DELNOR-WIGGINS PASS STATE PARK
Park Chapter

BIG CYPRESS REGION

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Delnor-Wiggins Pass State Park

Park Chapter

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Unit Name: Delnor-Wiggins Pass State Park

Planning Region: Big Cypress

County: Collier

Lease/Management Agreement Number: 2514

Central Park Theme: Where the Cocohatchee River empties into Wiggins Pass, Delnor-Wiggins Pass State Park stretches across a mile of relatively undeveloped white sand beach and coastal habitats, providing one of the few protected sanctuaries for wildlife and seashore activities in the region.

Total Acreage: 199.78

Natural Communities	Acres
Beach Dune	6
Coastal Strand	6
Estuarine Unconsolidated Substrate	21
Maritime Hammock	2
Mangrove Swamp	97
Marine Unconsolidated Substrate	54
Restoration Natural Community	2

Altered Land Cover	Acres
Developed	11

Acquisition: Delnor-Wiggins Pass State Park was initially acquired on September 8, 1970, with funds from the Outdoor Recreation Development Council.

Resource Management Component

Hydrology

- Assess the park's hydrological restoration needs.

Natural Communities

- Conduct natural community/habitat improvement activities on ± 25 acres of beach dune and coastal strand following impacts from storm events and designate trail access.

Imperiled Species

- Develop and update baseline imperiled species occurrence inventory list for flora and fauna.
- Continue to implement existing monitoring protocols for four marine turtle species, as well as piping plover, red knot, Wilson's plover, least tern, black skimmer and American oystercatcher.

- Monitor impacts on shorebird and sea turtle nesting by terrestrial nuisance species in the park.
- Complete full gopher tortoise surveys at the park annually to better understand trends in the population.
- Continue to implement existing monitoring protocols for shellmound pricklypear, triangle cactus and inkberry.

Invasive and Nuisance Species

- Create a long-term invasive plant management plan for the park.
- Monitor and maintain ± 76 acres of habitat already in maintenance condition.
- Reduce cover class on ± 95 acres not currently in maintenance condition.
- Remove invasive/nuisance animal species as needed.

Cultural Resources

- Monitor and assess the historic shipwreck and lithic scatter site.

Land Use Component

Conceptual Land Use

Entrance Area

- Evaluate feasibility of a reservation system.
- Install an exterior electric gate at the park entrance.

Beach Access Parking

- Reconstruct four of the former five parking areas, including the removal of the northernmost parking area, restoration of a former ± 1-acre parking area to maritime hammock with a hiking trail and installation of a kiosk payment system.

Beach Access Amenities

- Design and construct three replacement restrooms.
- Implement roving interpretive programming.

North Point Trail

- Install trailhead elements at north end of the northernmost parking area.
- Delineate narrow gauge trail through restored maritime hammock.

Long-Range Parking Alternatives

- Evaluate off-site parking alternatives.
- Conceptualize and design a multi-level parking facility.
- Develop a stabilized walkway between the parking facility and the beach access.

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

Delnor-Wiggins Pass State Park is located in Collier County. Access to the park is from Interstate 75 or U.S. Highway 41 via County Road 846 (Immokalee Road/Bluebill Avenue). The Big Cypress Region map reflects significant land and water resources existing near the park.

Delnor-Wiggins Pass State Park was initially acquired on September 8, 1970, with funds from the Outdoor Recreation Development Council. Currently, the park comprises 199.78 acres. The Board of Trustees of the Internal Trust Fund (Trustees) hold fee simple title to the park, and on January 27, 1971, the Trustees leased (Lease No. 2514) the property to the Department of Environmental Protection's (DEP) Division of Recreation and Parks (DRP) under a 99-year lease. The current lease will expire on January 26, 2070.

Delnor-Wiggins Pass 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 Delnor-Wiggins Pass State Park is to provide public beach access and related resource-based recreation. The park's natural communities are also home to coastal wildlife and impart environmental resilience to the stretch of coastline in vicinity of the Cocohatchee River.

Park Significance

- The park serves as a vital public gateway to the beaches of the greater Naples region in southwest Florida, drawing visitors with its exceptional opportunities for swimming, fishing, beachcombing, snorkeling, paddling and picnicking.

- The park's beach dune, maritime hammock and mangrove swamp natural communities are important natural resources, and in conjunction with the Barefoot Beach Preserve, a county-managed area just north of the park, provide habitat for a wide variety of coastal plants and animals.

- The park stretches across a mile of relatively undisturbed barrier peninsula, one of a few such protected Gulf sites in this region.

- The park preserves significant regional history. The written record of this area begins in the late 1800s with Joe Wiggins, the namesake of the pass. Wiggins, the first homesteader, ran an apiary and trading post where he traded goods with Seminole Indians and settlers.

Central Park Theme

Where the Cocohatchee River empties into Wiggins Pass, Delnor-Wiggins Pass State Park stretches across a mile of relatively undeveloped white sand beach and coastal habitats, providing one of the few protected sanctuaries for wildlife and seashore activities in the region.

Internal Classification

Delnor-Wiggins Pass State Park is classified as a State Recreation Area in the DRP unit classification system. 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, safe and resilient 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. Surface waters in this park are also classified as Class II waters (shellfish propagation and harvesting area) and Class III waters (suitable for fish consumption and recreation) by DEP. The park is not adjacent to an aquatic preserve.

PARK ACCOMPLISHMENTS

- Completed native dune plant restoration through diversity planting over the full length of beach.
- Restored approximately 1.5 acres of impervious surface resulting in transition to a natural ecosystem.
- Provides essential habitat and protection for approximately 60 sea turtle nests a year.
- Reduced sea turtle nest depredation to zero over the past five years through garbage reduction and removal of grills/picnic tables.
- Established year-round bird resting-nesting areas.
- Established Florida Department of Agriculture and Consumer Services (FDACS) certification of park mobile nursery.
- Consistently meets annual invasive plant treatment goals and all management zones are in maintenance condition.
- Contracted with the U.S. Department of Agriculture (USDA) for nuisance animal control in 2019.
- Coordinated with the USDA Animal and Plant Health Inspection Service and park district Biologists to train staff in nuisance animal control.
- Coordinated with the citizen support organization to acquire essential management equipment.
- Developed pop-up programming and roving interpretation with a focus on natural resource protection.
- Alleviated historical traffic control issues outside the park and at the park entrance through collaboration with local police and fire departments and removal of grills/picnic tables throughout the park, all while increasing park visitation.
- Added AmeriCorps Project ROAR member to the park.
- Collaborated with Collier Area Transit to offer Collier County residents and visitors the opportunity to access Delnor-Wiggins Pass State Park via shuttle.

RESOURCE MANAGEMENT COMPONENT

Delnor-Wiggins Pass State Park Management Zones		
Management Zone	**Acreage**	**Managed with Prescribed Fire**
DWP-01	4.91	No
DWP-02	5.39	No
DWP-03	5.86	No
DWP-04	9.14	No
DWP-05	7.83	No
DWP-06	26.57	No
DWP-07	24.2	No
DWP-08	16.26	No
DWP-09	70.56	No
DWP-10	29	No

TOPOGRAPHY

Delnor-Wiggins Pass State Park is located in the Everglades Geomorphological District, specifically the Big Cypress Province. On the Gulf side of the park, beach sands slope up to a low dune a few feet above mean sea level. The typical barrier island topography at this park consists of raised sand dunes on the Gulf side of the island, sloping eastward into the mangrove swamp. Barrier island dunes along the southwest coast are lower than those on the east coast (Myers and Ewell 1990). Upland elevations are only slightly above mean sea level. Alterations in topography have been caused by dredging activity in the mangroves prior to becoming a state park. The spoil from the dredging was deposited in the form of a berm along the eastern edge of the park. However, most of this spoil has been removed during several mitigation projects. The park's Gulf fronting beaches have fluctuated over the years in width and slope due to seasonal and storm induced erosion, inlet effects, and sand placement and erosion from dredging events. The beaches of Delnor-Wiggins Pass State Park are considered critically eroded by DEP (2025).

