LOVERS KEY STATE PARK
Park Chapter

BIG CYPRESS REGION

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Lovers Key State Park

Park Chapter

Unit Name: Lovers Key State Park

Planning Region: Big Cypress

County: Lee

Lease/Management Agreement Number: 3340

Central Park Theme: Where warm canals embrace sugar sand beaches, wildlife thrive in the meandering waterways and expansive shoreline of Lovers Key State Park.

Total Acreage: 1,442.44

Natural Communities	**Acres**
Beach Dune	15
Coastal Dune Lake	1
Coastal Strand	103
Maritime Hammock	26
Marine Mollusk Reef	2
Mangrove Swamp	307
Marine Seagrass Bed	439
Marine Unconsolidated Substrate	501
Shell Mound	<1

Altered Land Cover	**Acres**
Canal/Ditch	<1
Developed	48
Spoil Area	1

Acquisition: Lovers Key State Park was initially acquired on May 25, 1983, with the Save Our Coast program funds.

Resource Management Component

Hydrology

- Conduct a hydrological assessment of tidal flow in management zone LV-06.
- Continue to cooperate with other state and federal agencies in hydrological monitoring and research programs.
- Cap all artesian wells at the park.
- Continue to cooperate with federal, state and local agencies regarding erosion assessment and monitoring.
- Investigate and implement best management options for mitigation of shoreline erosion in areas currently experiencing, or at risk, of erosion.
- Assess options for shifting the trails along prioritized trails to prevent further upland impacts.

Interagency Partnerships

- Continue stakeholder engagement with federal, state and local agencies to fund, design, permit, improve and maintain coastal and beach management programs.

Natural Communities

- Revegetate ± 15 acres of beach dune, coastal strand and mangrove swamp.
- Revegetate the shorelines of ± 0.26 acres of coastal dune lake communities.

Imperiled Species

- Update baseline imperiled species occurrence inventory lists for flora and fauna.
- Continue to implement existing monitoring protocols for marine turtle species, piping plover, red knot, Wilson's plover, snowy plover, least tern, black skimmer and American oystercatcher.
- Monitor impacts on shorebird and sea turtle nesting by terrestrial nuisance predator species.
- Provide park visitor interpretation and outreach for shorebirds, seabirds and wading birds.
- Continue existing monitoring protocols for gopher tortoise.
- Develop monitoring protocols for four selected imperiled plant species including inkberry, triangle cactus, shell mound prickly pear and Florida Keys blackbead.

Invasive and Nuisance Species

- Create a long-term invasive plant management plan for the park.
- Monitor ± 642 acres of habitat already in maintenance condition.
- Reduce cover class on ± 7 acres not currently in maintenance condition.
- Manage invasive/nuisance animal species as needed.

Cultural Resources

- Complete annual assessments of two recorded cultural resources.
- Conduct a Phase III archaeological survey on Black Island Shell Midden to further evaluate the mound prior to potential adverse effects from future storm events or implementation of shoreline protection measures.
- Design and implement a shoreline stabilization project for Black Island Shell Midden.

Land Use Component

Conceptual Land Use

Park Entrance

- Design and develop a new ranger station.

Main Parking and Concession Area

- Repair restroom facility.
- Provide interpretive elements.
- Replace concession building.

Beach Access

- Reconstruct the boardwalk bridge to the middle beach.
- Construct a restroom at the landward side of the proposed boardwalk bridge.
- Continue to evaluate structural viability of the bridge to the southern beach.

Potential Passenger Ferry Access

- Evaluate feasibility of navigation from offsite locations.
- Identify suitable arrival/departure site within the park.
- Construct potential associated infrastructure.

Support Areas

- Improve resilience of the maintenance area by retrofitting the building interiors to resist flooding impacts.
- Reconstruct the ranger residence and four employee-owned trailer (EOT) sites.

Optimum Boundary

At this time, no additional lands are identified for acquisition. The present park boundaries can be considered optimal.

INTRODUCTION

LOCATION AND ACQUISITION HISTORY

Lovers Key State Park is located in Lee County, just north of Bonita Beach. Access to the park is from State Road 865 (Estero Boulevard). The Big Cypress Region map also reflects significant land and water resources existing near the park.

Lovers Key State Park was initially acquired on May 25, 1983, with the Save Our Coast Program funds. The Board of Trustees of the Internal Improvement Trust Fund (Trustees) hold fee simple title to the park and on March 8, 1984, the Trustees leased (Lease No. 3340) the property to the Department of Environmental Protection's (DEP) Division of Recreation and Parks (DRP) under a 50-year lease. The current lease will expire on March 7, 2034. On January 29, 1996, Lee County signed a letter of agreement with DRP to merge Carl Johnson Park, located on the southern end of Lovers Key, with the state park to be managed by the DRP as a consolidated unit under Lease No. C960134. This county lease, which is also for 50 years, will expire on January 2, 2046. Currently, the park comprises 1,442.44 acres.

Lovers Key State Park is designated single use to provide public outdoor recreation and conservation. There are no legislative or executive directives that constrain the use of this property (see appendix). A legal description of the park property can be made available upon request to DEP.

SECONDARY AND INCOMPATIBLE USES

In accordance with section 253.034(5), Florida Statutes (F.S.), the potential of the park to accommodate secondary management purposes was analyzed. These secondary purposes were considered within the context of DRP's statutory responsibilities and resource values. This analysis considered the park's natural and cultural resources, management needs, aesthetic values, visitation and visitor experiences. It was determined that no secondary purposes could be accommodated in a manner that would not interfere with the primary purpose of resource-based outdoor recreation and conservation.

DRP has determined that uses such as water resource development projects, water supply projects, stormwater management projects, linear facilities and sustainable agriculture and forestry (other than those management activities specifically identified in this plan) would not be consistent with the management purposes of the park.

In accordance with section 253.034(5), F.S., the potential for generating revenue to enhance management was also analyzed. Visitor fees and charges are the principal source of revenue generated by the park. It was determined that multiple-use management activities would not be appropriate as a means of generating revenues for land management. Instead, techniques such as entrance fees, concessions and similar measures will be employed on a case-by-case basis as a means of supplementing park management funding. Generating revenue from consumptive uses or from activities that are not expressly related to resource management and conservation is not under consideration.

PURPOSE AND SIGNIFICANCE OF THE PARK

Park Purpose

The purpose of Lovers Key State Park is to provide exceptional resource-based outdoor recreation for Florida residents and visitors while protecting important natural and cultural resources in a fast-growing region.

Park Significance

- With 2.5 miles of sandy beaches, Lovers Key State Park provides valuable recreational opportunities in a highly populated area of Southwest Florida. These opportunities include exceptional boating, fishing, kayaking, hiking, biking and swimming. The park serves as a vital gateway for visitors to access the Estero Bay Aquatic Preserve and the extensive paddling trails of the Great Calusa Blueway.

- The park is part of the Great Florida Birding and Wildlife Trail and provides critical habitat for over 40 species of birds, 19 of which are on the designated species list, including the least tern (*Sterna altillarum*), American oystercatcher (*Haematopus palliatus*) and Roseate spoonbill (*Ajaja ajaja*).

- The park's four barrier islands, consisting of Lovers Key, Inner Key, Long Key and Black Island, protect water quality in the Estero Bay Aquatic Preserve, an exceptional area of productive intertidal and estuarine habitat along the Gulf of America which supports important fish nurseries.

- The park protects the Black Island Midden, a prehistoric shell mound, as well as other historical features including a World War II-era airplane crash site and the rumored homestead of Black Augustus, a famous Portuguese pirate turned recluse after his escape from authorities.

Central Park Theme

Where warm canals embrace sugar sand beaches, wildlife thrive in the meandering waterways and expansive shoreline of Lovers Key State Park.

Internal Classification

Lovers Key State Park is classified as a state recreation area in the DRP unit classification system. In the management of a state recreation area, major emphasis is placed on maximizing the recreational potential of the unit. Preservation of the park's natural and cultural resources, however, remains important. Depletion of a resource by any recreational activity is not permitted. In order to realize the park's recreational potential, the development of appropriate park facilities is undertaken with the goal of providing facilities that are accessible, convenient and safe, to support public recreational use or appreciation of the park's natural, aesthetic and educational attributes.

OTHER DESIGNATIONS

The unit is not within an Area of Critical State Concern as defined in section 380.05, F.S., and it is not under study for such designation. The park is a component of the Florida Greenways and Trails System, administered by DEP's Office of Greenways and Trails.

All waters within the park have been designated as Outstanding Florida Waters, pursuant to Chapter 62-302, Florida Administrative Code (F.A.C.). Surface waters in this park are also classified as Class III waters (suitable for fish consumption and recreation) by DEP. The park is adjacent to the Estero Bay Aquatic Preserve as designated under the Florida Aquatic Preserve Act of 1975 (section 258.35, F.S.).

PARK ACCOMPLISHMENTS

- Treated approximately 46 infested acres (goal was 0.72 acres) in FY 2024-25 with the assistance of the DRP District Panther team.
- In cooperation with DRP's Interpretive Services and the Friends of Lovers Key, the Lovers Key Welcome and Discovery Center was designed, developed and opened to the public. The facility provides an exhibition hall with numerous interactive exhibits and a gift shop, as well as a large community room that can be utilized as a classroom and meeting space.
- With the Friends of Lovers Key, the park conducted a four-week summer camp where campers participated in nature-based activities, wildlife lectures and other educational opportunities.
- Developed the Bayside Park area, which provides visitors numerous picnic pavilions and a restroom.
- Received over 655,267 cubic yards of sand along the gulf-facing shoreline from a sand placement project completed by Lee County in 2025. A colony of black skimmers nested on the beach following sand placement for the first time in almost a decade.
- Completed multiple mangrove planting events to restore shorelines damaged by hurricanes Ian, Helene and Milton.
- Contracted with the U.S. Department of Agriculture (USDA) to remove sea turtle nuisance predators and invasive green iguanas from the park following Hurricane Milton in 2024.

RESOURCE MANAGEMENT COMPONENT

Lovers Key State Park Management Zones		
Management Zone	**Acreage**	**Managed with Prescribed Fire**
LV-01	205	No
LV-02	53	No
LV-03	54	No
LV-04	122	No
LV-05	168	No
LV-06	90	No
LV-07	233	No
LV-08	31	No
LV-09	465	No
LV-10	23	No

TOPOGRAPHY

Lovers Key State Park is located in the Everglades District, specifically the Big Cypress Province. The Big Cypress Province is characterized by a northwest-southeast trending area that is gently tilted towards the Gulf with the state park located on the western edge of the southwestern slope physiographic zone. Prior to human development, Lovers Key contained typical barrier island topography with raised sand dunes on the Gulf side of the island that sloped eastward into mangrove swamp and coastal uplands. This park consists of four main islands that include from west to east Lovers Key, Inner Key, Black Island and Long Key to the south of Black Island.

Elevations found at the park vary due to human disturbance. Natural elevation of the uplands ranges from sea level to 4 feet above mean sea level. On Black Island, a contractor developing the area conducted a series of dredge and fill activities in the 1970s which created a maximum elevation of 20 feet. In doing so, approximately 3 miles of winding canals were created through Black Island destroying large areas of mangrove swamp and upland habitat. The dredged material was used to raise the island's height to accommodate a beach resort with waterfront lots, which ultimately was never completed. Other low-lying mangrove islands are scattered within the park boundary and have elevations under 2 feet above mean sea level.

Lovers Key State Park is part of the Estero Bay estuary barrier island complex along with Estero Island, Long Key, Black Island, Big Hickory Island and Little Hickory Island. The Estero Bay estuary complex began to form approximately 5,000 years ago when a rise in sea level flooded the mouth of the Caloosahatchee River and the smaller rivers and creeks of the present Estero Bay area. This flooding caused sediments to be deposited at the mouth of the Caloosahatchee River and the lesser streams. The sediments from the Caloosahatchee River were carried by the longshore currents south to be deposited as barrier islands bounding the present Estero Bay. The sediments deposited from the smaller rivers and streams in Estero Bay filled in the bay to cause its present shallow depth (Byrne & Gabaldon 2008).

LOVERS KEY STATE PARK
Management Zones

N

0 1,000 2,000 Feet

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SOILS

Five soil types have been identified at Lovers Key State Park from the Soil Survey of Lee County, Florida (Henderson 1984). A detailed description of these soil types is contained in the Appendix. The three main soil types found within the park include Canaveral fine sand, Wulfert muck and St. Augustine sand. Both the Canaveral fine sand and Wulfert muck are found naturally in this area. The Canaveral sand typically displays a dark grey color and contains sand and shell particles. Natural fertility of this soil is low, and the common vegetative cover includes cabbage palm (*Sabal palmetto*), wild coffee (*Psychotria nervosa*), sea grape (*Cocoloba uvifera*) and other plants found within coastal strand and maritime hammock natural communities. Wulfert muck typically is a dark reddish-brown muck that is flat and very poorly drained. This soil is most commonly associated with mangrove swamps and tidal marshes. All of the mangrove islands associated with the park have Wulfert muck as their soil type. The last main soil type, St. Augustine sand, only exists at this site due to earthmoving operations. With large scale dredge and fill taking place previously to prepare this island for waterfront lots and a beach resort, the winding canals within Black Island all display St. Augustine sand. This soil is variable in color and appearance but is mostly sandy in nature. It is described that St. Augustine soil has severe limitations for most urban recreational uses due to its high water table, and rapid permeability which can cause pollution of groundwater in areas with septic tanks.

The two other soils found within the park boundary, Beaches and Kesson fine sand, occur less commonly throughout Lovers Key State Park. As the name implies, Beaches is found on the beach facing the Gulf. This sediment is sandy white with mixed in shell fragments. Common vegetation is associated with beach dune and coastal grassland natural communities. The last soil type known as Kesson fine sand is found scattered around the park. These areas are tidally influenced and are similar to areas with Wulfert muck in that they support mangrove swamp and salt marsh natural communities. Kesson fine sand has a sandy surface displaying a pale brown color with rapid water permeability.

