



Clearwater Harbor and Saint Joseph Sound Comprehensive Conservation and Management Plan:

Task 4b. Review of Existing Management Plans for Managed Lands

Prepared for:
Pinellas County



Prepared by:



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FOREWORD

This document is provided in fulfillment of Task 4b of the Comprehensive Conservation and Management Plan for Saint Joseph Sound and Clearwater Harbor; Contract No: 089-0222-P.

Background:

As part of the development of the Clearwater Harbor Saint Joseph Sound (CHSJS) Comprehensive Conservation and Management Plan, a review of existing management plans has been conducted and comparative matrices have been constructed to document the goals, objectives and policies of the various management plans. The majority of the management plans focus on the protection and preservation of environmental lands within the study area. Environmental lands in Pinellas County include publicly-owned preserves, other managed environmentally sensitive lands, and passive recreation parks. Environmental lands can be differentiated from active recreation parks (e.g., ball fields) and other open space in that they: support the sustainability of natural resources, watersheds, and natural habitat; provide resource-based recreational opportunities; and promote a healthy environment and community. However, active recreation parks can also include remnants of native habitats, as well as provide other important hydrologic functions such as surface water storage and treatment, and groundwater recharge. For the purposes of this document, active recreation parks that possess such natural resource values are considered to be environmental lands. Within the boundaries of CHSJS study area, environmental lands and active recreation parks are owned and managed by State of Florida, Florida Department of Environmental Protection, the Southwest Florida Water Management District, Pinellas County and the City of Dunedin. There are no federally owned/managed environmental lands in the project area watersheds. The CHSJS area is also unique in the State of Florida in that all submerged lands and tidal waters within its boundaries are designated as an aquatic preserve pursuant to Chapter 258, Florida Statutes. The Pinellas County Aquatic Preserve includes approximately 350,000 acres of submerged lands in total.

This document provides a summary of the current status of managed lands within the project area, documents management issues associated with these lands and compares and contrasts the goals and objectives of existing management plans. The managed areas are identified in Figure 1.

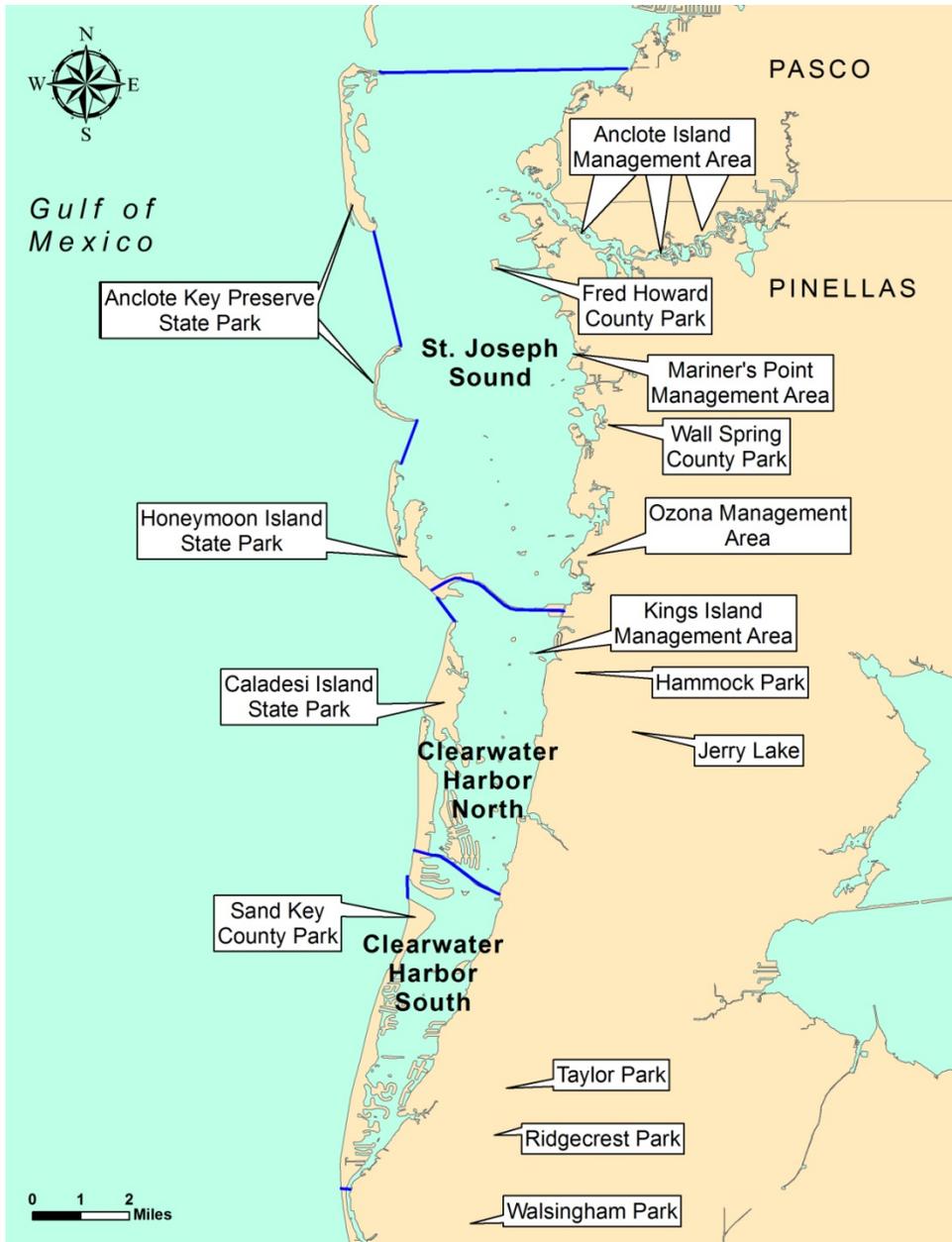


Figure 1. Location of managed lands in the Clearwater Harbor St. Joseph Sound study area.

Inland Managed Lands

The following sections describe existing environmental lands and management plans within the inland watershed and estuary of the CHSJS area, respectively. Inland management areas are defined as those areas residing east of the open bay estuarine waters. Table 1 provides a summary of these areas including the name, managing entity and total land area. Figure 2 displays the location of these six managed lands areas.