SOILS

The Soil Survey of Collier County Area, Florida (U.S. Geological Survey 1990) describes three soil types within Delnor-Wiggins Pass State Park: Canaveral fine sand, Wulfert muck and Urban land-aquents. Porous soil formations consisting mainly of Canaveral fine sand and shell characterize the Gulf side of the island while Wulfert muck soils have formed on the east as a substrate for the mangrove swamp. The third type is associated with two developed sites in the park. Complete soil descriptions are maintained in the Southwest District Soils Descriptions appendix. Management measures will continue to follow generally accepted best management practices to prevent soil erosion and conserve soil and water resources on-site.

HYDROLOGY

The park lies within the Big Cypress Swamp watershed basin. Wiggins Pass to the north of the park is the natural outlet for the Cocohatchee River. The Wiggins Pass Estuarine Area and the Cocohatchee River System were designated an Outstanding Florida Water effective July 16, 1996. Surface waters in one

DWP-06
DWP-05
DWP-09
DWP-04
DWP-10
DWP-03
DWP-08
DWP-02
DWP-07
DWP-01

Park Boundary
Management Zones

DELNOR-WIGGINS PASS STATE PARK
Management Zones

N

0 500 Feet 1,000

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Soils

- 35 - St. Augustine, organic substratum-urban land complex, 0 to 2 percent slopes
- 40 - Durbin and wulfert mucks, tidal complex, 0 to 1 percent slopes
- 42 - Canaveral-beaches complex
- 99 - Water

DELNOR-WIGGINS PASS STATE PARK
Soils

N

0 500 Feet 1,000

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unnamed water body located in management zone DWP-09 along Turkey Bay as well as the mangrove swamp and estuarine tidal communities along the east side of the island are designated as Class II Waters by DEP and generally maintain salinities indistinguishable from the Wiggins Pass Estuarine Area.

Hydrological Alterations

Wiggins Pass has been dredged frequently over the years to allow for improved recreational boater access to the Gulf. Extensive dredging of the channel along the mangrove swamp on the east side of the park in the 1950s and 1960s altered the surrounding estuary's hydrology. The placement of spoil berms along the channel disturbed natural hydrological circulation throughout portions of the mangrove forest community. However, most of this damage has since been repaired.

Coastal Erosion/Sedimentation

Frequent dredging activities in Wiggins Pass have resulted in a net loss of shoreline along the north end of the park due to erosion. The shoreline between R16.8 – R17.3 at the north end of Delnor-Wiggins Pass State Park is considered critically eroded (DEP 2023). Despite sand from mechanical dredging adjacent to Wiggins Pass being placed in nearshore locations to the south within the state park, the beach width adjacent to the northernmost parking lot situated between R17 and R18 has eroded between 50–100 feet since 2015 with the bulk of erosion occurring at the north end of the parking lot. Hurricane Ian in 2022 caused substantial erosion along the park's shoreline, with the effects most visible along the northernmost parking lot where approximately 25–50 feet of shoreline width was lost. Additional erosion and loss of shoreline occurred after hurricanes Helene and Milton in 2024. Bi-annual shoreline surveys have been completed by park district staff to document changes to the shoreline over time. In addition, consultants associated with the maintenance dredging in Wiggins Pass have completed shoreline surveys prior to and following mechanical dredge events to monitor shoreline changes at the state park and Barefoot Beach Preserve operated by Collier County on the north side of Wiggins Pass. The consultants have created a proposed design template that includes alternate dredge site locations along the pass, which would benefit Wiggins Pass navigation needs while reducing the downdrift impacts experienced at the park.

Erosion following tropical cyclone events at the park are common due to the narrow beach and dune line. Dune restoration activities involving the planting of 189,000 sea oats at the park occurred in 2006 following shoreline erosion impacts from Hurricane Charley in 2004 and Hurricane Ivan in 2005. Similar events will be necessary in the future following shoreline erosion and sediment movement that occurred because of Hurricane Ian in 2022, and hurricanes Helene and Milton in 2024.

Monitoring and Assessment

Objective: Assess the park's hydrological restoration needs.

Action:

- Continue to cooperate with other state and federal agencies and independent researchers in hydrological research and monitoring programs.

DRP will rely upon agencies such as South Florida Water Management District, U.S. Geological Survey (USGS), Collier County and DEP to keep it apprised of any declines in surface water quality or any

additional suspected contamination of groundwater on the island. DRP will continue to closely cooperate with 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.

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.

DRP will continue to coordinate with U.S. Army Corps of Engineers (USACE), Collier County, DEP and other stakeholders regarding monitoring and assessment of beach erosion at the park.

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 the DRP mission.

Action:

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

DRP will continue to coordinate with USACE, U.S. Fish and Wildlife Service (USFWS), Florida Fish and Wildlife Conservation Commission (FWC), Collier County, DEP and other stakeholders regarding the design and planning phases of any proposed maintenance dredge activities adjacent to the park and sand placement permits within the park in order to maintain a high-quality beach system. DRP will continue to conduct required imperiled species monitoring associated with onshore sand placement activities. DRP will continue to coordinate with U.S. Coast Guard regarding navigational buoys installed along the shoreline.

NATURAL COMMUNITIES

Delnor-Wiggins Pass State Park contains six distinct natural communities and two altered landcover types (see Natural Communities Map). A list of known plants and animals occurring in the park is contained in the Southwest District Species Matrix appendix.

Beach Dune

Beach dunes at Delnor-Wiggins Pass State Park are wind or wave deposited ridges of unconsolidated sediments along high energy shorelines. The beach dune community at the state park is defined by the characteristic sea oats (*Uniola paniculata*) and railroad vine (*Ipomea pes-caprae* spp. *brasiliensis*). Other dune forming species present at the park include coastal sea rocket (*Cakile lanceolata*), seacoast marshelder (*Iva imbricata*), seashore dropseed (*Sporobolus virginicus*), shoreline seapurslane (*Sesuvium portulacastrum*) and bitter panicgrass (*Panicum amarum*). Imperiled plants such as the west coast dune

MAH
CS
RNC
EUS
MS
MUS
BD
DV

Natural Communities (in Acres)

- BD - Beach Dune 6.07
- CS - Coastal Strand 6.21
- DV - Developed 10.55
- EUS - Estuarine Unconsolidated Substrate 21.3
- MAH - Maritime Hammock 1.9
- MS - Mangrove Swamp 97.42
- MUS - Marine Unconsolidated Substrate 53.54
- RNC - Restoration Natural Community 1.69

DELNOR-WIGGINS PASS STATE PARK
Natural Communities - Existing Conditions

N

0 500 Feet 1,000

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sunflower (*Helianthus debilis* subsp. *vestitus*) and state-threatened inkberry (*Scaevola plumieri*) are common throughout. Imperiled animal species that utilize the beach dune community at the park include federally threatened loggerhead sea turtles (*Caretta caretta*), which nest within the beach dune community each year between May and October, and state-threatened gopher tortoises (*Gopherus polyphemus*). Historically, the beach dune community at the north end of the island was used for nesting by state-threatened least terns (*Sternula antillarum*).