HYDROLOGY

Lovers Key State Park is considered part of the Big Cypress Watershed, located within the Everglades West Coast Basin. However, as a barrier island located well offshore, Lovers Key State Park and its adjacent islands are not directly affected by regional hydrology. Major land disturbances in the form of dredge and fill operations in the past have forever manipulated these barrier islands. Modified in the 1970s by a former land developer, a winding canal system now forms most of what used to be an intact mangrove ecosystem on Black Island. Most of the drainage in this artificial canal system at the park flows out to the east of Black Island through Little Carlos Pass under Estero Boulevard and out into Estero Bay. The Bonita Beach Causeway designed by Carl E. Johnson began construction in 1963 to connect Estero Island to Bonita Springs over the outer barrier islands of Lovers Key State Park and Big Hickory Island Preserve. The construction included filling in the openings on both sides of Long Key, which connected Long Key to the state park and to the smaller islands to the south in order to build Estero Boulevard. This effectively cut off natural water flow to Estero Bay on north and south sides of Long Key. Currently, tidally influenced water from the naturally formed canals east of Lovers Key and Inner Key flows south through the park along the east side of Long Key before exiting at New Pass. Two areas on Black Island that were not disturbed by development contain small ponds that have direct links to a shallow freshwater lens. These two small communities are known as coastal dune lakes with one that dries down to a soggy, wet film during the dry season, and the second retains enough water year-round to support at least one alligator. These two wet areas are the only natural sources of fresh

LOVERS KEY STATE PARK
Soils

N

Feet

0 1,100 2,200

Sources: ESRI; Florida Department of Environmental Protection

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water on the islands, and support much of the animal diversity found at Lovers Key State Park. This freshwater community goes through cycles of high nutrients, evident by the thick covering of duckweed (*Lemna* spp.) found on the surface. It is not known if the past dredge and fill operation has deposited high levels of nutrients within the surrounding areas, or if there is another unknown source of nutrients seeping into these ponds. More research is needed to completely understand what is causing the eutrophication of these water sources.

Water Quality

With limited staff and resources, water quality sampling and testing is not completed by the park. Water quality in the submerged areas within park boundaries are managed and monitored by DEP's Estero Bay Aquatic Preserve with samples collected by aquatic preserve staff, Lee County Environmental Laboratory, Charlotte Harbor Estuaries Volunteer Water Quality Monitoring Network and Coastal Charlotte Harbor Monitoring Network through the Coastal and Heartland National Estuary Partnership.

Hydrological Alterations

Hydrological alterations at Lovers Key State Park are all the result of past land disturbance for the purpose of development and human alterations to surrounding areas. The man-made canal dredged through Black Island was created solely for increased boat access and fishing for the houses that were to be developed on the filled land. Due to the increase of elevation adjacent to the canal, the historic natural tidal flow through Black Island is disrupted and tidal flushing is limited.

Coastal Erosion/Sedimentation

As barrier islands, constant shifts in shoreline locations and overall morphology are expected. There are no unique erosion problems except those associated with the dynamics of a sandy coastline. Longshore sand transport moves sediment from north to south along the park shoreline with ebb shoals forming at the north and south ends of the park, in areas influenced by current from the passes. Ongoing sand nourishment activities are necessary at the park to maintain the contiguous Gulf fronting beach, which is susceptible to erosion from weather events. Beach nourishment activities involve onshore and nearshore sand placement of sand that has been mechanically dredged from the San Carlos Pass ebb tidal shoal borrow areas. These nourishment projects are overseen by Lee County and typically occur in conjunction with sand placement on the neighboring Bonita Beach.

Hurricane Ian in 2022 and Hurricanes Helene and Milton in 2024 resulted in significant erosion and loss of shoreline along the outer island known as Lovers Key along with a substantial loss of vegetation within the beach dune, coastal strand and mangrove swamp fringe. Multiple breaches occurred along the Gulf facing beach due to the storm surge associated with Hurricane Ian. Most of the breaches along the beach have since recovered; however, Hurricanes Helene and Milton re-opened a breach just north of the tram bridge to the outer island. In addition, regular beach nourishment coordinated by Lee County will replenish areas depleted of sand by the hurricanes. Sand placement at Lovers Key State Park to restore and replenish areas that were impacted by Hurricanes Helene and Milton was completed in 2025 with 655,267 cubic yards of sand placed. Additional dune restoration planting is planned in conjunction with the sand placement at the park. Additional restoration activities include re-planting the back dune area where coastal strand lines the mangrove fringe.

Additional erosion has occurred along the shorelines of Black Island, which are flanked by recreational hiking trails. Erosion from normal wave action has slowly, over time, shifted the shoreline closer to the trails in some areas along the inner canals. Storm surge and wave action from multiple hurricanes have now exacerbated the erosion such that trees previously standing along the trails now having fallen into the water along sections of the trail and other sections of the trail have eroded into the canals. It has been necessary to re-route portions of the trails to reduce foot traffic in areas that are experiencing erosion.

Historic tidal connectivity has also been disrupted by sedimentation and spit formation along the northern end of Lovers Key with the beach now contiguous and connected to Black Island. Sediment accretion has created a large sandy beach area where a canal once flushed water from Big Carlos Pass to the inner canals. This natural accretion process could have been accelerated by nearby dredging and bridge construction over Big Carlos Pass, as well as prior beach nourishments at Lovers Key and other beach nourishment projects updrift of the park. The reduction in tidal flow within the canals (management zone LV-06) led to an increase of macroalgae in the canals along the northwestern side of the park, shading out and smothering seagrass. The algal bed was relatively small and dominated by one native algae known as green feather algae (*Caulerpa sertularioides*). The only location where this macroalgae had been observed was at the intersection of management zones LV-06 and LV-07, adjacent to the mid-beach pedestrian bridge. Additional sedimentation and tidal flushing occurred in the northwestern section of the park following the hurricanes in 2022 and 2024. Currently, the macroalgae appears to have succumbed to storm surge inundation; however, it is unclear whether the seagrass beds will recover in this closed off area. Following Hurricanes Helene and Milton, the area should be monitored closely for regrowth. If algae returns and is observed growing in an area greater than 3 feet, DRP district staff should be notified to confirm species to ensure that the invasive *Caulerpa taxifolia* is not present.

In the situation that the macroalgae returns and persists in the northwestern section of the inner canals, future consultation with staff from Estero Bay Aquatic Preserve would be necessary for assessing water quality to identify whether the lack of tidal flow is reducing water quality in that area of the park and assess potential options for dealing with the macroalgae. Currently, recreational boater access in the inner waterways is limited to non-motorized vessels to protect the shallow seagrass beds.

Monitoring and Assessment

Objective: Assess the park's hydrological restoration needs.

Actions:

- Conduct a hydrological assessment of tidal flow in management zone LV-06.
- Continue to cooperate with other state and federal agencies and independent researchers regarding hydrological research, assessments and monitoring programs.
- Cap all artesian wells at the park.

Changes in hydrologic flow following the closure of a canal at the northeast side of the park has potentially impacted tidal flow and natural flushing throughout management zone LV-06. In addition, seagrasses located in the northwestern corner of the park were previously smothered by large amounts of macroalgae that may have grown in part due to the decreased tidal flow. In other areas of the park,

the seagrass bed health may be impacted by increased nutrients from an adjacent county parcel managed as a designated pet beach. A hydrological assessment should include water quality sampling in various areas of the park to assess salinity, dissolved oxygen, temperature and nutrient levels. DRP will also coordinate with Estero Bay Aquatic Preserve staff to assess historic seagrass bed coverage within areas of the park managed by the aquatic preserve and develop monitoring protocols for the northwestern portion of the park that falls outside of the aquatic preserve.

DRP will continue to closely cooperate with county, state and federal agencies and independent researchers engaged in hydrological research and monitoring programs within the state park, and it will encourage and facilitate research in those areas.

The artesian wells found on this property installed by the previous landowner are still viable for extracting fresh water and need to be capped to prevent artificial water loss.

Erosion Monitoring

Objective: Continue to assist federal, state and local agencies with active monitoring of erosion and accretion cycles and assessment of beach and shoreline conditions following natural disasters.

Action:

- Continue to cooperate with federal, state and local agencies and researchers regarding monitoring and assessment of beach erosion.

Erosion Mitigation

Objective: Evaluate and mitigate the impacts of shoreline erosion along the inner canals of Black Island.

Actions:

- Investigate and implement best management options for mitigation of shoreline erosion in areas currently experiencing erosion and areas at risk of erosion.
- Assess options for shifting the trails along prioritized areas to reduce or prevent further upland impacts.

In addition to the erosion observed along the gulf-facing beachfront following the hurricanes of 2022 and 2024, additional erosion from the hurricanes occurred along the inner island shorelines that flank the main trails with trees falling into the water in some locations. DRP will investigate best management options for mitigation of erosion along the inner canals of Black Island. Erosion mitigation measures should focus on softer, natural shoreline stabilization methods such as living shorelines comprised of plants, oysters, etc., instead of hardened structures. Installation of wave attenuation structures such as pervious oyster shell habitat, reef balls, oyster castles, etc. in combination with planting native vegetation to stabilize the sediment should be considered over hardened shoreline structures to protect the upland from further erosion while providing habitat for oysters and fish. Portions of the recreational trail may need to be permanently shifted to reduce upland impacts from foot traffic or park vehicular usage.

Interagency Partnerships

Objective: Continue to partner with federal, state and local agencies to fund, design, permit, improve, and maintain coastal and beach management programs consistent with DRP's mission.

Action:

- Continue stakeholder engagement with federal, state and local agencies and researchers in planning and implementation of coastal projects that impact the parks.

The park will continue to work with Lee County, the Florida Fish and Wildlife Conservation Commission (FWC), DEP, U.S. Army Corps of Engineers and U.S. Fish and Wildlife Service (USFWS) for ongoing sand placement activities at the park that are necessary to combat natural beach erosion.

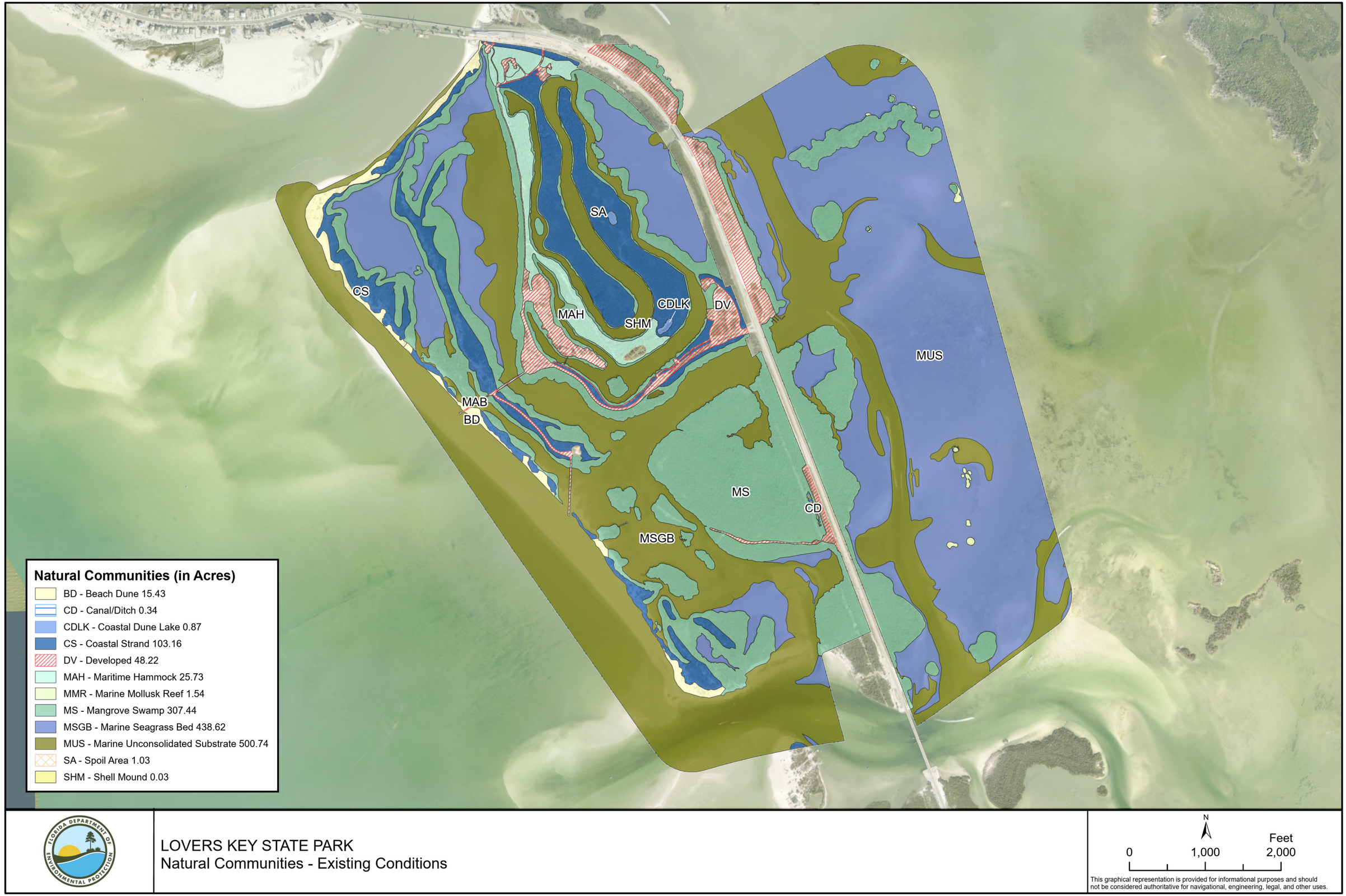
NATURAL COMMUNITIES

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

Beach Dune

Beach dunes at Lovers Key are wind or wave deposited ridges of unconsolidated sediments along high energy shorelines. The beach dune community extends the length of the Lovers Key including the Gulf facing shoreline, the northern shoreline facing Big Carlos Pass and the southern shoreline fronting New Pass. Vegetation consists of herbaceous dune forming grass species such as sea oats (*Uniola paniculata*) and bitter panicgrass (*Panicum amarum*), and other species including seacoast marshelder (*Iva imbricata*), shoreline seapurslane (*Sesuvium portulacastrum*), railroad vine (*Ipomea pes-caprae*) and the state-threatened inkberry (*Scaevola plumieri*). Shrubs such as bay cedar (*Suriana maritima*), sea grape (*Coccoloba uvifera*) and gray nicker (*Caesalpinia bonduc*) may be scattered within the herbaceous vegetation. Imperiled animal species that utilize the beach dune community at the park include federally threatened loggerhead sea turtles (*Caretta caretta*), which nest each year between May and October, and state-threatened gopher tortoises (*Gopherus polyphemus*). Historically, the beach dune community located between the pedestrian bridge and the tram bridge was used for nesting by state-threatened least terns (*Sternula antillarum*).