Table 1. Identification of managed lands in the Clearwater Harbor and St. Joseph Sound watersheds.				
Name	Managing Agency	Acres Total and Watershed		
		Total	Clearwater Harbor	St. Joseph Sound
Taylor Park	Pinellas County	156.5	156.5	0
Ridgecrest Park		23.0	23.0	0
Walsingham Park		350	353	0
Ozona Management Area		8	0	8
Jerry Lake	SWFWMD	81	80	0
The Hammock	City of Dunedin	88	82	0

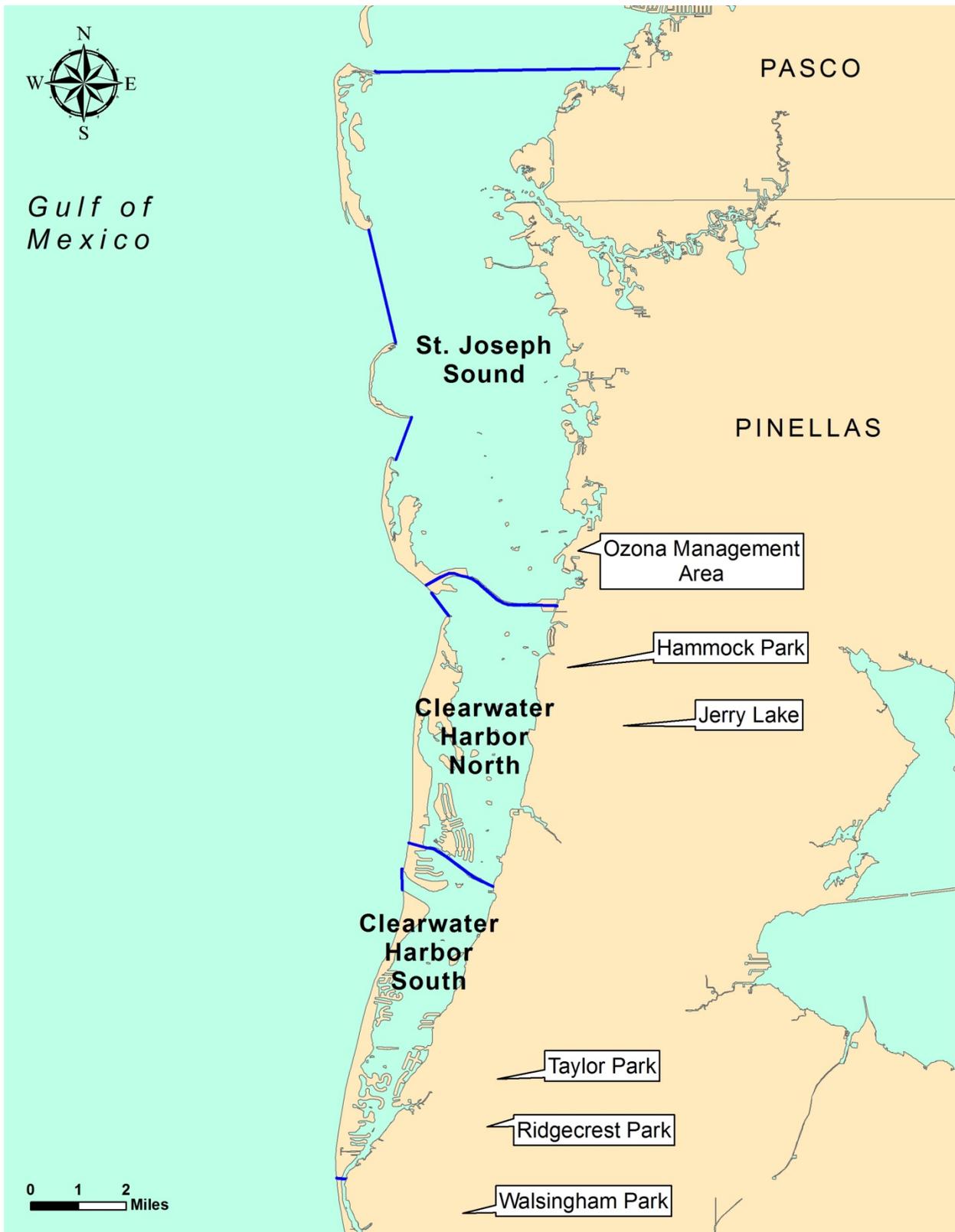


Figure 2. Location of managed lands in the Clearwater Harbor and St. Joseph Sound inland watershed.

The following bulleted list describes the significant features of each of the managed lands listed in Table 1. Detailed information for each of these parks is provided on the Pinellas County Parks and Preserves website: <http://www.pinellascounty.org/park/> which is summarized below.

- **Taylor Park** is located in the City of Largo, but is owned and managed by Pinellas County. The park consists of 156.5 acres, including a 53-acre created freshwater lake with excellent fishing. Small boats can be launched from a concrete boat ramp. Development of this park began in 1958. Its facilities include group picnic shelters, playground equipment, and restrooms. It also offers a softball diamond and a large, open playing field which are very popular with the local residents and children. A 1.8-mile running/exercise trail was added in May 1982. In late 1990, access to the nearby Pinellas Trail was completed. Remnants of native habitats include pine flatwoods and freshwater wetlands and aquatic habitats associated with the lake.
- **Ridgecrest Park** is located in the City of Largo, but is owned and managed by Pinellas County. This 23-acre park was first acquired and developed in 1958, and includes a 5-acre freshwater lake where fishing is permitted. In addition to picnic facilities, the park offers two play areas with a variety of playground equipment, restrooms, and a softball field. Remnants of native habitats include pine flatwoods and freshwater wetlands and aquatic habitats associated with the lake.
- **Walsingham Park** is situated on 354 acres, divided by 100-acre Walsingham Lake, one-quarter mile west of the Pinellas Trail. There are entrances on Walsingham Road and on 102nd Avenue North. The park provides passive recreational amenities for approximately 700,000 visitors to this park each year. Visitors picnic and enjoy recreation such as hiking, jogging, cycling, a 6 mile trail, a 10-station fitness area, bird-watching, observing many plant species, fishing and/or boating. Boating is restricted to rowing, sailing, or electric engines - combustion engines not permitted. Walsingham Reservoir was created from a natural lake to provide an irrigation water supply for historical citrus farming in part of Pinellas County. Five habitat areas have been delineated within the boundaries of Walsingham Park: botanical gardens; pine flatwoods; oak scrub; Walsingham Reservoir with detention ponds, swales and wetlands; and cleared areas. Wildlife includes: snakes, tortoises, turtles, hawks, mottled ducks, herons, wrens, thrashers, warblers; as well as butterflies comprised of swallowtails, sulphurs, gulf fritillary, Carolina satyr, white peacock.
- **Ozona Management Area** is an 8-acre conservation area located in unincorporated Pinellas County. Aerial photographs from the 1920s indicate former freshwater marshes and surrounding flatwoods and sandhill communities in this area. Prior to 1942, a ditch was dredged to connect this area to the Gulf of Mexico providing a means of salt water ingress to the formerly freshwater wetland system. Road improvements and coastal development that included mangrove removal followed. The Pinellas County Board of County Commissioners acquired the parcels that comprise this property between 1989 and 2001 and the area is managed by Pinellas County. Tides play a minimal role in the hydrology, which is regulated primarily by elevation changes in stormwater control structures. Low-lying areas within the region flood frequently. Elevation ranges up to 10 feet above sea level, though higher elevations are attributed to fill material associated with residential development. Mowing, dumping of trash, ditching, and filling have encouraged the