Areas of beach dune community at Delnor-Wiggins Pass State Park are in fair condition. The beach dune community has been negatively impacted by named tropical storms over the years. In 2006, over 189,000 sea oats were planted along the full length of the park within the beach dune community as part of a post-Hurricane Charley and post-Hurricane Ivan dune restoration project. During Hurricane Ian in 2022, the park received approximately 8–10 feet of sustained storm surge for several hours. The dune was fully destroyed with vegetation buried or ripped away as the storm surge tore through the park. Sand from the beach and dune system accumulated landward within the maritime hammock and along the roads and parking lots. Large invasive Australian pine trees (*Casuarina equisetifolia*) within the dune system toppled from the storm surge undercutting the roots and destabilizing the trees.

The dunes were slowly recovering post-Hurricane Ian with pioneer dune species such as railroad vine being among the first to emerge followed by sea oats, west coast dune sunflower and bitter panicgrass throughout the park. Inkberry was found throughout the former dune system as well as many invasive plant seedlings. Unfortunately, hurricanes Helene and Milton in 2024 caused additional damage to the dune system and resulted in the further burial of dune vegetation at the park and the toppling of additional trees. Post hurricane dune restoration activities are ongoing at the park and include vegetation planting to restore the width of the former dune line.

Management of beach dune at Delnor-Wiggins Pass State Park largely focuses on rare plant surveys, invasive plant surveys and treatment efforts, and dune restoration. Invasive plants in the beach dune community are currently minimal and of small enough size and scale to be uprooted by hand without chemical application. As saplings are observed, park staff should make every effort to hand pull beach naupaka (*Scaevola taccada*), Brazilian pepper (*Schinus terebinthfolia*) and Australian pine saplings while small. These seeds are all present throughout the developing dune system in part due to the seed bank present pre-Hurricane Ian or seeds that washed in with the storm surge. DRP staff will continue periodic surveys for rare plants and invasive plant infestations to catch new infestations early.

Additional dune restoration and/or revegetation will be necessary following erosion and sedimentation from hurricanes Helene and Milton, and potential future events. 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 park visitors of the need to stay off the beach dunes; however, additional temporary post and rope barriers should be considered in areas where dune vegetation is recovering from significant disturbances or where new plantings have been installed.

<u>Coastal Strand</u>

The coastal strand community at Delnor-Wiggins Pass State Park consists of an open hardwood canopy located directly behind the beach dune community along the west and north Wiggins Pass facing sides

of the park. 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 typically found within the coastal strand community at Delnor-Wiggins Pass State Park include seagrape, cabbage palm *(Sabal palmetto)*, coco plum (*Chrysobalanus icaco*), snowberry (*Chiococca alba*) and coinvine (*Dalbergia ecastaphyllum*). 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 Delnor-Wiggins Pass State Park is currently considered pyric due to its vegetative assemblage which is dominated by seagrape.

The coastal strand community at Delnor-Wiggins Pass State Park is currently in poor condition. Most of the coastal strand community had, until recently, succeeded to a closed canopy community consisting of tropical hardwoods resembling the structure and function of a maritime hammock. The strong sustained 8- to 10-foot storm surge from Hurricane Ian cleared and reset a large portion of the maritime hammock at the park into what is now considered coastal strand. Additional damage to the coastal strand community occurred following storm surge associated with hurricanes Helene and Milton in 2024. Species present in the coastal strand overstory include cabbage palm, sea grape, gumbo limbo, buttonwood (*Conocarpus erectus*) and Jamaican dogwood (*Piscidia piscipula*) with an understory of emerging dune species grasses such as sea oats, bitter panic grass and railroad vine. Other species growing in more shaded areas include St. Augustine grass (*Stenotaphrum secundatum*), seaside heliotrope (*Heliotropum curassavicum*), mangrove spiderlily (*Hymenocallis latifolia*) and bushy seaside oxeye (*Borrichia frutescens*).

Management of coastal strand at Delnor-Wiggins Pass State Park largely focuses on rare plant surveys, and invasive plant surveys and treatment efforts. Many of the invasive plants in the coastal strand community are currently minimal and small enough to be uprooted by hand without chemical application. These include beach naupaka, portia tree (*Thespesia populanea*), carrotwood (*Cupaniopsis anacardioides*) and Australian pine saplings, all of which are present throughout the developing dune system in part due to the seed bank present pre-Hurricane Ian or seeds that washed in with the storm surge. Along the north side of the park, latherleaf (*Colubrina asiatica*) has taken hold post-Hurricane Ian and is rapidly spreading throughout the strand. DRP staff will continue periodic surveys for rare plants and invasive plant infestations to catch new infestations early.

Maritime Hammock

Maritime hammock was a dominant plant community at Delnor-Wiggins Pass State Park prior to Hurricane Ian and currently occurs in patchy sections throughout the park. It is defined by the Florida Natural Areas Inventory (FNAI) (2010) as being a predominantly evergreen hardwood forest growing on stabilized coastal dunes lying at various distances from the shore. While Delnor-Wiggins Pass State Park lacks the live oak (*Quercus virginica*) commonly found in maritime hammocks throughout the state, other tropical hardwood species such as gumbo limbo (*Bursera simaruba*), Jamaican dogwood and strangler fig (*Ficus aurea*) merge with cabbage palm to form a closed canopy behind the narrow beach dune. Imperiled species found within this community include state-threatened gopher tortoises, state-threatened triangle cactus and shell mound prickly pear.

Much of the park's original hammock was displaced by invasive plant species such as Australian pine and Brazilian pepper. Areas occupied by non-native vegetation were in turn cleared during the construction of park facilities, which included entrance road and parking, bathhouses, boardwalks and picnic areas. Extensive restoration has taken place in park use areas to treat invasive vegetation and plant native vegetation to restore the maritime hammock.

The maritime hammock at Delnor-Wiggins Pass State Park is currently in poor condition. The sustained eight feet to 10-foot storm surge during Hurricane Ian in 2022 pushed sand from the beach back through the beach dune and maritime hammock communities burying existing vegetation while the storm surge ripped through the understory, removing vegetation, undercutting trees and toppling others. Structures built within the maritime hammock were torn apart with debris strewn across roadways, parking lots and within the mangrove swamp on the east side of the main drive. Additional damage to the maritime hammock occurred following storm surge from hurricanes Helene and Milton in 2024. What once was a mostly closed canopy system at the park has now shifted mostly to an open-canopy coastal strand with remaining maritime hammock found in small pockets along the east side of the park.

Management of maritime hammock at Delnor-Wiggins Pass State Park largely focuses on rare plant surveys and invasive plant surveys and treatment efforts. Invasive plants in the maritime hammock community are currently minimal and small enough to be uprooted by hand without chemical application. This includes beach naupaka, Brazilian pepper and Australian pine saplings, all of which are present throughout the developing hammock in part due to the seed bank present pre-Hurricane Ian or seeds that washed in with the storm surge. DRP staff will continue periodic surveys for rare plants and invasive plant infestations to catch new infestations early.

Mangrove Swamp

The mangrove swamp community at Delnor-Wiggins Pass State Park is the largest natural community encompassing more than half of the park. Dominant overstory includes red mangrove (*Rhizophora mangle*), black mangrove (*Avicennia germinans*), white mangrove (*Laguncularia racemosa*) and buttonwood in differentiated, monospecific zones based on degrees of tidal influence, salinity levels and type of substrate. Soils found in mangrove swamps 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 Delnor-Wiggins Pass 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, gray nicker, coinvine and herbaceous species such as saltwort, perennial glasswort (*Sarcocornia perennis*) and giant leather fern (*Acrostichum danaeifolium*). Imperiled plant species present in the mangrove swamp at Delnor-Wiggins Pass State Park include state-threatened golden leather fern (*Acrostichum aureum*). 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.