The beach dune community at Lovers Key State Park is in poor condition, having been negatively impacted by intense tropical storm systems over the years. After a beach nourishment in 2014 that included approximately 356,000 cubic yards of sand, sea oats were planted along a 0.5-mile stretch of frontal dune to help revegetate and stabilize the beach dune community. A permanent shorebird nesting area was also posted adjacent to the frontal dune in two separate areas, which allowed for the unimpeded growth of pioneer dune plant species such as sea oats and inkberry. However, shoreline erosion over several years resulted in the mean high-water line continuously eroding back to the planted sea oats and shorebird posted areas. During Hurricane Ian in 2022, the park received approximately 8 to 10 feet of sustained storm surge for several hours depositing sand and sediment landward, ripping out or burying vegetation and destroying the beach dune community at large. Sand from the beach and dune system accumulated landward within mangrove swamp, burying the base of



LOVERS KEY STATE PARK
Natural Communities - Existing Conditions

N

0 1,000 2,000 Feet

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large trees and toppling others. The recovering beach dune experienced additional impacts following Hurricanes Helene and Milton in 2024 with emergent vegetation reburied.

The dunes are slowly recovering post-Hurricane Milton with pioneer dune species such as sea oats, seacoast marshelder, bitter panicgrass and shoreline seapurslane emerging along the beach dune system. Inkberry has been found throughout the former dune system as well as many invasive non-native plant seedlings. Dune restoration activities to repair the damage from the hurricanes are ongoing at the park and will include beach nourishment, dune enhancement and revegetation.

Management of beach dune at Lovers Key State Park largely focuses on dune restoration and revegetation projects, rare plant surveys and invasive plant surveys and treatment efforts. Additional dune restoration planting projects will be necessary along the full park shoreline to restore this community. In the past, the beach dune community was dominated by Australian pine (*Casuarina equisetifolia*), but through extensive invasive non-native plant removal work, these large trees have been felled. Immediately following Hurricane Ian, invasive plant coverage was at a minimum. Currently, invasive non-native plant coverage in the beach dune community has increased with beach naupaka (*Scaevola taccada*), Brazilian pepper (*Schinus terebinthfolia*), Australian pine saplings and latherleaf (*Colubrina asiatica*) present throughout the developing dune system in part due to the existing seed bank and seeds that washed in with the storm surge events. DRP staff will continue periodic surveys for rare plants and invasive plant infestations to catch new infestations early.

Coastal Strand

The coastal strand community at Lovers Key State Park includes both stabilized, wind-deposited coastal dunes that are thickly vegetated with evergreen salt-tolerant shrubs and inner island locations that have formerly dredged that have succeeded to an open hardwood canopy. It is typically a transition zone between beach dune and older maritime hammock or mangrove swamp communities and contains deep, well-drained sands that are generally quite stable but become susceptible to severe damage if the vegetation is significantly disturbed. Species found within the coastal strand community at Lovers Key State Park include sea grape (*Cocoloba uvifera*), swamp privet (*Forestiera segregata*), myrsine (*Myrsine cubana*), buttonwood (*Conocarpus erectus*), white indigoberry (*Randia aculeata*), cabbage palm (*Sabal palmetto*), gray nicker and numerous others. Imperiled species found within this community include state-threatened gopher tortoises, state-threatened triangle cactus (*Acanthorcereus tetragonus*) and state-threatened shell mound prickly pear (*Opuntia stricta*). DRP's Fire Management Standard estimates that the appropriate fire return interval to be between four and 15 years. However, none of the coastal strand at Lovers Key is currently considered pyric due to its vegetative assemblage dominated by sea grape.

The coastal strand found at Lovers Key is located between the beach dune community and mangrove swamp in management zone LV-05 along the Gulf, Big Carlos Pass and New Pass. In management zone LV-02 on Inner Key, the strand is found on higher ground surrounded by mangrove swamp. Much of the coastal strand described at Lovers Key has recently succeeded to this community type due to the previous removal of Australian pine. Many areas show signs of further succession into maritime hammock with gumbo limbo (*Bursera simaruba*), strangler fig (*Ficus aurea*) and wild coffee (*Psychotria nervosa*) along with a somewhat more distinct open understory.

The coastal strand at Lovers Key is in fair condition. Storm surge associated with Hurricane Ian shifted the coastal strand in some locations, burying the vegetation with sand or debris. Some areas of spoil berm adjacent to the resident houses had succeeded to coastal strand but still requires some habitat improvement including reduction in coconut palms (*Cocos nucifera*). Coconut palms were planted in some areas of Lovers Key along with West Indian mahogany (*Swietenia mahagoni*) prior to becoming a state park when the land was used as a nursery. Due to this, remaining trees and palms can still be found scattered within the coastal strand, especially adjacent to the resident houses. The mahogany, even though it was artificially planted at Lovers Key, should be preserved as it is an imperiled plant species within its natural range.

Management of coastal strand at Lovers Key State Park largely focuses on rare plant surveys and invasive plant surveys and treatment efforts. DRP staff will continue periodic surveys for rare plants and invasive plant infestations to catch new infestations early.

Maritime Hammock

The maritime hammock at Lovers Key State Park is a non-pyric, closed hardwood canopy that succeeded in areas not a recipient of spoil material from the dredge and fill operations completed by the previous landowner. Canopy species at Lovers Key include sea grape, gumbo limbo, strangler fig, cabbage palm, cat's claw blackbead (*Pithecellobium unguis-cati*) and Jamaican dogwood (*Piscidia piscipula*). Understory species consist of myrsine, wild coffee, snowberry (*Chicocooa alba*) and marlberry (*Ardisia escallonioides*). Imperiled species found within this community include state-threatened gopher tortoises, state-threatened Florida Keys blackbead (*Pithecellobium keyense*) and state-threatened cacti such as the triangle cactus and shell mound prickly pear.

The maritime hammock at Lovers Key is in fair condition, and this natural community is expected to gain acreage as coastal strand matures and develops a more distinct canopy and understory. Storm surge from Hurricane Ian in 2022 drowned this community with 8 feet of water, toppling trees and piling up debris throughout as the water receded. The once closed canopy bisected by trails throughout the inner island is more open due to fallen and removed trees. The artificial edge effect from the trails also impacts useful hammock areas for nesting and migrating birds, along with habitat for arboreal bromeliads and orchids.

Management of maritime hammock at Lovers Key State Park largely focuses on rare plant surveys, invasive plant surveys and treatment efforts. With more light reaching the already disturbed understory post-Hurricane Ian, invasive plant species could become more prevalent. Species such as carrotwood (*Cupaniopsis anacardioides*), Brazilian pepper, Australian pine, invasive non-native agaves and ground orchids should be monitored and treated as they are found before they can take root. DRP staff will continue periodic surveys for rare plants and invasive plants infestations to catch new infestations early. Additional trails, access roads and further development through maritime hammock should be limited.

Shell Mound

The shell mound at Lovers Key State Park is a small remnant mound located within the inner canals of Black Island comprised of shells discarded by generations of Native Americans. Large gumbo limbo, buttonwood, sea grape and swamp privet previously formed a small canopy over the shell mound. Following multiple hurricane events that included several feet of storm surge, the large trees and shrubs

are no longer present on the mound. The shell mound community currently contains a groundcover of prickly pear (*Opuntia humifusa*), Spanish bayonet (*Yucca aloifolia*), seaside oxeye daisy (*Borrichia frutescens*) and saltwort (*Batis maritima*) on the remaining structure. Mangrove recruitment has been observed with small red mangroves taking root along the shoreline of the mound.
The shell mound community at Lovers Key State Park is in poor condition. The existing mound is only a small portion of the original structure that existed prior to the dredge and fill process completed by the previous landowners. While dredging canals for waterfront homes, the developers noticed the mound and attempted to leave as much as possible in the form of an island in the middle of the dredged waterway. Although some of the mound was spared by this operation, this small island has been exposed to large amounts of erosion due to its position in the middle of a canal. In the last 20 years, the mound has lost approximately 3,000 square feet, or 75 percent, of its surface area due to shoreline erosion. This natural community will be completely lost in the next 20 years if action isn't taken to lessen the erosional impacts.

Management of shell mound at Lovers Key State Park largely focuses on invasive plant surveys and treatment efforts. DRP staff will continue periodic surveys for rare plants and invasive plants infestations to catch new infestations early. To keep large trees from toppling and exposing more of the mound, staff should monitor tree growth on the mound and cut down all large diameter trees exceeding 12 inches. A shoreline stabilization project may be necessary to maintain the mound and prevent further erosion. Due to the abundance of oyster shells within the mound, staff could utilize oyster bags around the mound to disperse wave energy and allow natural accretion of sediment. Shoreline vegetation such as saltwort, nickerbean, smooth cordgrass (*Spartina alterniflora*) or red mangrove could be planted to assist with wave attenuation and sediment stabilization. Planning for shoreline stabilization should be coordinated with the Florida Department of State's Division of Historical Resources (DHR) and DRP's Bureau of Natural and Cultural Resources (BNCR) to ensure recommended techniques are utilized for minimal disruption of subsurface resources.

Mangrove Swamp

The mangrove swamp at Lovers Key State Park exists in either fringes or dense forests located along relatively flat, low wave energy, marine and estuarine shorelines. The dominant overstory includes red mangrove (*Rhizophora mangle*), black mangrove (*Avicennia germinans*), white mangrove (*Laguncularia racemosa*) and buttonwood (*Conocarpus erectus*) in mixed stands or in differentiated, monospecific zones based on degrees of tidal influence, salinity levels and type of substrate. Soils found in mangrove swamps at Lovers Key State Park are typically anaerobic and saturated with brackish water at all times, becoming inundated at high tide. Red mangroves dominate the deepest water, followed by black mangroves in the intermediate zone and white mangroves and buttonwood trees in the highest, least tidally influenced zone. Mangroves at Lovers Key State Park usually occur with little to no understory in the lower tidal zones; however, in upper tidal reaches, may have a shrub groundcover including seaside oxeye daisy, gray nicker, coin vine (*Dalbergia ecastaphyllum*) and herbaceous species such as saltwort, perennial glasswort (*Sarcocornia perennis*), Christmasberry (*Lycium carolinianum*) and giant leather fern (*Acrostichum danaeifolium*). Mangrove swamps provide important habitat for birds, juvenile fish and crustaceans, and play an important role in the cycling of nutrients and breakdown of detritus. Two mangrove swamp islands located in Estero Bay on the east side of the park contain rookeries that are monitored seasonally by Estero Bay Aquatic Preserve staff. Bird species that have been documented nesting in these rookeries include great blue heron (*Ardea Herodias*).

The mangrove swamp found at Lovers Key is in fair condition. Occasional invasive non-native plants can be found interspersed in the upper tidal reaches within the mangrove swamp, but no areas are monocultures of invasive species. Carrotwood, Brazilian pepper, Portia tree (*Thespesia populnea*) and beach naupaka are the main invasive species found in this natural community. Senegal date palms (*Phoenix reclinata*) are also present along the fringe adjacent to Estero Boulevard and other areas of the park. Other areas of the park previously disturbed by old roads and camping sites have reverted to mangrove swamp with the higher topography dominated by the glassworts and saltwort and lower areas dominated by mangroves.

Much of the mangrove swamp at Lovers Key State Park was severely damaged during Hurricane Ian with a majority of trees defoliated and many toppled by high winds. Mangrove dieback and recovery post Hurricane Irma in 2017 was found to be influenced by increased storm surge and sedimentation (Lagomasino et. al 2021) and overall resilience class, species composition and canopy height (Xiong et. al 2022). The wind and storm surge at Cayo Costa and associated islands drastically shifted the sand into the mangrove swamp community along the beach side of the island, which has not recovered from the increased sedimentation and lack of tidal flow. Restorative plantings of red mangrove in areas adjacent to the tram road where washouts and increased sedimentation occurred during Hurricane Ian in 2022 have been buried by approximately three feet of sand from storm surge associated with Tropical Storm Debby and Hurricane Helene in 2024. While there is evidence of regrowth in the understory, a large portion of the mangrove swamp community still contains skeletonized dead mangroves in the upper canopy throughout the swamps.

Management of mangrove swamps at Lovers Key State Park largely focuses on invasive plant surveys and treatment efforts and preventing boaters from tying lines to the mangroves. DRP staff will continue periodic surveys for invasive plant infestations to catch new infestations early.