extensive spread of invasive exotic species, including Brazilian pepper, punktree, guinea grass, and air-potato. The spread of other exotics, such as carrotwood and camphor tree, has been promoted by surrounding landscaping. Remaining native habitats and plant communities include: pine flatwoods; oak hammock; tidal swamp (mangrove); and, salt barren.

Since assuming management of this area in 1998, the County has focused its efforts primarily on controlling exotic species through the use of chemical treatment and including bays, cedars, hollies, ferns, and rushes. Volunteers have devoted many hours to removing exotics by hand. As with all small natural areas surrounded by development, exotics will be an on-going challenge. Though natural communities of this region would have burned historically, reintroduction of fire is not currently a viable management strategy at the Ozona Management Area due to its small size and proximity of residential areas. Additional efforts at this management area may include improving the hydrology and planting native vegetation.

- **Jerry Lake** is a natural 31-acre lake located within the City of Dunedin. The lake and approximately 50 acres of undeveloped mixed hardwood forest on the north and south sides of the lake are owned by the Southwest Florida Water Management District. Jerry Lake and its forested floodplain are identified as a major drainage feature in the Pinellas County Comprehensive Plan Drainage Element, and function as an urban flood detention area. Jerry Run flows into the northeastern end of the lake. The lake also receives stormwater runoff from adjacent residential development on the east and west sides of the lake. There is no documentation on the ecological condition of the lake and adjacent floodplain forest. There are no public recreational facilities on the lake or the adjacent open space.
- **Hammock Park**, also known as “The Hammock”, is an 88-acre natural area and passive recreational park owned and managed by the City of Dunedin. The park has five miles of nature trails, three picnic shelters, an observation platform, rest rooms and a playground area. This relatively small park has been largely preserved from the impacts of adjacent development, and contains a wide variety of vegetation and wildlife. There are five distinct native habitats represented in the park: mangrove; salt marsh; pine flatwoods; oak hammock/hardwood forest; bayheads; and, sand pine/scrub oak.

- **Resource Management Issues**

All of the watershed environmental lands described above have been impacted to some extent by dredge and fill, drainage alterations, and adjacent urbanization. For those managed lands that have retained most of their natural characteristics (e.g., Hammock Park; Ozona Management Area), the primary management challenges are preventing further degradation, and restoring historical habitats and/or functions. The most significant natural resource management challenge with regard to active recreation parks is balancing a reasonable amount of human usage against the tolerance and assimilative capacity of native ecosystems and wildlife populations.

One management problem that these managed lands all share is the control of exotic species introductions and infestations. Given their urban setting, prescribed burning and fire management are not viable management options, making exotic species control even more challenging.

Another major management problem with the watershed managed lands is surface water management – including flood and water quality control. There are no specific management plans directly attributable to each of the parks from which to derive a comparative matrix. However, these managed lands all occur within a highly urbanized watershed, and are thus impacted by similar anthropogenic activities including drainage alterations and the storage and conveyance of urban flood waters. Most of these managed lands are integrated into urban stormwater management systems; consequently, maintaining surface water quality and controlling eutrophication (e.g., algal blooms; dissolved oxygen sags) is a major challenge.

- **Goal Identification**

Recommended management goals for managed lands in the watershed include the following:

1. Periodically assess the overall ecological integrity of existing managed lands in the watershed project area.
2. Periodically quantify direct impacts (e.g., dredge and fill) and indirect impacts (e.g., adjacent urban development; water quality degradation) to existing managed lands.
3. Protect and/or restore native habitat on managed lands.
4. Protect and sustain native wildlife species populations utilizing managed lands.
5. Expand existing, and/or establish new, managed lands and buffer areas where feasible.
6. Identify, preserve and actively manage cultural resources.
7. Use managed lands more effectively to facilitate public education on conservation issues.

- **Target Identification**

Recommended management targets for managed lands in the study area include the following:

1. Increase protection of nesting and feeding areas for native raptors (ospreys, southern bald eagles).
2. Eradicate invasive exotic plants.
3. Restore native plant communities and habitats.
4. Identify, preserve and actively manage cultural resources.
5. Improve surface water quality as necessary to support native aquatic species

Estuarine Managed Lands

Within the estuarine boundaries of CHSJS study area, managed lands are owned and managed either by the State of Florida or Pinellas County. A list of managed lands in the estuary of the CHSJS is provided in Table 2. Anclote Key, Honeymoon Island, and Caladesi Island are three of Florida's few remaining intact, undeveloped barrier islands. While none of these barrier islands has been designated as an Area of Critical State Concern, as defined in section 380.05, Florida Statutes, they have been effectively preserved as State Parks. The portions of the three parks in Pinellas County are contained within the Pinellas County Aquatic Preserve. As such, all waters in the Park are designated Outstanding Florida Waters, (Chapter 62-302 F.A.C.) and surface waters are classified as Class III by FDEP.