The mangrove swamp community at Delnor-Wiggins Pass State Park is in good condition despite some dieback following the storm surge from Hurricane Ian in 2022, and hurricanes Helene and Milton in 2024. Historical channel dredging activities led to the creation of a spoil berm along the navigation channel and Turkey Bay, disrupting the tidal flow into the mangrove swamp community. The berms have been largely eliminated with the aid of restoration projects. Sedimentation along the east side of the

mangrove swamp due to Hurricane Ian-related storm surge resulted in the dieback of mangroves in patchy locations. 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). Natural recruits of red and black mangroves were observed in defoliated areas prior to hurricanes Helene and Milton, and continued recruitment in defoliated areas in the future is expected.

Management of the mangrove swamp community at Delnor-Wiggins Pass State Park largely focuses on invasive plant survey and treatment efforts. DRP staff will continue periodic surveys for rare plants and invasive plant infestations to catch new infestations early.

Estuarine Unconsolidated Substrate

Estuarine unconsolidated substrate at Delnor-Wiggins Pass State Park encompasses unvegetated, mineral-based estuarine communities that typically fall in subtidal and intertidal locations along the east side of the islands. On the east side of the park, this includes portions of the south channel leading from the Cocohatchee River and Little Turkey Bay, which are exposed at low tide. In most areas of the park, the estuarine unconsolidated substrate encompasses mud flats and tidal creeks within the larger mangrove swamp communities. These areas provide habitat for fiddler crabs, marsh crabs and other crustaceans and mollusks. At low tides, the exposed tidal mud flats provide a feeding ground for wading bird species. Management of these areas largely focuses on protection from outside impacts.

Marine Unconsolidated Substrate

Marine unconsolidated substrate at Delnor-Wiggins Pass State Park consists of expansive unvegetated areas of sand beaches along the western and northern shoreline fronting Wiggins Pass. At the northern end of the park, the beach topography evolves due to the hydrodynamics of Wiggins Pass. Tidal and storm forces constantly reconfigure the shoreline in this vicinity, sometimes extending as a spit to the north and west.

The marine unconsolidated substrate community provides important resting and foraging habitat for various species of raptors, terns, gulls, and shorebirds. Most of these species use the beaches as resting and feeding areas, and many do not tolerate disturbance. The beaches at Delnor-Wiggins Pass State Park provide nesting habitat for imperiled sea turtles, primarily the loggerhead sea turtle. During the 2021 nesting season, Delnor-Wiggins Pass State Park received its first documented federally threatened green (*Chelonia mydas*) sea turtle nest. 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 kill events typically associated with harmful algal blooms.

The marine unconsolidated substrate at Delnor-Wiggins Pass State Park is in fair condition. Natural beach erosion and accretion occurs constantly within this community, particularly at the north end of the island adjacent to Wiggins Pass following reoccurring maintenance dredge events in Wiggins Pass. The acreage and shape of the substrate changes daily based on the speed and location of the longshore current. Erosion that resulted from hurricanes Ian, Helene and Milton has decreased the amount of shoreline available for imperiled species nesting and visitor recreational opportunities. Routine beach

renourishment activities along the beach will be necessary to sustain the marine unconsolidated substrate at the park in association with dredging of the adjacent pass. In locations at the north end of the park, sand placement is necessary as a direct result of erosion occurring from the dredge itself.

Management of marine unconsolidated substrate at Delnor-Wiggins Pass State Park largely focuses on minimizing habitat disturbances and imperiled species monitoring efforts. Beach nourishment is necessary on the island to address erosion from mechanical dredge events that occur in Wiggins Pass as well as natural erosion due to storm events. Hardened structures should not be considered along Wiggins Pass as the shoreline fronting the pass provides a natural recreational area for park visitors and important beach habitat for imperiled species. Beach raking should not be conducted at the park to preserve the wrack line and minimize impacts to nesting shorebirds and sea turtles. Natural resource protection should be balanced with recreational use by posting marine turtle nests in accordance with FWC permits and guidelines, increasing signage prohibiting pets on the beach and posting temporary shorebird nesting and protection areas as needed. Driving on this natural community should be limited to necessary management activities and in accordance with FWC best management practices to avoid conflicts with beach nesting species.

Altered Land Cover Types

Developed

The developed areas at Delnor-Wiggins Pass State Park consist of natural communities such as maritime hammock and mangrove swamp that have been replaced by structures or permanently cleared areas. Developed areas at Delnor-Wiggins Pass State Park include four beach parking lots, two staff residences, roadways, a boat ramp and parking lot and a cleared paved area with employee parking where the maintenance compound once stood. Imperiled species adjacent to and frequently found within developed areas at the park include state-threatened gopher tortoises, state-threatened triangle cactus and state-threatened shell mound prickly pear. Four individual parking lots extend along the beach side of the island, each flanked by maritime hammock or coastal strand along the north and south sides, and beach dune or coastal strand along the western edge of the parking lot. Each lot contains a stormwater swale on the east side of the parking lot between the parking lot and main park drive.

Developed areas of the park were significantly damaged during the 8- to 10-foot storm surge associated with Hurricane Ian in 2022. Each parking lot along the west side of the island had a separate bathhouse facility, with a bathhouse/pavilion structure northwest of the northernmost lot. All infrastructure aside from the park residences was damaged beyond repair due to the storm surge from Hurricane Ian, which tore through the walls of the bathhouses along the beach. After the storm, portions of the bathhouses including walls, roofs and floors, were scattered throughout the mangrove swamp across the street with toilets deposited in the middle of the main drive by the storm surge.

Management of developed areas at Delnor-Wiggins Pass State Park 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. 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 park district staff prior to installation on site.

Canal/Ditch (within Developed Areas)

There are four stormwater swales at Delnor-Wiggins Pass State Park within each of the four developed beachside parking areas that help to direct stormwater accumulating on the parking lot surface into the adjacent mangrove swamp through culverts connected under the roadways. Prior to Hurricane Ian in 2022, the swales were filled with tall hardwood species such as cabbage palm, Jamaican dogwood, strangler fig, sea grape and buttonwood, and tall brush species such as coco plum, wild lime (*Zantoxylum fagara*) and seven-year apple (*Casasia clusifolia*). These hardwood species had established in the swales through previous planting efforts at the park. Unfortunately, the deep root system prevented stormwater from draining efficiently through the culverts causing water to pond in the parking lot and roadway areas.

Post-Hurricane Ian, several feet of sand had accrued in the swales throughout the park. Most of the trees and vegetation within the swales showed signs of damage or had been toppled by the storm surge. Repair work for the swales included recontouring to ensure proper drainage while salvaging as many healthy remaining hardwoods as possible. The swales were lined with biodegradable jute coconut fiber matting to hold the sediment in place and replanted with native grasses such as sand cordgrass (*Spartina bakerii*), bitter panicgrass, beach creeper (*Ernodea littoralis*), marshhay cordgrass (Spartina patens), saltgrass (*Distichlis spicata*) and seashore dropseed (*Sporobolus virginicus*) to allow for efficient drainage. Unfortunately, storm surge from hurricanes Helene and Milton in 2024 filled all the newly planted swales with up to 6 feet of sand toppling the few remaining hardwood trees that had been salvaged from Hurricane Ian. The swales have had all the displaced sand removed and have been recontoured to allow for proper drainage function; however, the sediment has not yet been dislodged from the culverts to allow for proper drainage into the mangroves.