Coastal Dune Lake

The coastal dune lakes at Lovers Key State Park are shallow, elliptic freshwater depressions without significant surface inflows or outflows. Vegetation within the coastal dune lakes includes sedges (*Cyperus sp.*), cattail (*Typha domingensis*), sweetscent (*Pluchea odorata*), seacoast marshelder, groundsel tree (*Baccharis halimifolia*) and Carolina willow (*Salix caroliniana*). Typical animals found in the coastal dune lakes at Lovers Key include American alligator (*Alligator mississippiensis*), little blue herons (*Egretta caerulea*), roseate spoonbills (*Platalea* ajaja) and saltmarsh snakes (*Nerodia clarkii*). There are two coastal dune lakes at Lovers Key State Park, both are in fair condition. Currently, the main coastal dune lake located along the northern end of Black Island covers approximately 4,000 square feet. This natural community has supported at least two adult alligators in the past and provides freshwater to all of the animals located on Black Island. The other coastal dune lake has grown over the years and now covers approximately 5,000 square feet.

The main coastal dune lake was entirely surrounded by a wall of Carolina willow trees prior to Hurricane Ian in 2022. These trees and other vegetation around both lakes died off in the months following the storm, presumably due to the associated saltwater storm surge. Hurricanes Helene and Milton further toppled these dead trees, which were subsequently removed to restore access to the areas. Revegetation of these natural communities should be considered to stabilize sediments, improve water quality and improve habitat for wading birds and other wildlife that utilize this freshwater source.

Both bodies of water appear to be eutrophic, with excessive amounts of nutrients in the water. The entire surface of both ponds have been covered with duckweed and display a "boom and bust" cycle when looking through historical photographs. This means some years display crystal clear water, while other years show a complete cover of vegetation typical of high nutrient levels. High nutrient levels could be a result of high phosphorous amounts in the spoil material dug up by the previous owners. More research is needed to determine the cause for eutrophication in these waterbodies.

Management of coastal dune lakes at Lovers Key State Park largely focuses on invasive plant surveys and treatment efforts. DRP staff will continue periodic surveys for invasive plant infestations to catch new infestations early. Coastal dune lakes are extremely vulnerable to hydrological manipulations, and all efforts should be made to avoid creating trails or structures adjacent to this community. Restoration and revegetation of the lake shorelines should be considered to stabilize sediment, promote biodiversity and improve the quality of the only known freshwater habitat on the island.

Marine Seagrass Bed

The marine seagrass bed community at the park is extensive within the inner canals behind the main beach area and along the east side of the park in Estero Bay. The seagrass beds within the inner canals and those on the east side of the park fall within the boundaries of the Estero Bay Aquatic Preserve managed and monitored by DEP staff. The three species of seagrasses commonly found at Lovers Key State Park include turtle grass (*Thalassia testudinum*), manatee grass (*Syringodium filiforme*) and shoal grass (*Halodule wrightii*), all of which are found within the park boundary. Other seagrasses found within Lovers Key that are less common include paddle grass (*Halophila decipiens*). Seagrass is a photosynthesizing plant requiring sunlight to reach through the water column and has rhizomes anchoring it into the sediment. These expansive stands of vascular plants occur in subtidal or coastal waters where wave energy is moderate. Seagrass is a critical habitat and nursery area providing food and shelter for many commercial and recreational fisheries, including threatened and endangered species. Imperiled species that frequent seagrass beds for foraging include sea turtles, manatees and smalltooth sawfish. Seagrass provides many environmental benefits including sediment stabilization, increasing water clarity by trapping particulates, absorbing nutrients and carbon dioxide and producing oxygen. The monetary value of seagrasses has been estimated to be valued up to $19,000 per hectare a year (Costanza et al. 1997), with a local study in Pine Island Sound assessing the sea grass bed total economic value as approximately $93,490 per acre (Beever et al. 2012).

Monitoring and mapping completed by DRP in 2014 revealed that all the seagrass beds at Lovers Key contain shoal grass, with deeper water areas in management zone LV-07 containing the three common grasses along with paddle grass. This mapping effort of all seagrass beds at the park has accurately displayed bed locations for future tracking and monitoring. The seagrass beds in management zone LV-07 were found to be in good condition at the time of the survey; however, there were concerns about with nutrients and bacteria fecal load from a county-owned property adjacent to the area. The seagrass beds in management zone LV-06 were found to be in fair condition during the mapping with extremely limited tidal flushing impacting these beds. Only shoal grass was found in this management zone along with large amounts of epiphytic algae exist over these beds. Estero Bay Aquatic Preserve staff bi-annually monitor five seagrass bed sites in Estero Bay, one of which is located within the park boundaries of Lovers Key State Park.

The seagrass bed community is currently in poor condition due to sedimentation from storm surge during Hurricane Ian in 2022 and Hurricanes Helene and Milton in 2024. A large seagrass bed at the south end of the park in management zone LV-07 declined since the original mapping survey in 2014 due to sedimentation and sand spit formation prior to the hurricanes. This area now hosts thousands of resting and foraging shorebirds, seabirds and wading birds when it becomes exposed at low tide. The other seagrass beds in the park experienced significant sedimentation from both hurricanes. It is unclear if regrowth occurred post-Hurricane Ian sedimentation due to lack of access into the area. Following Hurricane Helene, the area should be monitored closely for regrowth.

Management of seagrass beds at Lovers Key State Park includes monitoring regrowth of seagrass beds in the inner canal post-Hurricanes and monitoring the road for runoff points nearby that could potentially build up in the sediment and negatively impact these beds. DRP will continue to monitor for invasive algal and seagrass species, such as *Halophila stipulacea,* which was recently documented in Biscayne Bay (Campbell et al. 2024).

Marine Mollusk Reef

A small section of marine mollusk reef incorporated into marine seagrass beds is located on the east side of the main park in Estero Bay. The mollusk reef is comprised mainly of Eastern oysters (*Crassostrea virginica*). Oysters are filter-feeders and can clean large volumes of water over a relatively short period. Through the removal of suspended particles, excess nutrients and various pollutants, they contribute significantly to the improvement of surrounding water quality.

The mollusk reef at Lovers Key State Park is currently in good condition. It is monitored every two years by Estero Bay Aquatic Preserve staff.

Marine Unconsolidated Substrate

The marine unconsolidated substrate communities at Lovers Key State Park consist of expansive unvegetated areas of sand beaches and tidal mudflats that weave throughout the park. The park's sandy beaches are found along the outermost island on the north, west and south sides of the park. The presence of natural marine debris, or wrack, is considered desirable as it greatly enhances nutrient cycling and the food web.

The sandy beaches of Lovers Key State Park provide important nesting habitat for imperiled sea turtles, primarily loggerhead sea turtles and imperiled avian species. The marine unconsolidated substrate community provides important habitat for various avian species, several of which nest on the higher portions of the beach. Most of these species use the beaches at resting and feeding areas, and many do not tolerate disturbance. Federally protected red knots (*Calidris canutus rufa*) and piping plovers (*Charadrius melodus*) are noted visitors in the winter months.

The marine unconsolidated substrate at Lovers Key is in good condition. Coastal erosion along the beachfront necessitates routine beach nourishment along the shoreline. Tropical storm events such as Hurricane Ian in 2022 and Hurricanes Helene and Milton in 2024 led to a significant loss of sand along the beachfront at the park. In February 2025, Lee County completed a beach nourishment project at the park, which involved 655,267 cubic yards of sand placed along the beachfront at the park. This project

was completed in combination with beach nourishment at other area beaches in need of sand following the storm events.

Beach raking does not occur on these islands, which keep the natural beach wrack community intact. All-terrain vehicles and utility vehicles are used on the beaches for sea turtle nesting surveys, with driving limited to those lower beach areas near or below the high-tide line not utilized by shorebirds and sea turtles in accordance with FWC best management practices. In this community, wrack and seaweed is typically left in place to provide foraging opportunities for shorebirds and additional nutrients to the sandy soil. Situations where hand removal or hand raking of wrack might be necessary include large fish kills events typically associated with harmful algal blooms.

Management of marine unconsolidated substrate at Lovers Key State Park largely focuses on minimizing habitat disturbances and imperiled species monitoring efforts. Natural beach erosion and accretion occur constantly within this community. Occasional sand placement activities at the park will continue to be necessary to restore eroded shorelines. Park staff should monitor changes in the beach community but limit the amount of human interference in the form of hard stabilizations. The beach wrack community is kept natural, enhancing the nutrient cycle and the food web. Beach raking not only disrupts nutrient flow, but it can also greatly impact shorebird and sea turtle survival by physically running over young hatchlings and creating deep trenches that trap hatchlings. Driving on this natural community should be limited as much as possible to avoid conflicts with beach nesting species.

Altered Land Cover Types

Developed

Developed areas within the park consist of natural communities that have been replaced or nearly replaced by structures or permanently cleared areas. Developed areas at the park include paved roadways, paved multi-use trails, park staff residences, park volunteer campsites, maintenance area with offices, restroom facilities, boat and kayak launch sites and multiple parking lots. Multiple areas are regularly mowed to reduce the encroachment of grass and vegetation. While gopher tortoise burrows are not commonly found in the mowed locations, any active burrows located in these areas are posted and flagged to ensure that they are visible and avoided during lawn maintenance. Developed areas in the park are regularly monitored by park staff for invasive vegetation and treated as needed.

Management of developed areas largely focuses on invasive plant surveys and treatment efforts. DRP staff will continue periodic surveys for rare plants and invasive plant infestations to catch new infestations early. Other management measures include ensuring vegetation around developed areas follows wildland urban interface protocols for structure protection as a wildfire preventative measure. The developed areas within the park will be managed to minimize the effect of the developed areas on adjacent natural areas. Proposed landscaping within developed areas of the park should include only native plant materials sourced by ecoregion to preserve local genetic integrity, except where sufficient research suggests other strategies are appropriate for a given species. Native plants that have been documented within the county but have not been historically documented in the park should be avoided entirely. Additionally, special care should be taken with native plant species that are known to hybridize between ecoregions. For example, the east coast dune sunflower (*Helianthus debilis* subsp. *debilis*) readily hybridizes with the west coast variety (*Helianthus debilis* subsp. *vestitus*), with the latter variety being the only subspecies appropriate to plant in parks along the west coast of Florida. Proposed

planting or landscaping efforts must be approved by DRP District staff prior to installation on site.

Spoil Area

Spoil areas found at Lovers Key were historically mangrove swamp, coastal strand and/or maritime hammock natural communities. Based on surrounding natural communities and on historical photographs, the highest points of the spoil pile should resemble maritime hammock, with coastal strand acting as the ecotone between hammock and the mangrove swamp fringing the water.

Areas marked as spoil are the result of previous landowners conducting major dredge and fill alterations to the land. In this process, benthic sediment was placed on top of the historically existing mangrove swamp, coastal strand and maritime hammock eliminating the native seedbank from repopulating the disturbed area. Currently, some of the spoil areas are dominated by cabbage palm with little diversity. This monoculture of cabbage palm prevents any natural community from developing. Also, areas exist with no tree species at all, with only weedy herbaceous plants growing in areas. With no seed bank, it is difficult for these areas to transition into functioning coastal strand or maritime hammock.

Management of spoil areas largely focuses on invasive plant surveys and treatment efforts. DRP staff will continue periodic surveys for rare plant species and invasive plant infestations to catch new infestations early. Areas containing monocultures of cabbage palms will need to be restored to other natural communities.

Restoration

Objective: Conduct natural community/habitat improvement activities on 15 acres of beach dune, coastal strand and mangrove swamp natural communities.

Action:

- Revegetate beach dune, coastal strand and mangrove swamp communities on Lovers Key with native plant species.

The beach dune, coastal strand and mangrove swamp communities on the outer island of Lovers Key were severely affected by Hurricane Ian in 2022 and Hurricanes Helene and Milton in 2024. Much of the dune system at the park was flattened by storm surge with sand shifted landward and existing vegetation buried. Large trees within the coastal strand and mangrove swamp communities in the back dune areas were toppled with sand pushing out towards the islands' inner canals. Beach dune and coastal strand vegetative plantings are needed on Lovers Key to help rebuild the habitat for imperiled species such as sea turtles and shorebirds, and to reduce further breaches in the island.

Additional beach dune plantings at the park may become necessary following an increase in shoreline erosion or future storm events. Native plant species that should be considered for beach dune restorative plantings include sea oats, bitter panicgrass, railroad vine and seacoast marshelder. Additional woody species that could be considered for coastal strand locations adjacent to the back dune areas include sea grape, Jamaican dogwood, gumbo limbo and buttonwood. Mangrove should be replanted in areas where full washouts occurred or where the fringe was washed-out during the storms.

Plant materials for future dune restoration efforts should be sourced by ecoregion to preserve local genetic integrity, except where sufficient research suggests other strategies are appropriate for a given species. All new and existing dune walkovers should be designed in winding or zig-zagged patterns to prevent sand blowouts and avoid changing salt exposure for vegetative communities. Interpretive signs are generally effective in advising visitors of the need to stay off the beach dunes and should be added as needed throughout the park to protect dune vegetation. In some situations, obtaining a coastal construction control line permit from DEP for the installation of post and rope fences will be necessary to protect emerging or planted dune vegetation from foot traffic.

Objective: Conduct natural community/habitat improvement activities on 0.26 acres of coastal dune lake natural communities.

Action:

- Revegetate the shorelines of the coastal dune lake communities with native plant species.

Woody vegetation surrounding two coastal dune lakes located on the interior islands of Lovers Key was damaged from storm surge and wind following several major hurricanes in 2022 and 2024. The dead vegetation was removed to provide better access to the areas. While the coastal dune lakes are the only known freshwater systems at Lovers Key, storm surge from the hurricane events introduced saltwater into the system. Revegetation should include salt tolerant species which will assist with stabilizing sediments, improving water quality and improving habitat for wildlife.

IMPERILED SPECIES

Lovers Key State Park is vital to the existence and reproduction of many imperiled species as much of Florida's coastal habitats have been lost to human development. Lovers Key and its associated mangrove islands provide undisturbed coastal communities that act as breeding, nesting, resting and feeding grounds for many protected plants and animals. Although the impetus of natural systems management as practiced by DRP is management of natural communities and not individual species, certain species are of particular concern and importance and merit special management attention. There are 28 imperiled animals and six imperiled plant species at Lovers Key State Park.