The FDEP Division of Recreation and Parks is responsible for the maintenance and management of the three State Park, and has developed Unit Management Plans for each.

Table 2. Managed lands within the Clearwater Harbor, St. Joseph Sound estuary.				
Name	Owner	Managing Entity	Total Acres	Estuary
Anclote Key Preserve State Park	State of Florida	FDEP	12,177	St. Joseph Sound
Honeymoon Island State Park	State of Florida	FDEP	2,810	St. Joseph Sound
Caladesi Island State Park	State of Florida	FDEP	2,470	Clearwater Harbor
Fred Howard Park	Pinellas County	Pinellas County	155	St. Joseph Sound
Wall Springs Park	Pinellas County	Pinellas County	198	St. Joseph Sound
Sand Key Park	Pinellas County	Pinellas County	95	Clearwater Harbor
Mariners Point Management Area	Pinellas County	Pinellas County	76	St. Joseph Sound
Anclote Islands Management Area	Pinellas County	Pinellas County	160	St. Joseph Sound
King Islands Management Area	Pinellas County	Pinellas County	25	Clearwater Harbor

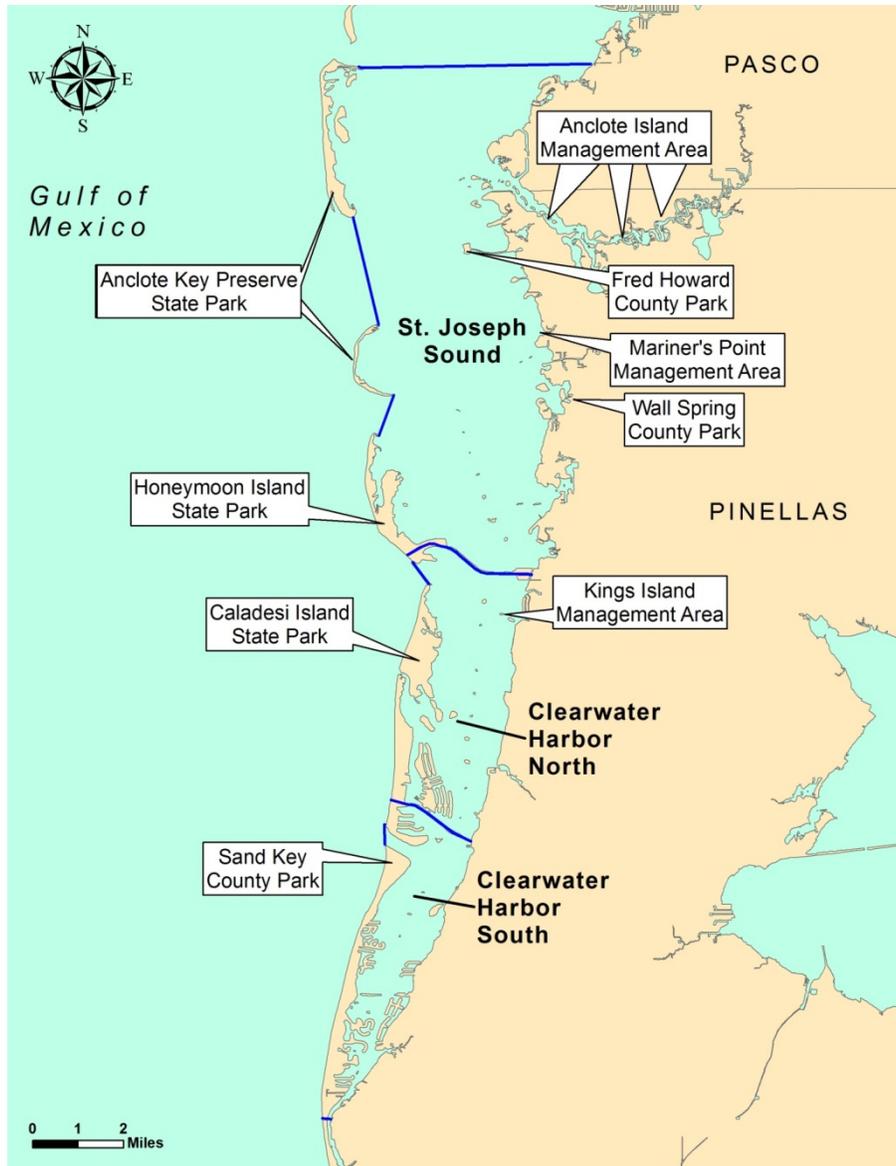


Figure 2-15. Location of managed lands in the CHSJS area.

The following bulleted list describes the significant features of each of the managed lands listed in Table 2.

State Parks

- Anclote Key Preserve State Park** - comprises approximately 437 acres of uplands located in the Gulf of Mexico, three miles offshore near Tarpon Springs in western Pasco and Pinellas Counties. It consists of several barrier islands of varying size and shape. Besides the island of Anclote Key there is North Anclote Key, which is almost contiguous with the north end of Anclote Key. Another Island is Three Rooker Island, about three miles south of Anclote Key. Three Rooker Island and the southern tip of Anclote Key are in Pinellas County, while the remainder of Anclote Key, as well as North Anclote Key, are in Pasco County. When the submerged lands are included, the entire preserve encompasses over 12,000 acres.

Anclote Key itself was acquired by trade with the U.S. Government for state land in the J. N. "Ding" Darling National Wildlife Refuge. In July 1988, Three Rooker Island was added, and in July 1996, the lighthouse on Anclote Key and the small lot that it occupies was donated by the U.S. Government. Two small mangrove islands (Dutchman Key and North Keys) just landward of Anclote Key have been identified for acquisition (FDEP, 2001). Access to the preserve is by boat only. Development is restricted to the minimum necessary for user safety and natural resource interpretation. Public outdoor recreation is the designated single use of the property. There are no legislative or executive directives that constrain the use of this property (FDEP, 2001).

Longshore drift is predominately northward at the latitude of Anclote Key (Johnson and Barbour 1990), and a new barrier island (Anclote Bar) has formed about two miles north of the preserve. Anclote Bar essentially marks the northern terminus of barrier island development on the west coast of Florida. From this new island north to the Ochlockonee River drainage is open coastal estuary with no barrier islands (FDEP, 2001).