Management of the stormwater swales at Delnor-Wiggins Pass State Park largely focuses on invasive plant surveys and treatment efforts. Sediment accrual within the culverts has occurred following tropical storm events and will continue to occur overtime due to the location adjacent to a mangrove swamp. Drains within the swales do not currently function due to being below grade on the outflow side, which is still buried in several feet of sand. In addition, seasonal high tides currently result in tidal water backing up into the drain. The culverts will need to be cleared annually to ensure maximum efficiency. Torpedo grass (*Panicum repens*), a known Florida Invasive Species Council (FISC) category I species that is difficult to treat due to its spread through deep rhizomes, has been observed in the swales post-hurricane Ian. Targeted and planned treatment efforts should continue before this species spreads to other areas of the park. DRP staff will continue periodic surveys for invasive plant infestations in the stormwater swales to catch new infestations early.

Restoration Natural Community

The restoration natural community at the park includes the northernmost parking lot (parking lot five) and the roadway leading to the parking area. Prior to Hurricane Ian in 2022, the northernmost parking

area was flanked on the west side by a dense, mature canopy of trees that included cabbage palm, sea grape, Jamaican dogwood, gumbo limbo, strangler fig and some invasive tree species such as Australian pine. The beach was completely obscured from the parking area except at beach access points. The stormwater swale on the east side of the parking lot included many of the same species, in addition to coco plum (*Chrysobalanus icaco*) shrubs approximately 15 feet tall, creating a dense wall of vegetation that visually and physically separated the parking lot from the outgoing road to the east. Loss of shoreline over the years in combination with damage sustained during hurricanes Ian, Helene and Milton has resulted in consistent flooding of the roadway and parking area during high tide events. Additionally, this area received several feet of storm surge and sand displaced from the adjacent beaches during each hurricane event, resulting in the loss of vegetation including large canopy species, and the need for repeat repairs to the pervious asphalt surface and swale drainage system with culverts.

Following the hurricanes in 2024, clean-up activities included relocating displaced sand to the beach and removing all asphalt, road base and culverts from the former parking lot area and roadway to allow natural regrowth of the area, which over time would succeed from its current beach dune vegetative state to maritime hammock. Vegetation currently emerging throughout the restoration area includes pioneer dune species such as bitter panicgrass, railroad vine, west coast dune sunflower and invasive species such as Durban crowfoot grass (*Dactloctenium aegyptium*). Additional revegetation with native plant species for both canopy and understory restoration should be considered for this area to both stabilize the sediment surface and restore the hardwood hammock. Species that could be considered for planting include cabbage palm, sea grape, gumbo limbo and Jamaican dogwood for canopy restoration, and shrubs like wax myrtle (*Morella cerifera*), Florida privet (*Forestiera segregata*), coco plum and white indigoberry (*Randia aculeata*). Additional species to be considered include seven year apple (*Casasia clusifolia*) and wild lime (*Zanthoxylum fagara*), which were observed in these areas prior to Hurricane Ian in 2022. The former parking lot and roadway areas will need to be monitored consistently for invasive plants due to the disturbance that has occurred.

Objective: Conduct natural community/habitat improvement and restoration activities on a combined 25 acres of beach dune and coastal strand following the impacts of major storm events.

Actions:

- Survey, remove and monitor FISC category I and II invasive plant species.
- Revegetate former northernmost parking area and roadway.
- Designate trail access to prevent trampling.
- Naturalize former parking areas as steps in the process to consolidate visitor parking.

Prior to revegetation, the area should be surveyed and treated for invasive plant infestations. Continued monitoring of the area is necessary to prevent re-infestations.

Revegetation with native plant species in the former northernmost parking area and adjacent roadway is necessary to stabilize and restore the canopy habitat with the goal of reestablishing maritime hammock. Restoration activities within the restored natural communities would include designation of trail access through the area to prevent trampling on emerging or planted vegetation.

Eventual consolidation of visitor parking and associated beach access is a long-term planning concept introduced in the Land Use Component of this park chapter. The merits of this concept include significant resilience improvements to both the visitor infrastructure and the park's natural areas. If the

current parking areas, located immediately adjacent to the Gulf beach, are replaced with a consolidated facility at a more protected location, this would provide an opportunity to restore up to 12 combined acres of coastal strand/maritime hammock and beach dune. Naturalization/restoration of these developed sites allows for a natural process management approach whereby sands that accumulate within the beach dune, coastal strand and evolving maritime hammock, via storm surge or gradual aeolian deposition, can remain in place. Fewer beach access points also reduces potential weak points within the recovering dune series for storm surge to penetrate and cause "blow outs." Essentially, there is no more effective coastal armor than intact, ecologically functioning beach dune, coastal strand and eventual maritime hammock natural communities.

IMPERILED SPECIES

Delnor-Wiggins Pass State Park has a rich diversity of plant and animal life, including a variety of imperiled species that utilize the park for breeding, nesting, resting, and feeding grounds. 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 nine imperiled plant species and 25 imperiled animal species that have been documented at Delnor-Wiggins Pass State Park.

The most common species encountered includes the federally threatened loggerhead sea turtle, which nests in relatively low numbers at the park. The highest nesting year to date was 2025 in which the park received 65 loggerhead sea turtle nests. During the 2021 nesting season, Delnor-Wiggins Pass State Park received its first federally protected green sea turtle nest. Rare sea turtles such as the Kemp's ridley (*Lepidochelys kempii*) and leatherback (*Dermochelys coriacea*) have also been observed within park boundaries and have washed ashore during sea turtle stranding events.

Delnor-Wiggins Pass State Park participates in the FWC Florida Index Nesting Beach Survey and provides daily logs of nesting activity to the Fish and Wildlife Research Institute (FWRI) from May 1 through August 31. The park is one of 36 beaches in Florida to participate in this program, which was developed in 1989 with the purpose of measuring trends through standardized data collection efforts. The park also provides a yearly nesting summary to FWRI for the FWC Statewide Nesting Beach Survey program which includes daily nesting surveys completed from April 15 to September 30.

All marine turtle activities conducted by the state park are regulated under a 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 hatch with information about tidal inundation, erosion or depredation recorded. Depredation by nuisance animals such as raccoons (*Procyon lotor*) has previously been a significant issue for nesting sea turtles on these islands. Protective screening or caging of nests involves placing a 4x4-foot self-releasing screen or cage over the egg chamber to deter depredation in accordance with the Marine Turtle Conservation Handbook (2016). Screens or cages are secured in place with four tent stakes and buried 2 to 3 inches below the sand surface. Additional nuisance animal removal activities have previously been contracted for the protection of incubating sea turtle nests when depredation levels are high. Nests are excavated three days after hatching occurs or 70 days from the date when eggs are first deposited.

Prior to Hurricane Ian in 2022, no structural lighting existed in the bathhouses and pavilion structure along the Gulf beach at Delnor-Wiggins Pass State Park. Plans for reconstruction of restrooms 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 Collier County.

Nesting seabirds and shorebirds are also monitored at Delnor-Wiggins Pass State Park in accordance with FWC 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). Delnor-Wiggins Pass State Park also participates in FWC's winter shorebird survey beginning the first Friday of February through the following Thursday annually. The goal of the winter survey is to better understand the winter distribution of shorebirds and seabirds in Florida and to help identify key wintering sites for state and federally listed species including piping plover (*Charadius melodus*) and red knot (*Caladris canutus rufa*). The park has participated in the International Piping Plover census coordinated by USGS every five years with the last census completed in 2016; the 2021 survey was canceled by USFWS.