Imperiled sea turtles frequently nest on the beaches of Lovers Key. Federally threatened loggerhead sea turtle (*Caretta caretta*) are the only nesting sea turtles at the park with 37 nests in 2023, 43 in 2024 and 40 in 2025. Other sea turtles that have been observed within park property include the federally threatened green sea turtle (*Chelonia mydas*) and the federally endangered Kemp's ridley (*Lepidochelys kempii*) sea turtle. Lovers Key State Park participates in the Statewide Nesting Beach Survey program involving daily sea turtle nesting surveys from April 15 to October 31 with a yearly nesting summary provided to FWC's Fish and Wildlife Research Institute. All marine turtle activities conducted by the state park are regulated under a Marine Turtle Permit issued by FWC. The permit allows staff to conduct nesting surveys, conduct stranding and salvage activities, relocate nests for conservation purposes, outfit nests with self-releasing screens/cages, conduct hatch success evaluations and maintain and display preserved specimens. Nests are posted and monitored daily until the turtles hatch with information about tidal inundation, erosion or depredation by nuisance animals, which has been a significant issue for nesting sea turtles on these beaches, being recorded. Nests are excavated after

either hatching occurs or 70 days have elapsed from when eggs were deposited and all nests are documented, including those lost to erosion or depredation.

Depredation by nuisance animals such as raccoons has been a significant issue for nesting sea turtles at Lovers Key State Park. Protective screening of nests involves placing a 4x4-foot self-releasing screens over the nests deter depredation in accordance with the FWC Marine Turtle Conservation Handbook (2016). Predator removal activities have previously been contracted for the protection of incubating sea turtle nests when depredation levels are high.

No structural lighting exists along the beach at Lovers Key and plans for new construction or updates to existing structures should not include structural lighting since the park is closed to the public at night. If lighting is necessary, lights will need to conform to FWC Marine Turtle Lighting Guidelines designed to prevent adult and hatchling disorientations. Disorientation events attributed to artificial light sources and area sky-glow near the park are reported to FWC and Lee County.

Nesting shorebirds are also monitored at Lovers Key in accordance with FWC guidelines and DRP Shorebird and Seabird Management standards. This includes completing monthly shorebird focal species nesting surveys during the FWC Florida Shorebird Database windows March through August. Nesting shorebirds at Lovers Key include Wilson's plover (*Charadrius wilsonia*). Historically, snowy plovers and least terns have been known to nest on site; however, predator pressures from raccoons and tidal wash over of colonial nesting sites substantially reduced fledge success for colonial species. Prior to Hurricane Ian in 2022, areas of the park were pre-posted for the protection of the historic least tern nesting site between the pedestrian footbridge and tram bridge. With recent sand placement activities completed on site, pre-posting of these areas may encourage least terns to return to their former nesting spot. Exclusion of humans and their pets from least tern colonies during the pre-nesting and nesting season is essential for successful nesting. Areas where Wilson's plovers are known to nest are pre-posted annually by park staff pre-season to provide a disturbance free zone. Solitary nesters like the Wilson's plover are vulnerable to disturbance pre-nesting. Staff continue to follow the guidelines and recommendations provided in the DRP Shorebird and Seabird Management Standards for the protection and management of least terns and other imperiled shorebird, seabird and wading bird species. The park continues to provide interpretive and educational outreach to the public prior to and during the nesting season to encourage visitor use that protects shorebirds and their habitat. The state park coordinates with FWC and Audubon for shorebird stewardship activities during the nesting season.

Lovers Key is an important resting and feeding area for migrating and wintering shorebirds. Species currently experiencing population declines such as the red knot (*Calidris canutus rufa*) and piping plover are monitored within the state park. All parks, including Lovers Key, will participate in FWC's winter shorebird survey to accurately capture how many birds are using Florida beaches for wintering and resting. When important resting and feeding areas are identified at these parks, proper signage and protection will be erected.

Though no longer listed as imperiled, southern bald eagles are noted here because of the FWC guidelines for activities near eagle nests during the October 1 through May 15 nesting season (FWC 2008). There are currently no nests at the park. When nests are present, special precautions are taken near active nests, including pedestrian and vehicular buffers, to prevent disturbance.

Lee County is considered one of the most important counties for manatee (*Trichechus manatus latirostris*) on the west coast of Florida and its waterways fall within the USFWS proposed critical habitat designation for the Florida manatee. Waters east of the state park consist of a slow speed zone from April 1 through November 15 to protect these animals from boats in the warmer months. There is a 25-mph speed zone within marked channels year-round. A manatee awareness sign has been placed at the park's boat ramp to inform visitors of manatees in the surrounding waters and park staff are directed to contact FWC for important manatee sightings, and for any hurt, sick or imperiled individuals seen within or adjacent to park boundaries. Manatees also are commonly seen within the park's inner canal system.

Lovers Key has a population of gopher tortoises within the coastal strand and maritime hammock natural communities. This population was impacted by Hurricane Ian in 2022 with all areas of the park under several feet of water for several hours. It is unknown how many gopher tortoises were lost during this storm as the park had not undergone a full gopher tortoise survey. Following Hurricane Ian, multiple active burrows were located under the debris. The isolation of these tortoise populations at Lover Key State Park brings about issues of genetic inbreeding, and the possibility for random genetic drift to wipe out the island's animals. Line distance transect sampling (LDTS) is the recommended method for determining gopher tortoise population sizes and density (Buckland et al. 2001) with multiple pilot surveys completed at state parks in the southwest district over the past 12 years. Surveys conducted in the state parks were completed by FWC. A pilot survey has not been completed at Lovers Key State Park to date but should be considered in the future if data supports a full LDTS survey, with follow-up surveys completed within 10 years in accordance with the Gopher Tortoise Survey Handbook (Smith et al. 2009) published by the U.S. Army Corps of Engineers. Park staff will continue to monitor for dramatic decreases in the population size of gopher tortoises and consult with FWC to protect this imperiled species.

New development at the park will need to follow the FWC Gopher Tortoise Permitting Guidelines (FWC 2008b), which includes a 25-foot protective buffer around gopher tortoise burrows. Development activities within the 25-foot buffer require a permit from FWC.

American alligators have successfully been breeding within the coastal dune lakes found in Lovers Key. As these animals continue to reproduce, offspring will be forced to find their own territory away from the small coastal dune lakes. The potential for human interaction is high, and park staff should make every attempt to keep the public and these animals safe. If staff and visitors do not feed these animals, they should maintain their fear of humans and not need any type of outside intervention. If these animals become aggressive, park staff will contact the appropriate FWC personnel.

Federally endangered smalltooth sawfish (*Pristis pectinata*) have been observed within the state park boundary in waters surrounding Lovers Key. On October 2, 2009, the National Marine Fisheries Service, designated areas surrounding Lovers Key State Park as critical habitat for the smalltooth sawfish within the Charlotte Harbor Estuary unit.

Imperiled plant species are managed through the upkeep of the park's natural communities. There are six imperiled plant species currently found at Lovers Key State Park. Three of the imperiled plants found at Lovers Key, shell mound prickly-pear, west coast dune sunflower and inkberry (*Scaevola plumieri*), are located within the beach dune natural community. Shell mound prickly-pear can also be found in areas of coastal strand and shell mound throughout the islands. These species of plant are commonly found

within the park, and there are currently no identifiable threats to these populations. Two of the other imperiled plants found within the park boundary, triangle cactus and Florida Keys blackbead (*Pithecellobium keyense*) are found within the more established maritime hammock. All new developments or trail creation should involve checking designated construction sites for these species. The last two imperiled plant species, Curacao bush (*Varronia globosa*) and West Indian mahogany (*Swietenia mahagoni*), were planted within the park. The Curacao bush was introduced to the butterfly garden at Lovers Key in 2005, and this plant has not yet been observed growing outside of its planted location within the park. The documented range for this imperiled plant is adjacent in nearby Hendry County but currently does not include Lee County for its native range. Because this plant is imperiled, it will be maintained within the butterfly garden even though it has not been found native at the park. The West Indian mahogany found at the park was most likely grown there by the previous owners. The land was used as a nursery for Malayan coconut palm, sea grape and West Indian mahogany before it became a state park. The trees located here are mature, indicating that they had not recruited in the past 15 years, but had been established before the land was sold to Lee County. Since the West Indian mahogany is a state-threatened plant found within its proper range, it will be managed as an imperiled plant even though there is no evidence it was at this site prior to the nursery.

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

Imperiled Species Inventory						
Common and Scientific Name	**Imperiled Species Status**				**Management Actions**	**Monitoring Level**
	FWC	**USFWS**	**FDACS**	**FNAI**		
PLANTS						
Triangle cactus *Acanthocereus tetragonus*			T		2	Tier 1
West coast dune sunflower *Helianthus debilis ssp. vestitus*				G5T2, S2	2	Tier 1
Shell-mound prickly-pear *Opuntia stricta*			T	G4?, S3S4	2	Tier 1

Imperiled Species Inventory						
Common and Scientific Name	**Imperiled Species Status**				**Management Actions**	**Monitoring Level**
	FWC	**USFWS**	**FDACS**	**FNAI**		
Inkberry *Scaevola plumieri*			T	G5, S4	2	Tier 1
West Indian mahogany *Swietenia mahagoni*			T	G3G4, S3	2	Tier 1
Curacao bush *Varronia globosa*			E		2	Tier 1
FISH						
Smalltooth sawfish *Pristis pectinata*	FE	E		G1G3, S1S2	13	Tier 1
REPTILES						
American alligator *Alligator mississippiensis*	FT (S/A)	SAT		G5, S4	13	Tier 1
Loggerhead sea turtle *Caretta caretta*	FT	T		G2G4, S3	8, 9, 10, 13	Tier 3
Green turtle *Chelonia mydas*	FT	T		G3, S2S3	8, 9, 10, 13	Tier 3
Gopher tortoise *Gopherus polyphemus*	ST			G3, S3	2, 8, 10, 13	Tier 2
Kemp's ridley *Lepiodochelys kempii*	FE	E		G1, S1	8, 9, 10, 13	Tier 3
BIRDS						
Brown noddy *Anous stolidus*				G5, S1	13	Tier 1
Short-tailed hawk *Buteo brachyurus*				G4G5, S1	13	Tier 1
Red knot *Calidris canutus rufa*	FT	T		G4T2, S2N	8, 10, 13	Tier 2
Piping plover *Charadrius melodus*	FT	T		G3, S2	8, 10, 13	Tier 2
Snowy plover *Charadrius nivosus*	ST			G3, S1	8, 9,10, 13	Tier 3
Wilson's plover *Charadrius wilsonia*				G5, S2	8, 9, 10, 13	Tier 3

Imperiled Species Inventory						
Common and Scientific Name	**Imperiled Species Status**				**Management Actions**	**Monitoring Level**
	FWC	**USFWS**	**FDACS**	**FNAI**		
Little blue heron *Egretta caerulea*	ST			G5, S4	13	Tier 1
Reddish egret *Egretta rufescens*	ST			G4, S2	2, 10, 13	Tier 1
Tri-colored heron *Egretta tricolor*	ST			G5, S4	13	Tier 1
Swallow-tailed kite *Elanoides forficatus*				G5, S2	13	Tier 1
Merlin *Falco columbaris*				G5, S2	13	Tier 1
Peregrine falcon *Falco peregrinus*				G4, S2	13	Tier 1
Magnificent frigatebird *Fregata magnificens*				G5, S1	13	Tier 1
American oystercatcher *Haematopus palliatus*	ST			G5, S2	2, 8, 10, 13	Tier 3
Caspian tern *Hydroprogne caspia*				G5, S2	13	Tier 2
Wood stork *Mycteria americana*				G4, S2	13	Tier 1
Roseate spoonbill *Platalea ajaja*	ST			G5, S2	8, 10, 13	Tier 1
American avocet *Recurvirostra americana*				G5, S2	13	Tier 1
Black skimmer *Rynchops niger*	ST			G5, S3	2, 8 ,10, 11, 13	Tier 3
Least tern *Sternula altillarum*	ST			G4, S3	2, 8, 10, 11, 13	Tier 3
Sandwich tern *Thalasseus sandvicensis*				G5, S2	9, 10	Tier 2
MAMMALS						
Florida manatee *Trichechus manatus latirostris*	FT	T		G2G3T2, S2S3	10, 13	Tier 1

Management Actions:

1. Prescribed Fire
2. Invasive Plant Removal
3. Translocation/Augmentation
4. Hydrological Maintenance/Restoration
5. Nest Boxes/Artificial Cavities
6. Hardwood Control
7. Mechanical Treatment
8. Predator Control
9. Erosion Control
10. Protection from Visitor Impacts
11. Decoys (Shorebirds)
12. Vegetation Planting
13. Outreach/Education
14. Other

Monitoring Level:

Tier 1. Non-Targeted Observation/Documentation: includes documentation of species presence through casual/passive observation during routine park activities (i.e. not conducting species-specific searches). Documentation may be in the form of Wildlife Observation Forms or other district specific methods used to communicate observations.

Tier 2. Targeted Presence/Absence: includes monitoring methods/activities that are specifically intended to document presence/absence of a particular species or suite of species.

Tier 3. Population Estimate/Index: an approximation of the true population size or population index based on a widely accepted method of sampling.

Tier 4. Population Census: A complete count of an entire population with demographic analysis, including mortality, reproduction, emigration and immigration.

Tier 5. Other: may include habitat assessments for a particular species or suite of species or any other specific methods used as indicators to gather information about a particular species. [If referenced in table, provide discussion in narrative]

Inventory

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

Action:

- Update imperiled species list.

Update imperiled species list as necessary to add or remove species in compliance with current FWC or USFWS listing status and update any accepted nomenclature changes.

Fauna

Objective: Continue existing monitoring protocols for 10 selected imperiled animal species.