Anclote Key Preserve State Park contains seven distinct natural communities:

- Beach dune,
- Coastal strand,
- Maritime hammock,
- Mesic flatwoods,
- Marine tidal marsh (predominantly *Spartina alterniflora*,
- Marine tidal swamp (mangroves), and
- Marine unconsolidated substrate (mud and sand flats).

In addition to native plant communities, the park contains limited ruderal areas (e.g., areas altered by human activities) that have little native vegetation and have often been replaced by weedy or exotic species.

Designated species are those which are listed by the Florida Natural Areas Inventory (FNAI), U.S. Fish and Wildlife Service (USFWS), Florida Fish and Wildlife Conservation Commission (FFWCC), and the Florida Department of Agriculture and Consumer Services (FDA) as endangered, threatened or of special concern.

Three Rooker Island is a very significant nesting site for shorebirds (herein defined to include larids) on a statewide basis, ranking among the top five sites (Douglass, 1997). In addition to 5,000 laughing gull nests, American oystercatcher, black skimmer, least tern and snowy plover nests have been recorded on the island (Schnapf, 1997). Three Rooker Island is an important wintering site, and is used by piping plovers and a myriad of other species. However, there is now so much human use of this small island that nesting and resting birds are seriously threatened. As an indication of the intensive recreational use, the preserve has received requests from food vendors for permits to supply food service there. Attempts to have the area declared a Critical Wildlife Area by the FFWCC in 1995 were not successful. Recent attempts to post the nesting sites against trespassing have met with more success. In addition to shorebirds, southern bald eagle and osprey nests occur in slash pine trees and snags on Anclote Key.

Atlantic loggerhead sea turtles are known to crawl up on the beach at Anclote Key during nesting season (Brewer, 1997), but nesting has not been adequately monitored. Raccoons, which are responsible for most sea turtle nest predation on barrier islands to the south, are also present on Anclote Key. West Indian manatees, utilizing the Anclote River and the warm water refuge provided by the springs in Whitecomb Bayou, also use seagrass beds in the park.

- **Honeymoon Island State Park** is located in Pinellas County about four miles northwest of downtown Dunedin, and about two miles from the mainland shoreline. The island has been accessible from the mainland via highway State Road 586 and the Dunedin Causeway since 1965. St. Joseph Sound lies between the island and the mainland. A small mangrove island, Grassy Key, lies off the eastern shore of Honeymoon Island (FDEP, 2007b).

Acquisition of the barrier island began in 1974, after the failure of an extensive commercial development scheme of high-density dwellings (Luisi, 1999). Initially, funds from the 1972 sale of general obligation bonds were used. Later purchases were made with funds from the Land Acquisition Trust Fund. Currently the park contains approximately 2,810 acres. The park is the location of the administrative office for the following parks: Egmont Key State Park, Skyway Fishing Piers State Park, Caladesi Island State Park, and Anclote Key Preserve State Park (FDEP, 2007a).

At Honeymoon Island State Park, public outdoor recreation is the designated single use of the property. There are no legislative or executive directives that constrain the use of this property. Honeymoon Island State Park is a favorite destination for beach recreation and nature study. It consistently ranks among the top five most visited parks in the Florida State Parks system (FDEP, 2007a).

Honeymoon Island State Park contains nine distinct natural communities in addition to rural and developed areas. Natural communities include:

- Beach dune,
- Coastal strand,
- Maritime hammock,
- Mesic flatwoods,
- Marine grass bed,
- Marine mollusk reef (oyster *Ostrea frons*),
- Marine tidal marsh (*Spartina alterniflora*),
- Marine tidal swamp (mangroves), and
- Marine unconsolidated substrate (mud and sand flats).

Honeymoon Island is a very significant feeding and wintering site for shorebirds. It is ranked second among 27 sites in biological importance to wintering shorebirds on the southeast coast of the U.S., and is ranked third in the State of Florida (Sprandel et al., 1997). It is located due south and in close proximity to Three Rooker Island, which is consistently ranked among the top five shorebird nesting sites in the State by biologists of the FFWCC. A large number of piping plovers, a state- and federally-listed threatened species, forage and

rest at Honeymoon Island. The island also supports several species of nesting shorebirds, including Wilson's plover and two threatened species, the least tern and the snowy plover, as well as a species of special concern, the American oystercatcher (FDEP, 2007a).

In addition to the four listed species of shorebirds noted above, 34 other designated bird species have been documented in the park. Six designated reptile species, and one designated mammal species have been documented. As for plants, four designated species have been discovered in the park. The park is noted for its large number of osprey nests. The hiking trail which traverses the northern half of the island, passes in close proximity to several of the nests, without apparent harm (FDEP, 2007a).

Atlantic loggerhead sea turtles nest on the beach. Raccoons, which are responsible for most sea turtle nest predation on barrier islands, are also present on Honeymoon Island. West Indian manatees, utilizing the Anclote River and the warm water refuge provided by the springs in Whitecomb Bayou, also use seagrass beds in the park. Manatees have been seen in the shallow seagrass beds north of the park manager residences (FDEP, 2007a).

- **Caladesi Island State Park** - is located in Pinellas County about two miles and west of the town of Dunedin. The park is accessible by private boat or watercraft, and a ferry service is provided from nearby Honeymoon Island State Park, at the western terminus of State Road 586. The entrance to Honeymoon Island State Park is five miles west of U.S. Highway 19. Technically, Caladesi is no longer an island. Dunedin Pass, that once separated it from Clearwater Island to the south, has in recent years filled with sand, joining the two islands. Visitors can now reach the park by walking north from Clearwater Beach (FDEP, 2007b).

Currently the park contains approximately 2,470 acres. The initial acquisition was a donation by the City of Dunedin in 1966. From 1967 through 1969, additional acquisitions were made using funds for the Land Acquisition Trust Fund and the Federal Land and Water Conservation Fund. The last acquisition was a donation in 1983. Public outdoor recreation and conservation of the property are the sole designated uses. There are no legislative or executive directives that constrain the use of this property. Caladesi Island is a favored destination for boaters, tourists and a popular site for beach recreation. An annual survey of U.S. recreational beaches by the University of Maryland's Laboratory for Coastal Research, consistently places Caladesi Island in the top ten (e.g., in both 2006 and 2007 the ranking was number 2). The beach ranking is based on 50 criteria including width, softness of sand, water temperature, pollution and crowding. The park is a component of the Florida Greenways and Trails System (FDEP, 2007b).