State-threatened least terns were historically documented to nest along the north end of the island, with the last nest sites documented in 1987. Exclusion of humans and their pets from least tern colonies during the pre-nesting and nesting season is essential for successful nesting. Least terns have been spotted foraging and resting along the beach at the park as recently as 2024. Pre-posting areas along the north end of the park will assist in diverting foot traffic around the area and allowing the terns space to nest. When important resting and feeding areas are identified at these parks, proper signage and protection will be erected. There are continued concerns about erosion related habitat disturbance/loss due to maintenance mechanical dredge efforts within Wiggins Pass to improve navigation.

Nuisance sea turtle and shorebird predators at Delnor-Wiggins Pass State Park include raccoons, which can destroy multiple sea turtle nests in one night and have previously negatively impacted the overall hatching success at the park. The sea turtle nest depredations rates began climbing to approximately 60 percent of nests in 2017 and again in 2018 to approximately 70 percent of nests. To combat depredation of sea turtle eggs, park staff and volunteers place an FWC-approved self-releasing metal screen over the clutch of eggs to prevent the predators from reaching the egg clutch. Unfortunately, many of the nests are depredated overnight, before the surveyors arrive in the morning and have a chance to place the screen on it. In 2019, ahead of the nesting season, beach-specific predator control efforts were completed by USDA resulting in an overall decrease in nest depredations at the park with only one nest that season depredated by a mammalian predator.

Gopher tortoises have had a difficult history at the park with the population fading out in the early 1980s due to intensive land use activities. A few individuals were reintroduced prior to the establishment of relocation protocols by FWC. It was initially believed that this population might not fare well because of limited forage and heavy visitation; however, protection of the population led to gopher tortoises thriving and occupying much of the beach dune and maritime hammock community at the park. Unfortunately, gopher tortoise habitat became subject to frequent erosion following dredging in Wiggins Pass, and the number of tortoises at the park began to decline in 2019. In addition, multiple tortoises have been hit by motor vehicles prompting the park to install speed bumps and flashing signage. The gopher tortoise population at the park was significantly impacted by the storm surge from

Hurricane Ian with the population dwindling to approximately a dozen tortoises remaining after the storm.

Much of what is known about the gopher tortoise population at the park is due to focused research efforts by Phil Allman, Ph.D., who studied gopher tortoise demography, population structure and habitat use at Delnor-Wiggins Pass State Park from 2013-2022 under DRP- and FWC-issued scientific research and collecting permits. His research goals included completing a mark-recapture study to model population size, size classes and growth rate at all age classes, and utilizing radio telemetry methods to estimate activity range and habitat use across seasons. His research efforts were also focused on characterizing the biotic environment to determine how gopher tortoises of different size classes were utilizing the habitat at the park (Allman 2015). Over the course of the surveys at the park, Dr. Allman and his students from Florida Gulf Coast University had 402 tortoise encounters with 108 unique tortoises at the park. This includes 294 recaptures from 65 individual tortoises (Allman DRP research and collection permit annual report 2020). His telemetry research identified that the home ranges of tortoises at the park differed significantly between sexes with males having a much larger home range than females.

Dr. Allman's research also documented the decline in the overall population at the park with full gopher tortoise burrows completed in 2015, 2020 and 2022 ahead of Hurricane Ian. In 2015, 262 burrows were documented in the park with 97 identified as active, 47 identified as inactive and 116 identified as abandoned. A follow-up survey completed prior to Hurricane Ian documented 162 burrows with 60 identified as active and 102 as inactive/abandoned. After Hurricane Ian, less than two dozen burrows (both active and inactive) were identified by park district staff with most of the burrows located adjacent to park residences and the former maintenance area. Dune restoration and revegetation activities along the shoreline will return the habitat to conditions suitable for the existing population of gopher tortoises. In addition, continued shoreline erosion monitoring and the use of alternate dredge locations may assist the park in identifying any burrows that are in immediate danger of being washed away. However, given that suitable habitat (per FWC gopher tortoise recipient site guidelines) is not available at the park, and that coastal tortoises have been found to be genetically distinct from insular populations (Winters et al. 2017), further augmentation of this population with additional tortoises should not be considered.

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). Special precautions are taken near active bald eagle nests, including buffers, to prevent disturbance. Precautions are also taken to protect osprey nests that were previously found in snags at the park.

Collier County provides important habitat for Florida manatees (*Trichechus manatus latirostris*) and smalltooth sawfish (*Pristis pectinata*) along the west coast of Florida. A manatee awareness sign has been posted at the boat dock to inform visitors of manatees in the surrounding waters. Park staff are directed to contact FWC for important manatee sightings, and for any hurt, sick or imperiled manatees seen within or adjacent to the park boundaries.

Imperiled plant species at Delnor-Wiggins Pass State Park include state-threatened triangle cactus, state-threatened golden leather fern, state-threatened common wild pine (*Tillandsia fasiculata*), state-threatened inkberry (*Scaevola plumieri*), state-threatened shellmound pricklypear and west coast dune sunflower. Shellmound pricklypear cacti statewide are under attack by an invasive non-native moth species known as the cactus moth (*Cactoblastis cactorum*), which is threatening the abundance of this

pricklypear cacti species at state parks. The female moth lays her eggs at the base or tip of a spine 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. FDACS' Division of Plant Industry has submitted a petition to USDA for permission to release a biological control agent of the moth. The park will continue to monitor the shellmound pricklypear plants for regrowth post-cactus moth destruction. Additional options for prominent or unique plants include weekly removal of egg sticks and infested pads to reduce pressure on individual plants. Egg sticks and infested pads should be frozen or heat-killed prior to disposal.

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 FNAI global and state rank are provided in the Southwest District FNAI Element Tracking Codes appendix.

Imperiled Species Inventory						
Common and Scientific Name	**Imperiled Species Status**				**Management Actions**	**Monitoring Level**
	FWC	**USFWS**	**FDACS**	**FNAI**		
PLANTS						
Triangle cactus *Acanthocereus tetragonus*			T	G5, S3	2	Tier 2
Golden leather fern *Acrostichum aureum*			T	G5, S3	2	Tier 1
Shell mound prickly pear *Opuntia stricta*			T	G4, S3S4	2	Tier 1
Florida royal palm *Roystonea regia*			E	G2G3/S2	2	Tier 1
Inkberry *Scaevola plumieri*			T	G5, S4	2	Tier 1
West Indian mahogany *Swietenia mahagoni*			T	G3G4, S3	2	Tier 1
Northern needleleaf *Tillandsia balbisiana*			T	G4G5, S3	2	Tier 1
Cardinal airplant; Common wild pine *Tillandsia fasciculata*			E	G5, S4	2	Tier 1