Actions:

- Continue to implement existing monitoring protocols for marine turtle species and piping plover, red knot, Wilson's plover, snowy plover, least tern, black skimmer and American oystercatcher.
- Monitor impacts on shorebird and sea turtle nesting by terrestrial nuisance predator species in the park.
- Provide park visitor interpretation and outreach for shorebirds, seabirds and wading birds.
- Continue existing monitoring protocols for gopher tortoises.
- Review and revise protocols as necessary to remain consistent with FWC and USFWS standards.

Imperiled species management at Lovers Key State Park focuses primarily on shorebirds and other coastal bird species, as well as marine turtle species that nest within the parks. The parks coordinate all monitoring of imperiled species with FWC and submit monitoring data to FWC as required.

Marine turtle nesting is monitored in strict accordance with the FWC Marine Turtle Conservation Handbook (FWC 2016). Lovers Key State Park is part of the Statewide Nesting Beach Survey program and is surveyed in accordance with DRP's Marine Turtle Permit. Staff previously used a digital survey application, developed by DRP and adopted by FWC, to collect GPS data in the field and allow direct digital data entry of the marine turtle nesting data. Currently, the state park uses a digital survey application created by FWC that allows direct digital entry from the field and allows FWC to directly pull the annual reports submitted.

Shorebird surveys are conducted in accordance with DRP's Shorebird and Seabird Management Standard. Surveys are conducted both during the nesting season and during the winter and migratory seasons. Data for nesting shorebirds are submitted to FWC via the online Florida Shorebird Database. The primary focus of surveys is on imperiled shorebird and seabird species that nest on the beaches and in the dunes. An additional survey known as the Winter Shorebird Survey is completed in accordance with Florida Shorebird Alliance guidelines and identifies winter distribution of shorebirds and seabirds in Florida.

Historic shorebird nesting areas will be posted in advance of seasonal occupation annually in accordance with FWC and DRP guidelines. Individual solitary nesting sites will be posted to provide a buffer as they are encountered on the beach to limit disturbances. The park will continue to coordinate with Audubon and FWC towards a shorebird stewardship program on site. The park will work to enhance community outreach efforts during shorebird nesting season through improved interpretive programming and regular monitoring of posted areas by park staff and volunteers.

Current protocols for nesting surveys include data collection on the presence of terrestrial predators. Staff and volunteers are trained to observe and document predator tracks near shorebird nesting habitat, shorebird nest sites and sea turtle nest sites and false crawls. In accordance with FWC guidelines and permit conditions, self-releasing cages and screens are installed over sea turtle nests by park staff to discourage depredation by nuisance mammal species. Park staff coordinate with DRP District biologists, who monitor shorebird and sea turtle nest depredation activity and coordinate predator removal efforts at all southwestern beach parks. Park staff will continue to communicate with DRP District biologists as depredations occur for timely implementation of predator removal efforts.

Dogs brought by visitors to the park introduce significant and challenging impacts on shorebird nesting success. Signage on each of the islands clearly describes the DRP policy on pets; however, evidence of non-compliance persists. The current approach to reducing this impact to shorebird nesting depends on multiple partners including law enforcement personnel. Park staff maintains signage and educates visitors on policies when dogs are encountered in areas of the park where prohibited. Rule 62D-2.014(13), F.A.C., includes enforceable language on the presence of pets in restricted areas. This code is enforced by FWC law enforcement at state parks, and park staff will continue to coordinate with FWC to increase enforcement at Lovers Key.

Gopher tortoise populations at the park were impacted by Hurricane Ian in 2022 and Hurricanes Helene and Milton in 2024. Hurricane Ian resulted in over 8 feet of storm surge at the park for several hours. Many gopher tortoise burrows collapsed under the weight of the water or felled trees. Some tortoises were able to re-emerge following declining water levels at the park; however, the full impact of these

hurricanes on the gopher tortoise population is not clear. When funding becomes available and if data supports a full LDTS survey, a pilot gopher tortoise LDTS survey should be completed to gain a baseline understanding of the gopher tortoise population size and density at the park. Follow-up surveys completed 10 years after the pilot survey will assist in assessing population health and potential changes in population size.

Flora

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

Action:

- Develop monitoring protocols for four selected imperiled plant species including inkberry, triangle cactus, shell mound prickly pear and Florida Keys blackbead.

Currently, no monitoring protocols exist at Lovers Key for imperiled plants. Monitoring would include surveying for rare plant species, such as the Florida Keys blackbead (*Pithecellobium keyense*), documenting population locations of species such as inkberry and triangle cactus and determining the frequency of occurrence for each species. Presence absence surveys would occur yearly, and total population counts would occur every three to five years. A population of Florida Keys blackbead is suspected to be present at the park; however, its presence has not yet been confirmed.

A protocol should be developed to monitor shell mound prickly pear cacti populations at the park, which have been impacted by the invasive cactus moth (*Cactoblastis cactorum*). The female moth lays her eggs at the base or tip of a spine on the shell mound prickly pear in the form of a long chain known as an egg-stick. The larvae crawl down the egg stick onto the cladode where they burrow into the pad and destructively feed on the tissue, moving to other cladodes until the food source is exhausted or the larvae exit the plant to pupate (Habeck et al. 2016). Cactus moth feeding may be detected by the pile of frass on or beneath an infested pad. The Florida Department of Agriculture and Consumer Services' (FDACS) Division of Plant Industry (DPI) has submitted a petition to the USDA for permission to release a biological control agent of the moth (pers. comm. with Nicole Benda, FDACS-DPI). Monitoring solutions could include monthly visual inspections of known cacti populations for egg sticks and signs of cactus moth destruction, removing egg sticks and infested pads as needed. Egg sticks and infested pads should be frozen or heat-killed prior to disposal.

INVASIVE SPECIES

Invasive plant coverage at the park is currently at low maintenance levels due to targeted in-house treatment projects led by park and district staff. Invasive plants are persistent at the park including Brazilian pepper, beach naupaka, balsampear (*Momordica charantia*), shrimp plant (*Justicia brandegeeana*), mahoe (*Taliparitiliaceum*), rosary pea (*Abrus precatorius*) and carrotwood. Continued invasive plant treatment efforts will be necessary to maintain low invasive plant coverage throughout the park.

Multiple coconut trees (Cocos nucifera) still stand within the park boundary and represent the former landowner usage of the area. Former treatment and removal of coconut palms in the park resulted in local backlash. Park personnel now remove any new growth that occurs near these plants but do not treat the existing adults. As these trees age and die over time, they will not be replaced with new

individuals. Also, coconuts will be collected to prevent new growth elsewhere at the park and adjacent Estero Bay communities. Coconut trees with coconuts adjacent to heavily used paths should be removed for safety purposes.

Green iguanas (*Iguana iguana*) are the most visible invasive non-native animal at the park. Removal efforts at the park have included USDA trapping to reduce population numbers. Green iguanas are known to utilize gopher tortoise burrows, displacing the tortoises and limiting food sources for many native animals. Additional invasive species include Cuban tree frogs, Cuban anoles, tropical house geckos and armadillos. Currently, there are no plans to trap or actively remove these invasive animals from the park.

Nuisance imperiled species predators commonly found at Lovers Key include raccoons, which account for a majority of the depredation activity for shorebirds, seabirds and sea turtle nests on the islands. Historically, predator control efforts were initiated in response to periods of elevated nest depredations. In addition to funding through DRP, the Sea Turtle Conservancy had provided the park with several years of predator removal funding with a goal of increasing the number of hatchlings reaching the Gulf. Despite these efforts, sea turtle nest depredations remain high with an average 38 percent of the sea turtle nests negatively impacted by raccoon predation. Shorebird nest predation is more difficult to determine, but it is assumed that these predators negatively impact all nesting species of birds at the park. Staff attempts to limit the number of sea turtle nest predation by placing metal screens over the nests in order to keep the raccoons from eating the eggs. These FWC approved self-releasing screens allow the turtle hatchlings to escape the nest when they hatch, while protecting the unhatched eggs from predators when still in the nest.

In addition to raccoons impacting beach nesting species, feral and domesticated cats are occasionally spotted at the park. Cats present a significant threat to shorebird nesting and should be relocated if caught within the park boundary.

Invasive Plant Species			
Species Name **Common Name – *Scientific Name***	**FISC Category**	**Distribution**	**Zone ID**
Australian pine *Casuarina equisetifolia*	I	Scattered Plants or Clumps	LV-02, LV-05
Latherleaf; Asian nakedwood *Colubrina asiatica*	I	Scattered Plants or Clumps	LV-04
Lantana; Shrub-verbena *Lantana camara*	I	Scattered Plants or Clumps	LV-02, LV-04
Balsampear *Momordica charantia*	II	Scattered Plants or Clumps	LV-01, LV-04
Senegal date palm *Phoenix reclinata*	II	Scattered Plants or Clumps	LV-04
Beach naupaka *Scaevola taccada*	I	Scattered Plants or Clumps	LV-05
Brazilian pepper *Schinus terebinthifolius*	I	Scattered Plants or Clumps	LV-01, LV-02, LV-04, LV-05, LV-10
Portia tree	I	Scattered Plants or Clumps	LV-05

Invasive Plant Species			
Species Name **Common Name – *Scientific Name***	**FISC Category**	**Distribution**	**Zone ID**
Thespesia populnea			
Caesar's weed *Urena lobata*	I	Scattered Plants or Clumps	LV-02, LV-04

Invasive Plant Treatment

Objective: Create a long-term invasive plant management plan for the park.

Actions:

- Identify the major vectors and pathways for invasive plants at the park and reduce incoming propagules where possible.
- Annually update surveys to reflect accurate infestation levels of each management zone.
- Develop an early detection rapid response protocol for new infestations.
- Develop a species-specific action plan for each management zone with a prioritization framework.
- Evaluate and update plan on an annual basis and adapt to changing conditions.

Objective: Monitor and maintain 642 acres of habitat already in maintenance condition as needed.

Actions:

- Survey all maintenance areas yearly for new infestations.
- Treat areas where invasive plant spread is imminent (e.g., after prescribed fire, mechanical or other disturbance).
- Document treatments and update surveys in Natural Resources Tracking System (NRTS).

Objective: Reduce or maintain cover class on 7.2 acres not in maintenance.

Actions:

- Survey and treat after prescribed fire for rapid spread of invasive species.
- Treat medium infestations with staff and volunteers where available.
- Reduce high infestations with additional labor sources (e.g., contract funding, strike teams) and plan for passive or active restoration.
- Document treatments and update surveys annually in NRTS.

In addition to treatment of invasive species, surveys of the park should be completed and updated annually to find new infestations before they spread. Staff should focus on treatment of small levels of invasives whenever they arise in addition to large-scale woody invasives. Priority should be on maintaining infestation cover class at or below current cover class and singling out priority invasive species that should be eradicated, such as beach naupaka. New invasive species should immediately be vouchered and eradicated.
The butterfly garden adjacent to the Discovery Center should be monitored more closely for invasive plants and species out of their natural range. Proposed landscaping within all developed areas of the

park should include only native plant materials sourced by ecoregion to preserve local genetic integrity, except where sufficient research suggests other strategies are appropriate for a given species. Native plants that have been documented within the county but have not been historically documented in the park should be avoided entirely. Additionally, special care should be taken with native plant species that are known to hybridize between ecoregions. For example, the east coast dune sunflower readily hybridizes with the west coast variety, with the latter variety being the only subspecies appropriate to plant in parks along the west coast of Florida. Proposed planting or landscaping efforts must be approved by DRP District staff prior to installation on site.

Invasive and Nuisance Animal Control

Objective: Implement control measures on two invasive/nuisance animals.

Actions:

- Manage invasive or nuisance animals as needed.
- Coordinate with USDA, FWC and park staff capable of management to develop control method plans of known non-indigenous/nuisance animals.

With funding from the Sea Turtle Conservancy and DRP, USDA has directly assisted with sea turtle predator management of raccoons on the outer island at Lovers Key State Park over the past four years. Sea turtle predator management has been shown to reduce sea turtle nest depredation rates in subsequent seasons; however, continued predator removal appears to be necessary to reduce depredation levels below 10 percent as populations appear to rebound with average depredation rates of 37 percent over the past four years. DRP will continue to pursue funding to complete predator control ahead of the sea turtle nesting season, monitor depredation levels at the park during nesting season and assess when further predator control is warranted.

USDA and DRP staff have previously assisted with green iguana management at the park. DRP District and park staff are currently pursuing options for iguana management due to the increasingly high rate of infestation. Iguanas are known to displace gopher tortoises and DRP will continue to pursue funding for iguana removal efforts at the park.

CULTURAL RESOURCES

Prehistoric and Historic Archaeological Sites

Lovers Key State Park contains two archaeological sites, one historic site and one isolated find as recorded in the Florida Master Site File (FMSF). Due to major ground disturbance caused by the previous landowner, it is possible that Black Island and Lovers Key contained other archaeological sites that have since been lost to dredge and fill operations or natural erosion as the island's location shifted over time. In the early 1900s, the islands were accessible only by boat. It was said that only lovers made the effort to get to this romantic island, thus the name Lovers Key. Local legend hints that Black Island got its name from Black Augustus, a pirate who had been captured by authorities, and later escaped, making this island his home for the remainder of his life. Fish camps were located on Black Island from the early 1900s until the late 1950s. Then, in the 1960s and 1970s, the four barrier islands were slated for development. Preparations for development damaged the islands. Mangrove swamps were altered to

uplands by dredging a canal through Black Island. In 1983, the state acquired the islands and in 1996, merged with adjacent Carl E. Johnson County Park to become Lovers Key Carl E. Johnson State Park.

LL01788 - Lovers Key State Recreational Area: The site is described as a foundation of board-formed aggregate concrete piers with embedded rectangular and natural wood posts. The homestead displays architecture that doesn't closely resemble any specific culture or time period. Also, the sandbags associated with the concrete and wood foundation appear to be much more recent than the rest of the site. Professional historians suggest that the techniques found at this site bear some small likeness to a few structural stone remains present at the nearby Koreshan settlement. This would place the site as being created in the late 1800 to early 1900s. An 1875 map and associated surveyor's notes did not show or mention anything regarding a building or structural remains on Black Island. The only written evidence we have that anyone lived on the island is a letter dated 1905, where it is revealed that an individual named F. Augusta had requested a survey of Black Island.