Caladesi Island is one of Florida's few remaining intact, undeveloped barrier islands and less than ten percent of the uplands have been disturbed to provide visitor and support facilities. Further disturbance has been in the form of invasive exotic plants and by a network of small canals dug throughout the mangroves for mosquito control in the late 1960 and early 1970s. The island is three-quarters of a mile wide at its broadest point. In length, it stretches about four miles; the length includes three small satellite mangrove islands. Cultural resources are evident in the remains of a Pre-Columbian burial mound, a shell scatter site and of a nineteenth century homestead (FDEP, 2007b).

Caladesi Island State Park contains nine distinct natural communities in addition to ruderal and developed areas. Natural communities include:

- Beach dune,
- Coastal strand,
- Maritime hammock,
- Mesic flatwoods,
- Shell mound,
- Marine grass bed,
- Marine mollusk reef (oyster *Ostrea frons*),
- Marine tidal marsh (*Spartina alterniflora*),
- Marine tidal swamp (mangroves), and
- Marine unconsolidated substrate (mud and sand flats).

Below is a comparative matrix of the management goals of each of the state parks described above (Table 3).

Table 3. Comparison of management goals between the three State Park Unit Management Plans.			
	Caladesi Island State Park	Honeymoon Island State Park	Anclote Key Preserve State Park
Natural and Cultural Resources	Continue to remove all invasive exotic plants from the park	Eradicate invasive exotic plants.	Eradicate invasive exotic plants such as Australian Pine and Brazilian Pepper.
	Continue prescribed burning in the mesic flatwoods.	Continue to maintain fire-adapted natural communities through prescribed burning, and continue to restore ruderal areas to native vegetation through prescribed burning and/or replanting.	
	Continue monitoring and protecting nesting marine turtles.	Continue to monitor sea turtle nesting, osprey nesting and wading and shorebird nesting and resting sites.	Establish monitoring programs for sea turtles that avoids impacting nesting shorebirds, as well as monitoring programs for ospreys, southern bald eagles, and terrestrial mammalian nest predators.
	Continue to protect shorebird nesting and resting sites, including wintering sites, some of which occur on high use beaches.	Continue to protect shorebird nesting and resting sites, including wintering sites, some of which occur on high use beaches.	Increase protection of nesting, wintering and migrating shorebirds and the areas they use on Three Rooker Bar and Anclote Bar.
	Protect marine grass bed communities.	Continue to protect seagrass beds, and monitor their recovery from damage due to propeller scarring and turbidity caused by pollution using guidelines and the best technology in cooperation with Pinellas County and the Southwest Florida Water Management District.	Protect marine grass bed communities near the preserve.
	Continue to identify and protect cultural resources.	Identify and protect cultural resources.	Identify, preserve and actively manage cultural resources.
		Assess the impact of nocturnal recreation use on natural resources.	
Recreation	Continue to provide quality resource based outdoor recreational and interpretive programs and facilities at the State park.	Continue to provide quality resource based outdoor recreational and interpretive programs and facilities at the State park.	

Table 3 Cont'd. Comparison of management goals between the three State Park Unit Management Plans			
	Seek funding to expand recreational and interpretive opportunities through the improvement of programs and the development of new use areas and facilities.	Seek funding to expand recreational and interpretive opportunities through the improvement of programs and the development of new use areas and facilities.	Expand recreational opportunities to attract additional kinds of recreational users, and improve the integration of existing recreational use with the functions of the preserve as a shorebird nesting site of statewide significance.
Park Administration and Operations	Continue to expand interpretation.		
	Continue to expand appropriate recreational uses.	Provide safe, appropriate and high quality outdoor recreational opportunities for all park visitors.	
	Increase operational effectiveness.	Continue to share resources with all parks under Honeymoon Island administration.	
	Continue to expand partnerships.		

- County Parks

Three Pinellas County parks border the Clearwater Harbor/St. Joseph Sound estuarine study area. The primary designated use of Pinellas County parks is public recreation; however, the County also strongly promotes natural resource conservation and public environmental education at its park facilities. The following provides a brief summary of the three County parks. Detailed information on these managed lands including the basis for the summaries below is provided on the Pinellas County Parks and Preserves website: <http://www.pinellascounty.org/park/>

- **Fred Howard Park** - consists of 155 acres and is located on the Gulf of Mexico. The park was named in honor of Fred H. Howard, former Mayor of Tarpon Springs, and was dedicated in April 16, 1966. Howard Park's location provides access to the Gulf of Mexico by a 1-mile long causeway. The white sandy beach is a very popular north county swim area. The causeway is also used for sunbathing, fishing and exercising.

The park was constructed when access to the barrier islands was much more limited, thus providing convenient access to the Gulf and a swimming beach for the citizens of Tarpon Springs. The park was created from spoil material dredged from surrounding sub-tidal areas prior to the enactment of the federal environmental regulations in the 1970s that now restrict dredge and fill activities.

Remnants of historic habitats still remain, and second growth habitats have established, within park boundaries, including:

- Long leaf and slash pine flatwoods,
 - Turkey oak - long leaf pine sandhill,
 - Coastal scrub,
 - Marine grass bed,
 - Marine tidal marsh,
 - Marine tidal swamp, and
 - Salt barrens.
- **Wall Springs Park**- consists of 195 acres, and includes a historic spring once used as a spa and bathing area from the turn of the 20th century until the mid-1960s. Pinellas County began acquiring the Wall Springs property in 1988, with the initial purchase of approximately 63 acres which included the spring and surrounding area. The County has continued to acquire additional property since their initial purchase. The park now includes boardwalks, nature trails, playground, a 35-foot observation tower, bike racks, drinking fountains, restrooms, parking lot, and access to the Pinellas Trail

Wall Springs is a major spring with mean annual freshwater discharges of 4.2 million gallons per day. The spring run, which discharges to tidal waters of St. Joseph Sound, is a rare freshwater/estuarine habitat. Other habitats contained within the park boundaries include:

- Spring-run stream,
- Clastic upland lake,

- Marine tidal swamp,
 - Marine tidal marsh,
 - Mesic flatwoods,
 - Xeric hammock,
 - Upland mixed forest,
 - Unconsolidated substrate,
 - Marine mollusk reef, and
 - Marine grass bed.
- Sand Key Park - consists of 95 acres located on the northern end of the barrier island of Sand Key. The park was opened to the public in 1984, and comprises two components: a beachfront on the Gulf of Mexico, and a park area along Clearwater Harbor. Sand Key Park houses the base of operations for the artificial reef program, an interdepartmental cooperation program to build a reef in the Gulf. Sand Key Park's natural communities include a beach where sea turtles annually deposit eggs. The nearby Clearwater Aquarium takes responsibility for these nests and keeps statistics. In July 2002, the media chronicled 84 hatchlings from a rare Kemp's Ridley Sea Turtle making their way to the Gulf of Mexico. A salt marsh with viewing benches further enhances the park, where heron, roseate spoonbill, great horned owl, anhinga, and common moorhen nest and feed. The park has nine boardwalks leading to the beach
- **County Management Areas**

County management areas are smaller, publicly-owned parcels that have been acquired, and are managed, primarily for environmental conservation purposes. These areas do not have restroom facilities such as restrooms or public education displays, nor do they provide any active recreational amenities. Detailed information on these managed lands including the basis for the summaries below is provided on the Pinellas County Environmental Lands website: <http://www.pinellascounty.org/environment/>

- **Mariners Point Management Area**- is a 76-acre tract located in Tarpon Springs. The Pinellas County Board of County Commissioners acquired the property in 1990. The site was historically composed of a mosaic of emergent tidal wetlands and wet pine flatwoods that drained via sheetflow to St. Joseph Sound. While the site has never been developed, hydrologic impacts have occurred primarily to improve drainage of adjacent developed parcels. Hydrologic modifications include the dredging of a freshwater marsh and a canal to St. Joseph Sound, and the construction of a stormwater culvert and sump in the southeastern corner of the property

The area supports a diverse array of natural communities, including tidal swamp dominated by mangroves, tidal marshes dominated by rushes, and flatwoods dominated by pines and saw palmetto. Also supported are extensive sandhills, a unique upland community dominated by longleaf pine, oaks, wiregrass, and hogplum. Disturbance has resulted in ruderal areas and has encouraged the spread of invasive exotic species, including Brazilian pepper, punktree, guineagrass, and air-potato. The spread of other exotics, such as carrotwood and camphor tree, has been promoted by surrounding landscaping in nearby

residential areas. Rare species that utilize the area include gopher tortoises and bald eagles (Pinellas County 2011b).

- **Anclote Islands Management Area** - is a cluster of intertidal islands and riparian wetlands in the Anclote River, comprising a total land area of approximately 160 acres. The management area was acquired through a number of land purchases from the mid 1990's to 2004 by the Pinellas County Board of County Commissioners. Elevations range up to several feet above sea level, with many portions of the management area permanently inundated. The dominant soil types are mucks and fine sands that support tidal swamp and tidal marsh communities. The tidal swamps consist primarily of red and black mangroves, but also support buttonbush, glasswort, cordgrass, needlerush, and sea purslane. The tidal marshes are dominated by black rushes, but also support bulrushes, cordgrass, and saltwort. These communities provide habitat for a wide variety of saltwater fishes and wading birds. Because this management areas has not been heavily disturbed, exotic species are not as predominant a problem as at some other natural areas.
 - **King Islands Management Area** is an approximate 25-acre parcel in Clearwater Harbor north, immediately west of the City of Dunedin. This management area is composed of two mangrove islands and surrounding submerged lands. This parcel was dedicated to the Pinellas County Board of County Commissioners by a private entity. No active management has been conducted on this parcel to date.
- **Natural and Anthropogenic Stressors**

The three barrier island State Parks in the study area are extremely popular recreational destinations for both tourists and local residents due to their pristine beaches and well preserved native ecosystems. The same is true for the three County Parks, but to a lesser degree due to their smaller size. The most significant anthropogenic threats to these areas are the cumulative impacts of intense human visitation and usage. Native ecosystems and wildlife on park lands, as well as water quality in and around the parks, can be adversely impacted by the following stressors:

- Exotic species introductions and infestations
- Illicit plant and animal collection
- Uncontrolled domestic pets
- Proliferation of feral animal populations
- Trash dumping
- Human waste discharges from vessels
- Stormwater runoff from impervious surfaces
- Propeller scarring of submerged aquatic vegetation
- Encroachment of adjacent urban development.

The three County Management Areas are also subject to the same anthropogenic stressors, but generally to a lesser degree due to limited public access and the lack of infrastructure.

In addition to human use impacts and related stressors, the barrier island State parks in particular are subject to severe erosion and accretion resulting from both anthropogenic and natural causes. Changes in local sand budgets and longshore drift patterns can be caused by:

- Placement of groins and other structures for beach stabilization
- Dredge and fill, and shoreline hardening for adjacent urban development
- Dredge and fill for ICW and local channel maintenance
- Dredge and fill for opening and/or maintenance of coastal passes
- Loss of stabilizing aquatic vegetation – both submerged and emergent
- Catastrophic tropical storm events
- Sea level rise.

- **Resource Management Issues**

The most significant management challenge with regard to the barrier island State Parks and the estuarine County Parks is balancing a reasonable amount of human usage against the tolerance and assimilative capacity of native ecosystems and wildlife populations.

Unit Management Plans for each of the three State Parks were reviewed and compared. Table 2 provides a comparison of the management goals of the three Unit Management Plans. While there are differences between the three plans, seven common management goals were identified, including:

- Control exotic species introductions and infestations
- Monitor and protect nesting shorebirds
- Monitor and protect sea turtle nests
- Protect marine grass bed communities
- Identify and protect cultural resources
- Provide quality resource-based outdoor recreational opportunities
- Provide quality interpretive environmental education programs and facilities.