Imperiled Species Inventory						
Common and Scientific Name	**Imperiled Species Status**				**Management Actions**	**Monitoring Level**
	FWC	**USFWS**	**FDACS**	**FNAI**		
Giant airplant *Tillandsia utriculata*			E	G5. S3	2	Tier 1
REPTILES						
American alligator *Alligator mississippiensis*	FT(S/A)	SAT		G5, S4	13	Tier 1
Loggerhead sea turtle *Caretta caretta*	FT	T		G3, S3	8, 9, 10, 13	Tier 3
Green sea turtle *Chelonia mydas*	FT	T		G3, S2S3	8, 9, 10, 13	Tier 3
American crocodile *Crocodylus acutus*	FT	T		G2, S2	13	Tier 1
Leatherback sea turtle *Dermochelys coriacea*	FE	E		G2, S2	8, 9, 10, 13	Tier 3
Eastern indigo snake *Drymarchon couperi*	FT	T		G3, S3	13	Tier 1
Gopher tortoise *Gopherus polyphemus*	ST			G3, S3	2, 8, 10, 13	Tier 3
Kemp's ridley sea turtle *Lepidochelys kempii*	FE	E		G1, S1	8, 9, 10, 13	Tier 3
BIRDS						
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, 11, 13	Tier 3
Wilson's plover *Charadrius wilsonia*				G5, S2	8, 9, 10, 11 13	Tier 3
Little blue heron *Egretta caerulea*	ST			G5, S4	13	Tier 1
Reddish egret *Egretta rufescens*	ST			G4, S2	13	Tier 1
Tricolored heron *Egretta tricolor*	ST			G5, S4	13	Tier 1
Swallow-tailed kite *Elanoides forficatus*				G5, S2	13	Tier 1

Imperiled Species Inventory						
Common and Scientific Name	**Imperiled Species Status**				**Management Actions**	**Monitoring Level**
	FWC	**USFWS**	**FDACS**	**FNAI**		
Peregrine falcon *Falco peregrinus*	LE			G4, S2	13	Tier 1
American oystercatcher *Haematopus palliatus*	ST			G5, S3	8, 9, 10, 13	Tier 3
Wood stork *Mycteria americana*				G4, S2	13	Tier 1
Roseate spoonbill *Platalea ajaja*	ST			G5, S2	13	Tier 1
Black skimmer *Rynchops niger*	ST			G5, S3	8, 9, 10, 13	Tier 3
Least tern *Sternula antillarum*	LT			G4, S3	8, 9, 10, 11, 13	Tier 3
Sandwich tern *Thalasseus sandvicensis*				G5, S2	13	Tier 2
FISH						
Smalltooth sawfish *Pristis pectinata*	FE	E		G1G3, S1S2	13	Tier 1
MAMMALS						
Florida manatee *Trichechus manatus latirostris*	FT	T		G2, S2	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 11 selected imperiled animal species.

Actions:

- Continue to implement existing monitoring protocols for four marine turtle species, as well as piping plover, red knot, Wilson's plover, least tern, black skimmer and American oystercatcher.
- Review and revise protocols as necessary to remain consistent with FWC and USFWS standards.
- Monitor impacts on shorebird and sea turtle nesting by terrestrial nuisance species in the park.
- Complete full gopher tortoise surveys at the park annually to better understand trends in the population.

Imperiled species management at Delnor-Wiggins Pass 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 at the parks 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). Delnor-Wiggins Pass State Park is part of the Index Nesting Beach Survey program and is surveyed in accordance with the DRP 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. Park staff continue to document and submit all live or dead sea turtle stranding information to FWRI in accordance with Marine Turtle Conservation Handbook guidelines and FWRI's Sea Turtle Stranding and Salvage Network instructions. Required FWC trainings for sea turtle nesting surveys and stranding documentation are completed by the Permit Holder annually, and participating staff biannually in accordance with the conditions of the Marine Turtle Permit.

Shorebird surveys are conducted in accordance with DRP Resource Management Standard, "Shorebird and Seabird Management." 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. Over-wintering and migratory imperiled species such as the piping

plover and red knot are monitored during the Winter Shorebird Survey and the USGS International Piping Plover census conducted every five years. Park staff routinely monitor shorebird flocks for banded birds and report that information to the USFWS and international researchers working with these migratory species.

Surveys completed previously by Dr. Allman provided the park with an invaluable understanding of the impact of erosion and tropical storm surge on gopher tortoise population trends at the park. The gopher tortoise population at Delnor-Wiggins Pass State Park once declined to the point where additional tortoises were brought in to sustain the species. Annual gopher tortoise surveys should be completed at the park to determine if populations are growing or declining over time. The park should work with FWC staff to discuss the health of the population and determine if there are other options that should be considered to restore the population, including becoming an approved recipient site for tortoises in other coastal habitats that need relocation.

Flora

Objective: Continue existing monitoring protocols for three selected imperiled plant species in the park.

Action:

- Continue to implement existing monitoring protocols for three rare plant species at the park including shellmound pricklypear, triangle cactus and inkberry.

Cactus populations at the park have been severely impacted by storm surge and parasitic moths and require additional monitoring to ensure survival. Park staff should develop a protocol to monitor the triangle cactus and shellmound pricklypear cacti at the park during routine marine turtle surveys and along the roadway as needed.

INVASIVE SPECIES

Delnor-Wiggins Pass State Park has minimal invasive plant coverage but an extensive invasive plant seed bank within the beach dune and coastal strand communities. Large Australian pine trees once stood in multiple locations along the beach creating an extensive seed bank that will need to be continuously monitored for years to come. Many of the pine trees at the north end of the island were previously undercut by significant shoreline erosion with several felled to prevent toppling and potential damage to park resources. The remaining Australian pine trees at the park were damaged or toppled by the strong storm surge during Hurricane Ian.

Other species prevalent at the park and that have spread after the devastating effects of Hurricane Ian include Brazilian pepper, latherleaf, beach naupaka, carrotwood, Portia tree and Durban crowfoot grass (*Dactyloctenium aegyptium*). Torpedo grass was also found within the stormwater swales at the park. Continuous treatment will be necessary to prevent spreading to other areas of the park.

Invasive Plant Species			
Species Name ***Scientific Name* - Common Name**	**FISC Category**	**Distribution**	**Zone ID**
Australian pine *Casurina equisetifolia*	I	Single Plant or Clumps	DWP-03, DWP-04, DWP-05, DWP-06, DWP-09
Latherleaf *Colubrina asiatica*	I	Scattered Plants or Clumps	DWP-06
Carrotwood *Cupaniopsis anacardioides*	I	Single Plant or Clumps	DWP-04, DWP-05, DWP-06, DWP-07, DWP-08, DWP-09
Torpedo grass *Panicum repens*	I	Single Plant or Clumps	DWP-01, DWP-03, DWP-05, DWP-07, DWP-08
		Scattered Dense Patches	DWP-04, DWP-06
Beach naupaka *Scaevola taccada*	I	Single Plant or Clumps	DWP-01, DWP-02, DWP-03, DWP-04, DWP-05, DWP-06, DWP-07, DWP-09
Brazilian pepper *Schinus terebinthifolius*	I	Scattered Plants or Clumps	DWP-06, DWP-07, DWP-08
Portia tree *Thespesia populnea*	I	Single Plant or Clumps	DWP-06, DWP-09

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.
- Regularly 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 75.7 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 the Natural Resource Tracking System (NRTS).

Objective: Reduce (or maintain) cover class on 95 acres not in maintenance.

Actions:

- Survey and treat 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 in NRTS.

Invasive and Nuisance Animal Control

Objective: Implement control measures on one non-indigenous/nuisance animal to protect native species and habitats.

Action:

- Remove invasive or nuisance animals as needed.

Removal of nuisance species such as raccoons should be considered if sea turtle depredation rates exceed 10 percent of nests on the beach during a nesting season.

CULTURAL RESOURCES

Prehistoric and Historic Archaeological Sites

The Florida Master Site File (FMSF), maintained by the Florida Department of State's Division of Historical Resources (DHR), reveals two recorded archaeological sites at Delnor-Wiggins Pass State Park, including a shipwreck and an artifact scatter site.

A lithic scatter site known as 8CR970 was documented on the very northern tip of the park adjacent to Wiggins Pass. Three stone tools, commonly called Florida Archaic stemmed points, were found at this location. Given the shifting shorelines in this location, due to erosion and sand accretion, it is unlikely that this site still exists in the park.

