the tree canopy allowing sunlight to reach the forest floor. These clearings and their ecotones are favorite spots used by wildlife for feeding, resting, mating, nesting and rearing of offspring. The added sunlight allows new pine seedlings to become established in their native ecosystems and grow to replace trees killed by lightning, insects or disease. In all restoration scenarios, the exact methods and final results will be guided by the best available ecological information to conserve biodiversity of the affected habitats.

Mechanical equipment, used in timber harvests, helps reduce dense understory vegetation such as saw palmetto, gallberry and invasive plants. Thinning of dense timber stands also allows a tractor pulled roller-drum chopper to reduce the understory vegetation. This fuel reduction makes the introduction of prescribed fire easier, safer and more effective. The ability to maintain a frequent burning schedule may be essential to long-term control of invasive plant pests. In addition, income from forest product sales can be used to offset the high cost of exotic pest control.

There is a fence post company, a few small sawmills, and a railroad siding yard that operate nearby. In addition, there are always rumors about new mills opening in the south Florida area to utilize timber from the cattle ranches and other undeveloped lands. Charlotte Harbor State Buffer Preserve is located 200 or more miles from most of the markets for products of a timber harvest. The cost of hauling the trees to large, north Florida mills will keep timber revenues down and reduce interest in timber offered for sale. Therefore, successful timber sales will require timing to match the market. For example, recent dry weather across most of Florida has made it easy to harvest sites that are normally too wet. This has depressed wood prices all around Florida. But, when north Florida woodlands are inundated with water and south Florida is dry, loggers tend to drive long distances to obtain wood from drier land. These circumstances allow local land managers to take advantage of the opportunity to sell timber that otherwise might be hard to sell. The secret to timing the markets is to be flexible about when stands need to be cut and keeping up with market factors throughout the state. Combining timber offerings with other sales from nearby state owned lands is another way to attract more interest from prospective buyers.

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Senior Forester  
Florida Division Of Forestry



**Addendum 8 – Priority Schedule And Cost Estimates**



## Charlotte Harbor Preserve State Park Priority Schedule And Cost Estimates

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

### Resource Management

Activity	Period Covered (Year)	Estimated Cost Annual	Estimated Cost Nonrecurring
Natural Communities Mapping	0-3		\$250,000
Improve access for resource mgmt.	0-5		\$150,000
Prescribed fire (initial preparation, including fire lines and fuel reduction)	0-5		\$350,000
Prescribed fire and annual preparation	0-10	\$90,000	
Prescribed fire training and PPE	0-10	\$5,000	
Prescribed fire (1 <sup>st</sup> attack fire trucks (2))	0-5		\$120,000
Maintain fire equipment	0-10	\$10,000	
Conduct annual resource surveys and assessments	0-10	\$9,000	
Conduct timber assessments	0-5		\$5,000
Site preparation for plantings	6-10		\$20,000
Initial treatment of invasive plant species	0-5		\$3,000,000
Invasive plant species mgmt.	0-10	\$75,000	
Invasive animal mgmt.	0-10	\$10,000	

**Charlotte Harbor Preserve State Park Priority Schedule And Cost Estimates**

<b>Activity</b>	<b>Period Covered (Year)</b>	<b>Estimated Cost Annual</b>	<b>Estimated Cost Nonrecurring</b>
Hydrologic restoration (Coral Creek spoil)	1-10		\$8,000,000
Hydrologic restoration (Alligator Creek, Punta Gorda)	0-10		\$4,000,000
Hydrologic monitoring	5-10	\$6,000	
Cultural Resource Specialist staff position	0-10	\$33,552	
Cultural resource monitoring	0-10	\$45,000	
Cultural resource mapping and restoration	0-10		\$3,500,000
Education and outreach	0-10	\$25,000	
Trail development and maintenance	0-10	\$10,000	
<b>Total Cost</b>		\$3,161,520.00	\$19,395,000.00

**Capital Improvements**

<b>Development Area or Facilities</b>	<b>Estimated Cost</b>
Cape Haze Management Area .....	\$811,100.00
Port Charlotte Management Area .....	\$196,375.00
Punta Gorda Management Area.....	\$943,100.00
Cape Coral North Management Area .....	\$260,750.00
Pine Island Management Area.....	\$67,775.00
Interpretive/Directional Signage .....	\$4,375.00
<b>Total Cost with Contingency:.....</b>	<b>\$2,740,170.00</b>

**Additional Information**

**ENAI Descriptions**

**DHR Cultural Management Statement**



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## Descriptions Of Natural Communities Developed By FNAI

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

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

The levels of the hierarchy are:

**Natural Community Category** - defined by hydrology and vegetation.

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

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

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### TERRESTRIAL COMMUNITIES

XERIC UPLANDS  
COASTAL UPLANDS  
MESIC UPLANDS  
ROCKLANDS  
MESIC FLATLANDS

### PALUSTRINE COMMUNITIES

WET FLATLANDS  
SEEPAGE WETLANDS  
FLOODPLAIN WETLANDS  
BASIN WETLANDS

### LACUSTRINE COMMUNITIES

### RIVERINE COMMUNITIES

### SUBTERRANEAN COMMUNITIES

### MARINE/ESTUARINE COMMUNITIES

### Definitions of Terms Used in Natural Community Descriptions

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

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

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

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

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

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

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

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

## Descriptions Of Natural Communities Developed By FNAI

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

**Mesic Flatwoods** - flatland with sand substrate; mesic; subtropical or temperate; frequent fire; slash pine and/or longleaf pine with saw palmetto, gallberry and/or wiregrass or cutthroat grass understory.

## Descriptions Of Natural Communities Developed By FNAI

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

**Flatwoods/Prairie Lake** - generally shallow basin in flatlands with high water table; frequently with a

## Descriptions Of Natural Communities Developed By FNAI

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broad littoral zone; still water or flow-through; sand or peat substrate; variable water chemistry, but characteristically colored to clear, acidic to slightly alkaline, soft to moderately hard water with moderate mineral content (sodium, chloride, sulfate); oligo-mesotrophic to eutrophic.

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

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

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

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

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

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

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

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

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

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

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

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

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

water such as fissures in the ceiling of caves.

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

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

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

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

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

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

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

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

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

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

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

**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.

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

**DEFINITIONS OF TERMS Terrestrial and Palustrine Natural Communities**

**Physiography**

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

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

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

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

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

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

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

**Hydrology**

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

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

**usually inundated** - surface water present except during droughts

**Climatic Affinity of the Flora**

**tropical** - community generally occurs in practically frost-free areas

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

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

**Fire**

**annual fire** - burns about every 1-2 years

**frequent fire** - burns about every 3-7 years

**occasional fire** - burns about every 8-25 years

**rare fire** - burns about every 26-100 years

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

**LATIN NAMES OF PLANTS MENTIONED IN NATURAL COMMUNITY DESCRIPTIONS**

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



## **Management Procedures for Archaeological and Historical Sites and Properties on State-Owned or Controlled Properties (revised February 2007)**

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

### **A. General Discussion**

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

### **B. Agency Responsibilities**

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

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

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

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

### **C. Statutory Authority**

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

**Chapter 253, F.S.** – State Lands

**Chapter 267, F.S.** – Historical Resources

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

Other helpful citations and references:

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

Other helpful citations and references:

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

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

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

**Management Procedures For Archaeological And Historical Sites And Properties  
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**D. Management Implementation**

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

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

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

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

**E. Minimum Review Documentation Requirements**

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

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

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

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

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

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

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

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

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

**Phone:(850) 245-6333  
Suncom: 205-6333  
Fax: (850) 245-6438**