The homestead (Lovers Key Recreation Area) is well hidden and protected from visitor impacts being tucked away in a dense mangrove swamp. Also, due to the dense tree cover, it is well protected from wind and waves associated with tropical storm events.

LL01924 - Bell P-39 Airacobra: This site consists of the remains of a Bell P-39 Airacobra that crashed offshore in 1943. The pilot, Buford S. Courtenay, bailed out of the aircraft after taking off from Page Field in Fort Myers. Portions of the plane including the propeller, motor, driveshaft, forward section of the fuselage and instrument panel were removed in the 1990s. The remaining portions include the center of the plane. In 2005, the remaining pieces were visible along the shoreline and in the water at low tide. Since that time, park staff have not been able to locate any remaining aircraft metal at this site, and the site is believed to be completely submerged under the sediment. This site is important in the World War II-era history of Fort Myers and Estero Bay, as well as the military and aviation history of Florida. Portions of the plane removed by Preston Esterle are currently on permanent exhibit at the Fort Myers Historical Museum.

LL01947 - Black Island Midden: The shell midden found at Lovers Key is a small shell mound located in the middle of the inner canal of Black island. It is unknown whether the site was substantially larger prior to the dredging of the winding canals by the former landowner, who spared the small midden. The site is comprised of oysters, clams and whelks with shards of pottery and a fire ring made of stone. The shoreline is highly susceptible to erosion, and the mound has decreased in size over the past 20 years.

In 2021, a phase II archaeological evaluation of the midden contracted by DRP was completed. Ceramics found at the location along with radiocarbon dating indicated the midden was formed during the Caloosahatchee I and Caloosahatchee IIa periods (approximately 500 B.C.E. to 700 C.E.) (Lanning and Byrd 2021). Radiocarbon samples further yielded calibrated dates of A.D. 546-835 and A.D. 616-900, suggesting that the midden deposit was formed over a short period of time during the Caloosahatchee IIa and IIb periods. Questions remain as to the potential relationship of the site to Mound Key located nearby in Estero Bay.

Additional recommendations from the phase II evaluation include that the site is eligible for the National Registry of Historic Places and that a phase III data recovery is recommended prior to any adverse effects including but not limited to ground disturbance from site stabilization. Shoreline restoration and

other protective measures may be necessary for the preservation of and to prevent further loss of this site, which in itself would be considered an adverse effect.

LL02017 - No Name Isolated Find: This site consists of a skull fragment found on the shoreline by park staff in 2000. There is no evidence proving it is human according to the FMSF, and because it was found washed up on the beach, there is no evidence it came from anywhere near the state park. Due to the extreme lack of evidence associated with this site, there is no other information to provide.

In 2013, the Alliance for Integrated Spatial Technologies at the University of South Florida were contracted as part of a DRP Districts 4 and 5 project to perform predictive modeling of cultural resource potential in state parks. During this project, aerial LiDAR data was used to refine maps showing the complex surface elevations of the park (Collins 2013). Fieldwork was also conducted to survey with sub-meter instrumentation and GPS camera equipment to ground truth previously recorded sites and potential new sites. The analysis of LiDAR and ground truthing assisted in correcting the locations and boundaries for two previously recorded sites, LL01788 (Lovers Key Recreation Area) and LL01947 (Black Island Midden). Site LL01788 was located, but the actual site was found approximately 120 meters south of the FMSF-listed location. This correction was updated in the FMSF. Site LL01947 was also incorrectly plotted in the FMSF. In 1997, the plot for this site included large amounts of open water along with uplands on the adjacent island. This spatial location was corrected to only include the actual above water midden found as a small island in the middle of the dredged canal.

The archaeological sensitivity model created from this research found that of the approximately 493 acres of uplands within Lovers Key State Park, approximately 254 acres (51 percent of the park) is considered high sensitivity for cultural resources. The other 49 percent is considered to have a low sensitivity for cultural resources.

Cultural Sites Listed in the Florida Master Site File

Site Name and FMSF #	Culture/Period	Description	Significance	Condition	Treatment
LL01788 Lovers Key State Recreational Area	Late 19th to Early 20th century	Archaeological Site	NE	G	P
LL01924 Bell P-39 Airacobra	Aircraft wreckage 1942	Historic Site	NE	G	P
LL01947 Black Island Midden	Prehistoric/Unspecified	Archaeological Site	NE	F	ST
LL02017 No Name Isolated Find	Historic/Unspecified	Isolated Find	NE	NA	NA

Significance:	Conditions:	Recommended Treatment:
NRL - National Register Listed	G - Good	RS - Restoration
NRE - National Register Eligible	F - Fair	RH - Rehabilitation
LS - Locally Significant	P – Poor	ST - Stabilization
NE - Not Evaluated		P - Preservation
NS - Not Significant		R – Removal

Condition Assessment

Objective: Monitor and assess two of four recorded cultural resources.

Action:

- Complete annual assessments of two recorded cultural resources.

Park staff will monitor two cultural sites annually, recording site visits and updating site files with the FMSF short form. Monitoring will focus on the shell midden to ensure that looting and other resource impacts are not occurring on site.

Preservation Measures

Objective: Bring one of four cultural sites into good condition.

Actions:

- Conduct a Phase III archaeological survey on Black Island Shell Midden to further evaluate the mound prior to potential adverse effects from future storm events or implementation of shoreline protection measures.
- Design and implement a shoreline stabilization project for site LL01947 - Black Island Midden.

A phase III archaeological survey and implementation of shoreline protection measures for the Black Island Midden (LL01947) is necessary to prevent or reduce further erosion to this sensitive cultural site. Ongoing erosion is currently undercutting the mound and eventually will topple the entire structure, dropping all of the stabilizing vegetation into the water. Shoreline stabilization methods including oyster bags or recycled oyster shell structures to assist with wave attenuation and/or a living shoreline may be best for maintaining the natural appearance of the midden while protecting the structure from further erosion. DRP staff will consult with DHR and BNCR to develop a plan for shoreline stabilization.

SPECIAL MANAGEMENT CONSIDERATIONS

Arthropod Control Plan

Mosquito control plans (i.e., Arthropod Control Plans) are typically proposed by county mosquito control districts when they desire to treat on public lands that are protected by section 388.4111, F.S. (Collier County Mosquito Control District 2012; FDACS 2012). The current plan for Lovers Key State Park was finalized in 2010 and is available in the Southwest District Arthropod Control Plan Appendix. Mosquito control plans temporarily may be set aside under declared threats to public or animal health, or during a declared state of emergency.

LAND USE COMPONENT

VISITATION

Lovers Key State Park is a popular year-round beach destination in densely populated and fast-growing Lee County, which includes the Fort Myers/Cape Coral Metropolitan Area. With outstanding opportunities for coastal resource-based recreation, the park attracts both locals and vacationers.

While the pristine white-sand beach on the Gulf is a focal point, the park also provides opportunities for paddling, fishing, swimming, snorkeling, hiking, biking and boating. Boaters often recreate in the shallows along the park's varied shoreline which includes Gulf, inlet and estuarine settings. Picnicking is also available at the park's roadside picnic area along the bayside of County Road 865.

Florida Circumnavigational Saltwater Paddling Trail (CT)

Segment 12, an approximately 40-mile portion of the CT from Cayo Costa State Park/Cabbage Key to Lovers Key/Bowtie Island, features several state parks including Lovers Key. Paddlers can follow the signs for the Great Calusa Blueway on the inside of San Carlos Island, or shorten their day by 1.5 miles by paddling on the inside of Estero Island. At the terminus of this segment, Lovers Key State Park offers paddlers a chance to land either bay side or Gulf side to enjoy hiking trails, restrooms and picnic facilities. Paddlers wishing to camp overnight must continue on to Bowtie Island and apply for a camping permit with Lee County.

Trends

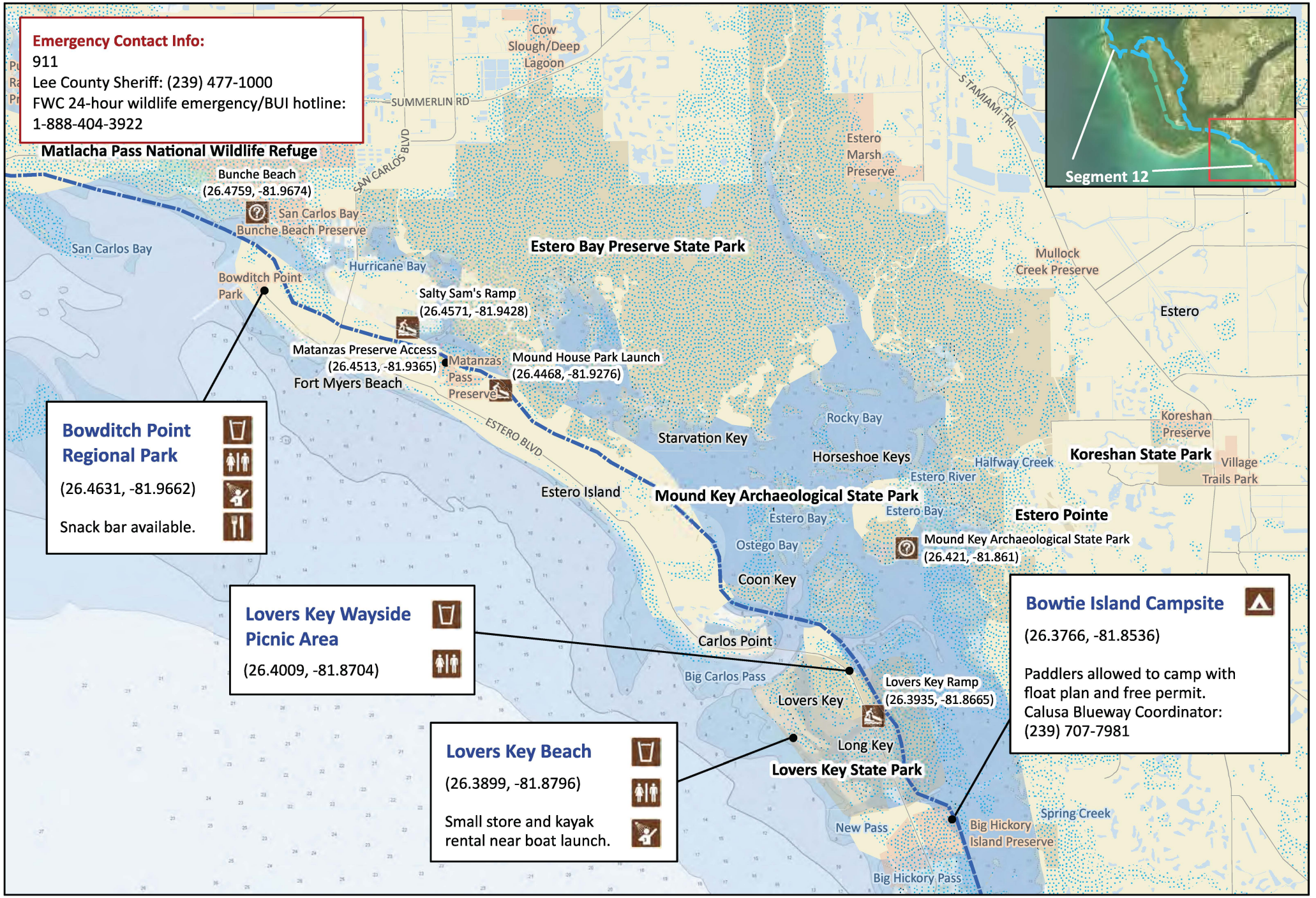
Visitation data at Lovers Key State Park reflects a marked increase in February, followed by a dramatic peak in attendance in March and April. This visitation trend aligns with warming spring weather, the presence of more seasonal residents at this time of year and the occurrence of spring break across the United States. Attendance typically remains somewhat elevated through the early summer, then declines during the late summer. Attendance numbers have generally trended up over the past several decades correlating with upward trending population growth as well as overall regional visitation. In particular, paddling continues to grow in popularity with interest in additional opportunities to access and enjoy the clear waters of the Estero Bay Aquatic Preserve.

Economic Impact

Attendance over the 10-year period from FY 2015-16 through FY 2024-25 totaled 8,202,318 visitors. By DRP estimates, the visitors contributed $867,417,679 in direct economic impact. Visitor spending supported a cumulative total of approximately 12,519 one-year job equivalents over the 10-year period. (DEP 2015–2025).

EXISTING FACILITIES AND INFRASTRUCTURE

Many of the original facilities and much of the original infrastructure at Lovers Key State Park were destroyed by high winds and storm surge associated with Hurricane Ian in 2022 and further impacted by numerous hurricanes in 2024. A few permanent structures remain in more sheltered landward locations within the park, including the park visitor center. As of 2026, many park operations, including



Florida Circumnavigational Saltwater Paddling Trail

Segment 12: Pine Island/Estero Bay (Map 3 of 3)

Begin: Cayo Costa State Park
End: Lovers Key/Bowtie Island

Distance: 38.3-41.5 miles
Duration: 2-3 days

0 0.75 1.5 3 Miles

Updated: 12/2/2024

N

concessionaire operations, have resumed by utilizing temporary facilities. The Conceptual Land Use Plan in the following section details the DRP's recovery plans with emphasis on reducing environmental impact while increasing resilience.

The Lee County wayside park and boat ramp on the east side of Estero Boulevard are managed as part of Lovers Key State Park; however, these areas are separate from the main operations of the park. The wayside park primarily serves passersby, offering picnic pavilions and a restroom. One and a half miles south on Estero Boulevard, the bayside boat ramp offers numerous parking spaces for vehicles towing trailers and a high capacity boat ramp with docks. Access to both facilities is free of charge.