In addition to the management goals articulated in the State Park Unit Management Plans, other management issues and actions common to all estuarine environmental lands include:

- Prohibit illicit plant and animal collection
- Prohibit domestic pets in park boundaries
- Control introduced feral animal populations
- Control illicit trash dumping
- Prohibit illicit human waste discharges from vessels
- Minimize and treating stormwater runoff from impervious surfaces
- Control propeller scarring of submerged aquatic vegetation
- Maintain effective buffers from adjacent urban development.

Bird Management Areas

Many of the managed lands listed above provide important habitats for avian fauna. Below is a list of management activities associated with bird nesting and foraging activities, principally in the CHSJS estuary (Table 4).

Table 4. Management characteristics of islands in Clearwater Harbor-St. Joseph Sound.
Abbreviations in table include:

FCIS = Audubon's Florida Coastal Islands Sanctuaries;
FDEP = Florida Department of Environmental Protection;
FSP = Florida Department of Environmental Protection/Florida State Parks;
PAqP = Florida Department of Environmental Protection/Pinellas Aquatic Preserve;
PinCo = Pinellas County

Island	Management Authority	IBA	Bird Colony	Mixed Use	Nesting Habitat Type	COMMENTS
North Anclote Bar State Preserve	FSP	Gulf Coast GEOPark	X	X	B	Yearly posting & enforcement at the nesting area is necessary to reduce human/dog disturbance
Anclote Key State Park	FSP	Gulf Coast GEOPark		X	B	The Florida Park Service staff has removed invasive tree species (Australian pine) and reduced the over-population of raccoons, greatly improving the island as habitat for birds and turtles
South Anclote Bar State Preserve	FSP	Gulf Coast GEOPark	X	X	B	Because it is so popular with recreational boaters who often bring their dogs, disturbance of the nesting birds is high, despite public education, signage, and enforcement provided by state parks biologists and volunteers. Yearly posting & enforcement at the nesting area is necessary to reduce human/dog disturbance
Dutchman Key	Private	Gulf Coast GEOPark			T	Private landowner management plan
Three Rooker Island State Preserve	FSP	Gulf Coast GEOPark	X	X	B/T	Yearly posting & enforcement at the nesting area is necessary to reduce human/dog disturbance
Honeymoon Island State Park	FSP	Gulf Coast GEOPark	X	X	B/T	Yearly posting & enforcement at the nesting area is necessary to reduce human/dog disturbance; removal of Australian pines, Brazilian pepper and reducing the over-population of raccoons greatly improved habitat use by birds and turtles
Caladesi Island State Park	FSP	Gulf Coast GEOPark	X	X	B/T	Yearly posting & enforcement at the nesting area is necessary to reduce human/dog disturbance
Marker 30	PAqP	CH/SJS		X		Submerged
Marker 29	PAqP	CH/SJS		X		Habitat modification for beach-nesting birds in planning by multi-agency working group
Marker 28	PAqP	CH/SJS		X		Recreation island
Marker 27	PAqP	CH/SJS		X		Recreation island

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Island	Management Authority	IBA	Bird Colony	Mixed Use	Nesting Habitat Type	COMMENTS
Marker 26	PAqP / FCIS	CH/SJS	X		T	Human disturbance; no landing; yearly posting & enforcement at the nesting area is necessary to reduce human/dog disturbance
Ozona Spoil West	PAqP	CH/SJS		X		Recreation island
Ozona Spoil East	PAqP / FCIS	CH/SJS	X	X	T	Yearly posting & enforcement at the nesting area is necessary to reduce human/dog disturbance
Marker 22	PAqP	CH/SJS	X	X	T	Recreation island
Marker 21	PAqP	CH/SJS		X		Recreation island; a few nesting records
Smith Bayou Islands	Private / FCIS	CH/SJS	X		T	Posted by FCIS for private landowner
Dunedin Sand Key West	PinCo / FCIS	CH/SJS	X		T/B	Erosion, loss of nesting habitat, human disturbance; no landing; yearly posting & enforcement at the nesting area is necessary to reduce human/dog disturbance
Dunedin Sand Key East	PinCo	CH/SJS		X		Recreation island
Markers 13	PAqP	CH/SJS		X		Recreation island
Marker 10	PAqP	CH/SJS		X		Recreation island
Marker 9	PAqP	CH/SJS		X		Recreation island
Marker 8	PAqP	CH/SJS		X		Recreation island
Marker 5	PAqP	CH/SJS		X		Recreation island
Marker 3	PAqP	CH/SJS		X		Recreation island
Marker 2	PAqP	CH/SJS		X		Recreation island
Marker 1 / Pope Channel	PAqP / FCIS	CH/SJS	X	X	T	Recreation island
Marker 17, north of Memorial Causeway	PAqP	CH/SJS		X		Recreation island
I-25 Bird Colony Island	City of Clearwater / FCIS	CH/SJS	X		B/T	No landing; occasional raccoon present, fishing line entanglement
Marker 10	PAqP					Submerged after 2009 nesting season; erosion

Table 4. Management characteristics of islands in Clearwater Harbor-St. Joseph Sound.
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Island	Management Authority	IBA	Bird Colony	Mixed Use	Nesting Habitat Type	COMMENTS
Marker 8 / Compass Key	PAqP	CH/SJS		X		Recreation island; Clrwtr Aquarium destination
Marker 6	PAqP					Submerged; erosion
Marker 3	PAqP					Submerged; erosion
Belleair Beach Bird Colony Islands	City of Belleair Beach	CH/SJS	X		T	No landing; fishing line entanglement
Belleair Beach island near Intracoastal waterway	PAqP	CH/SJS		X		Recreation island; high nesting potential for Least Terns, other species.
Indian Rocks Beach Bird Colony Island	City of Indian Rocks Beach / FCIS	CH/SJS	X		B/T	No landing; occasional raccoon present, fishing line entanglement
Indian Rocks Beach South Bird Colony Island	PAqP / FCIS	CH/SJS	X		T	No landing; human disturbance, building tree houses; erosion, fishing line entanglement; yearly posting & enforcement at the nesting area is necessary to reduce human/dog disturbance

Notes:

1. "Mixed Use" refers to a combination of recreational use, habitat restoration and management, and wildlife habitat.
2. Nesting habitat types: B = beach, T = trees.
3. Agencies:

FCIS = Audubon's Florida Coastal Islands Sanctuaries;
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