Facilities Inventory

Beach Access Area	
*Entrance Station	1
Visitor Center	1
Tram Pavilion	1
*Beach Access Boardwalk Number 1 (length in feet)	360
Tram Road (Miles - includes portion from Education Center parking)	0.6
Beach Access Boardwalk Number 2 (length in feet)	760
Support Area	
PM Residence	1
Maintenance Building	1
Storage Shed	11
Native Plant Nursery	1
Volunteer Campsite (full utilities)	6
Boat Ramp	
Restroom	1
Boat Ramp (double wide)	1
Roadside Picnic Area	
Pavilion	9
Restroom	1
Inner Keys Trail System	
Bench Pavilion	7
Hiking Trail (mileage)	2
Old North Entrance	
*Staff Residence (Assistant Park Manager residence extant; ranger residence destroyed)	2

*Destroyed by hurricanes in 2022 and 2024.

CONCEPTUAL LAND USE PLAN

Park Entrance

Objective: Construct a new ranger station.

Action:

- Design and develop a new ranger station.

LOVERS KEY STATE PARK
Existing Facilities

N

0 1,000 2,000 Feet

Sources: ESRI; Florida Department of Environmental Protection
This graphical representation is provided for informational purposes and should not be considered authoritative for navigational, engineering, legal, and other uses.

The former ranger station was built on-grade, contributing to its demise during Hurricane Milton. Following the hurricane, a temporary mobile facility has served as the ranger station. A permanent and more resilient structure will be constructed during this planning cycle. Resilient design features will include off-grade construction; however, off-grade architecture is challenging for direct visitor interface. A switchback ramp configuration will be necessary for staff and visitors to access the upper level. The new ranger station will be located within the former site. While non-personal payment systems have been considered, the volume of visitation at this unit, including many international visitors, warrants personal interface at a ranger station.

If construction of a permanent ranger station is logistically or fiscally infeasible, kiosk payment and/or reservation systems would be viable alternatives. Volume of visitation may be a limiting factor. In the absence of a ranger station, staff presence parkwide and reliance on the Discovery Center would need to increase to support visitors.

Main Parking and Concession Area

Objective: Redevelop facilities to meet visitor access and vendor service needs.

Actions:

- Repair restroom facility.
- Replace concession building.
- Provide interpretive elements for park users as appropriate.

Lovers Key State Park was significantly impacted by Hurricane Ian in 2022 and Hurricanes Helene and Milton in 2024. Storm surge and strong winds caused damage to nearly all visitor support facilities, including the restroom and shade pavilions at the former tram embarkment. Exterior repairs, as well as repairs to water and sewer connections, will be completed during this planning cycle.

The former concession building at the primary beach parking area was destroyed during Hurricane Ian. The concessionaire currently operates out of a temporary facility. A permanent concession building should be constructed in situ with decking that overlooks the adjacent mangrove swamp. Design and aesthetics should strive for resilience, operational efficiency and visitor engagement/connection to the park's significant natural resources (i.e., beach dune, maritime hammock, mangrove swamps and seagrass beds). Elements such as renewable energy and design of an inviting space where visitors can appreciate the adjacent estuarine resources should be considered. In addition, planning appropriate interpretive elements to deepen understanding and improve orientation should be considered.

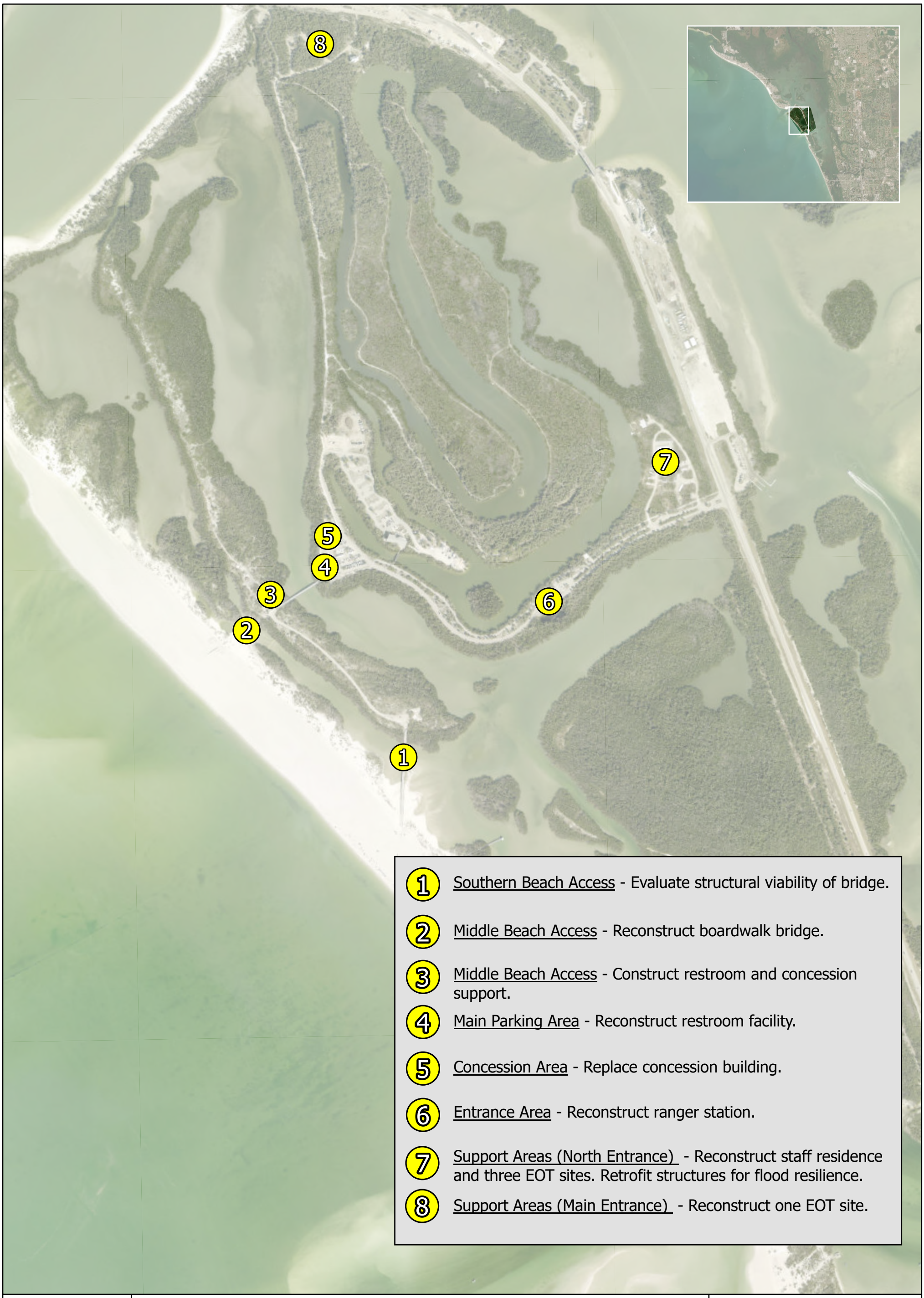
As the former tram station was irreparably damaged and tram operations became unsustainable, tram service to the southern beach access is being discontinued. An abridged pathway to the beach is proposed to enable convenient beach access.

Beach Access

Objective: Provide safe and convenient access to the Gulf beach with supporting facilities.

Actions:

- Reconstruct the boardwalk bridge to the middle beach.
- Construct a restroom at the landward side of the boardwalk bridge.



1. Southern Beach Access - Evaluate structural viability of bridge.
2. Middle Beach Access - Reconstruct boardwalk bridge.
3. Middle Beach Access - Construct restroom and concession support.
4. Main Parking Area - Reconstruct restroom facility.
5. Concession Area - Replace concession building.
6. Entrance Area - Reconstruct ranger station.
7. Support Areas (North Entrance) - Reconstruct staff residence and three EOT sites. Retrofit structures for flood resilience.
8. Support Areas (Main Entrance) - Reconstruct one EOT site.

LOVERS KEY STATE PARK
Conceptual Land Use Plan

N

0 400 800 Feet

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- Continue to evaluate structural viability of the bridge to the southern beach.

To facilitate beach access in the absence of tram service, a pedestrian boardwalk and bridge over the waterway to the south will be constructed. This segment of beach is known as the middle beach. Linear distance from the former tram station is only modestly over 1,000 feet.

Prior to its destruction in Hurricane Ian, the former boardwalk bridge provided access to the middle beach within reasonable walking distance of the main parking area. This boardwalk will be reconstructed, restoring this well-established access point to the Gulf beach. The new boardwalk structure will be engineered to accommodate utility vehicles as well as light vehicles, for vendor and official use only. This design, in conjunction with a small utility station to support mobile concession activity at the seaward end of the boardwalk, will support vendor services such as a minor refreshment service operation closer to the focal visitor use area.

The southern beach access restroom located at the former tram terminus was destroyed by recent hurricanes. A temporary mobile restroom was stationed at this site to support visitors to the southern beach area; however, maintaining a wastewater system was logistically and fiscally unsustainable. Additionally, the reconstructed access to the middle beach area is expected to absorb the majority of beach access demand, reducing the need for facilities at the southern beach. Accordingly, a permanent restroom facility is needed at this middle beach access area. The restroom must be constructed off-grade for resilience purposes and be proportioned to high visitor use.

Previously, construction of a permanent restroom within the cul-de-sac of the tram road terminus had been considered. Given the alternative facilities constructed at the middle beach area, the susceptibility of the southern beach area to storm impacts and distance of the southern beach from centralized sewer, no such facilities should be constructed.

The bridge to the southern beach, formerly utilized by the trams, has been downgraded to pedestrian access only. Deterioration of its structural condition precludes heavy vehicular use and may soon require substantial repairs to perpetuate its use even for pedestrian use only. Cost-benefit analysis may indicate closure and subsequent removal. Infrastructural investments for the middle beach including a boardwalk bridge, restroom and nearby concession facilities are anticipated to fulfill beach access demand for this portion of the park. While visitor congestion at the middle beach is a consideration, trends demonstrate that visitors are dispersing north and south of the middle beach access point. Exposure to tidal energies along the southern beach dictates that structures in this area should be minimized.

Potential Passenger Ferry Access

Objective: Evaluate potential park access by passenger ferry.

Action:
- Evaluate feasibility of navigation from off-site locations.
- Identify suitable arrival/departure site within the park.
- Construct potential associated infrastructure.

The park is traditionally accessed by road; however, traffic congestion and vulnerability of local and regional roads to storm damage necessitates evaluation of alternative modes of access. Both the City of

Fort Myers and Village of Estero have expressed interest in establishing passenger ferry access to Lovers Key State Park. The feasibility of both maritime navigation and business economics may be limiting factors. Within the park boundary, an appropriate arrival/departure site must be identified, with several variables ultimately determining the site. As beach access is the primary draw for visitors, any landing point must be within convenient proximity of the park's beach. Lack of deepwater access and the complex multi-island configuration of the park may require shallow draft vessels and direct beach landings. Specific site planning details must be sensitive to seagrass beds, mangrove swamp, wildlife nesting habitat and avoidance of visitor crowding. Concepts of passenger ferry access are not intended to replace traditional vehicular access.

Support Areas

Objective: Improve resilience of the maintenance area.

Action:

- Retrofit building interiors to resist flooding impacts.

The current maintenance buildings are durable and function well to support maintenance and other operations. The buildings are situated on relatively high ground; however, they still experienced storm surge flooding during Hurricane Milton. While long-term solutions may consider elevating or reconstruction, recommended measures during this planning cycle should focus on improving the resilience of the structures. These measures should include raising electrical outlets and associated wiring safely above the elevation of historic floodwaters. Given these modest interior alterations, major reconstruction is not indicated at this time. If necessitated by storm impacts, replacement structures must remain within the footprint of this existing maintenance area.

Objective: Provide essential staff residences.

Action:

- Reconstruct the ranger residence.
- Reconstruct four employee-owned trailer (EOT) sites.

Prior to recent hurricanes, a third staff residence was located at the north end of the park near the staff residence. Replacement of this site-built residence is essential to support the complex and demanding operations of this high visitation coastal park. Design and construction of the new residence should feature elements to improve resilience to future storm events.

The park historically had four EOT sites that should be reconstructed due to the high cost of living in the area and to improve staff retention. Three of the sites should be located at the north end of the park near the staff residence. The fourth site should be situated within the footprint of the former EOT site in the support area near the park entrance, which is currently occupied by a temporary administration trailer.

OPTIMUM BOUNDARY

The current park boundary for Lovers Key State Park extends well beyond mean high water along a majority of its shoreline. This includes submerged lands up to approximately 0.5 miles into Estero Bay,

up to approximately 800 feet into the Gulf and nearly the entirety of New Pass. Management authority of submerged lands that fall within the park boundary are extended to DRP through direct lease of said lands from the Trustees or Lee County.

The entirety of upland and submerged lands that are germane to Lovers Key State Park exist within the park boundary. Most of the submerged lands of the park overlap with the Estero Bay Aquatic Preserve. An area of beach on the northern extent of Big Hickory Island along New Pass, including approximately 3,000 linear feet of Gulf frontage, is eligible for state acquisition due to its inclusion in the former Estero Bay Florida Forever Project; however, being adjacent to resort development and located on the opposite side of New Pass, incorporation with Lovers Key State Park is infeasible.

The central and southwestern portions of Big Hickory Island are conserved under Lee County and may expand by way of the Estero Bay Florida Forever Project, either under Lee County or Trustees ownership. Alternatively, these central and southwestern portions of Big Hickory Island could be considered for management under Estero Bay Preserve State Park, which is suited to manage remote estuarine habitats. No additional acquisitions within this immediate vicinity would enhance the recreational opportunities of the Lovers Key State Park or provide buffer for non-conservation land uses.

LOVERS KEY STATE PARK
Optimum Boundary

N

0 1,000 2,000 Feet

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