A shipwreck site (8CR218) was first observed in 1981 when Tropical Storm Dennis caused severe beach erosion, uncovering the remains of wooden sailing vessels on the park's beach. A cursory examination by DHR found the remains of a 19th-century sailing vessel of the kind that once plied the coast, with a beam estimated at 17 feet. Subsequent cultural resource assessment surveys completed in 2020 and 2024 were unable to locate any part of the shipwreck structure; the locational data for which did not accurately allow for site re-establishment after the site was concealed by subsequent storms.

Cultural Sites Listed in the Florida Master Site File					
Site Name and FMSF #	**Culture/Period**	**Description**	**Significance**	**Condition**	**Treatment**
8CR218 Wiggins Pass Wreck (South)	Unknown	Historic Shipwreck	NE	P	P
8CR970 Delnor-Wiggins Pass State Park Site	Unknown	Lithic Scatter	NE	P	P

Significance:
NRL - National Register Listed
NRE - National Register Eligible
LS - Locally Significant
NE - Not Evaluated
NS - Not Significant

Conditions:
G - Good
F - Fair
P – Poor

Recommended Treatment:
RS - Restoration
RH - Rehabilitation
ST - Stabilization
P - Preservation
R – Removal

Condition Assessment

Objective: Monitor and assess all recorded cultural resources.

Action:

- Continue to monitor areas where two recorded cultural resources were previously observed.
- If fragments of the historic shipwreck are identified and unstable, then excavation for off-site preservation is indicated.

Given the dynamic conditions of the park shoreline, cultural resources are highly vulnerable to erosion and permanent loss. For the shipwreck, which consists of especially fragile components, archaeological salvage of identified components may be appropriate in consultation with DHR. Out of site context components could be interpreted within a museum or other archival setting.

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. (Charlotte County Mosquito Control District 2012, FDACS 2012). The current plan for Delnor-Wiggins Pass State Park was finalized in 2022 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

Delnor-Wiggins Pass State Park is well known as one of the most popular seashore destinations in Naples. This stretch of beach is sought after for swimming, fishing, paddling, sunbathing, beachcombing, snorkeling and picnicking. Anglers can try their luck along Wiggins Pass, and paddlers enjoy traversing the estuary. Diving is also an attractive recreational opportunity along the hard bottom reef located just offshore in the Gulf. This approximately 200-acre park also serves as habitat for wildlife including many bird species, dolphins, manatees and sea turtles.

Florida Circumnavigational Saltwater Paddling Trail (CT)

Segment 13, a 68-mile portion of the CT from Lovers Key/Bowtie Island to Everglades City, runs through the park. The northern part of this segment is part of the Great Calusa Blueway, offering diverse paddling opportunities along the coast and associated waterways. From Lovers Key, a paddler can venture eight to nine miles along a sheltered inland passage to Wiggins Pass. The park is accessible via the trail south of the pass, where weary paddlers can take a much-needed break and enjoy a picnic lunch or swim in the Gulf.

Trends

Visitation numbers at Delnor-Wiggins Pass State Park show a considerable increase from mid-December to the end of April, with the busiest month being March. The uptick in visitors reflects the seasonal residents being in the area during this time and spring break normally occurring in March for many students.

Economic Impact

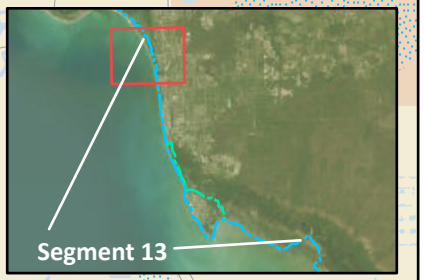
Attendance over the 10-year period from FY 2015-16 through FY 2024-25 totaled 5,626,459 visitors. By DRP estimates, the visitors contributed $617,712,262 in direct economic impact. Visitor spending supported a cumulative total of approximately 8,854 one-year job equivalents over the 10-year period. (DEP 2015-2025).

EXISTING FACILITIES AND INFRASTRUCTURE

In late September 2022, Hurricane Ian made landfall on the southwest coast of Florida, with Delnor-Wiggins Pass State Park receiving extensive damage. The park remained closed until May 2023, when the park was reopened with a limited capacity due to reduced parking and other amenities. During this period, demand was notably high.

As restoration efforts continued into 2024, the park was devastated again by two more hurricanes, Helene and Milton, less than two weeks apart. All remaining facilities and infrastructure received catastrophic damage. The only three structures that remained were the two elevated staff residences and one 8-by-8-foot concrete block building, all located in the maintenance area. Again, the park remained closed to the public for an extended period while recovery efforts were underway.

Emergency Contact Info:
911
Collier County Sheriff: (239) 774-4434
Everglades NP 24-hour Search and Rescue: (305) 247-7272
FWC 24-hour wildlife emergency/BUI hotline: 1-888-404-3922



Lovers Key Wayside Picnic Area

(26.4009, -81.8704)

Lovers Key Beach

(26.3899, -81.8796)

Small store and kayak rental near boat launch.

Bowtie Island Campsite

(26.3766, -81.8536)

Paddlers allowed to camp with float plan and free permit.
Calusa Blueway Coordinator:
(239) 707-7981

Bonita Beach

(26.3313, -81.8458)

Barefoot Beach

(26.3044, -81.8357)

Delnor-Wiggins Pass State Park

(26.2821, -81.8296)

Snacks at beachside concession.

Big Carlos Pass
Lovers Key
Lovers Key State Park
Lovers Key Ramp
(26.3935, -81.8665)
Long Key
Estero Bay Aquatic Preserve
Spring Creek
New Pass
Big Hickory Island Preserve
Big Hickory Pass
Estero Bay Preserve State Park
Bonita Beach
I-75
Pine Lake Preserve
Oak Creek Imperial River Preserve
Oak Creek Preserve
Imperial Flowway
Fish Trap Marina Ramp
(26.3306, -81.8317)
BONITA BEACH RD
Bonita Springs
Barefoot Beach Preserve County Park
Cocohatchee River Park Marina Ramp
(26.2936, -81.8201)
LIVINGSTON RD
Delnor-Wiggins Pass State Park
Wiggins Pass
Wet Woods Preserve
Delnor-Wiggins Pass State Park Ramp
(26.2778, -81.8252)
Old Collier Golf Club Conservation Easement
TAMIAMI TRL
Cocohatchee Creek Preserve

Florida Circumnavigational Saltwater Paddling Trail

Segment 13: Rookery Bay/Ten Thousand Islands (Map 1 of 5)

Begin: Lovers Key/Bowtie Island
End: Everglades City

Distance: 68 miles (depending on route)
Duration: 4 days

0 0.75 1.5 3 Miles

Disclaimer: This guide is intended as an aid to navigation only. A Global Positioning System (GPS) unit is required and persons are encouraged to supplement these maps with NOAA charts or other maps.
Updated: 12/2022

N

Facilities Inventory
(Prior to Hurricane Ian)

Recreation Facilities	
Picnic Area	5
Picnic Pavilion	2
Boardwalk (1,707 linear feet)	14
Observation Tower	1
Boat Ramp (two lane)	1

Support Facilities	
Parking – beach use (354 spaces)	5
Parking – boat ramp (30 spaces)	1
Bathhouse	5
Pavilion Restroom	1
Entrance Station	1
Staff Residence	2
Maintenance Building	1
Equipment Shelter	1
Flammable Storage Building	1
Native Plant Nursery	1

CONCEPTUAL LAND USE PLAN

Entrance Area

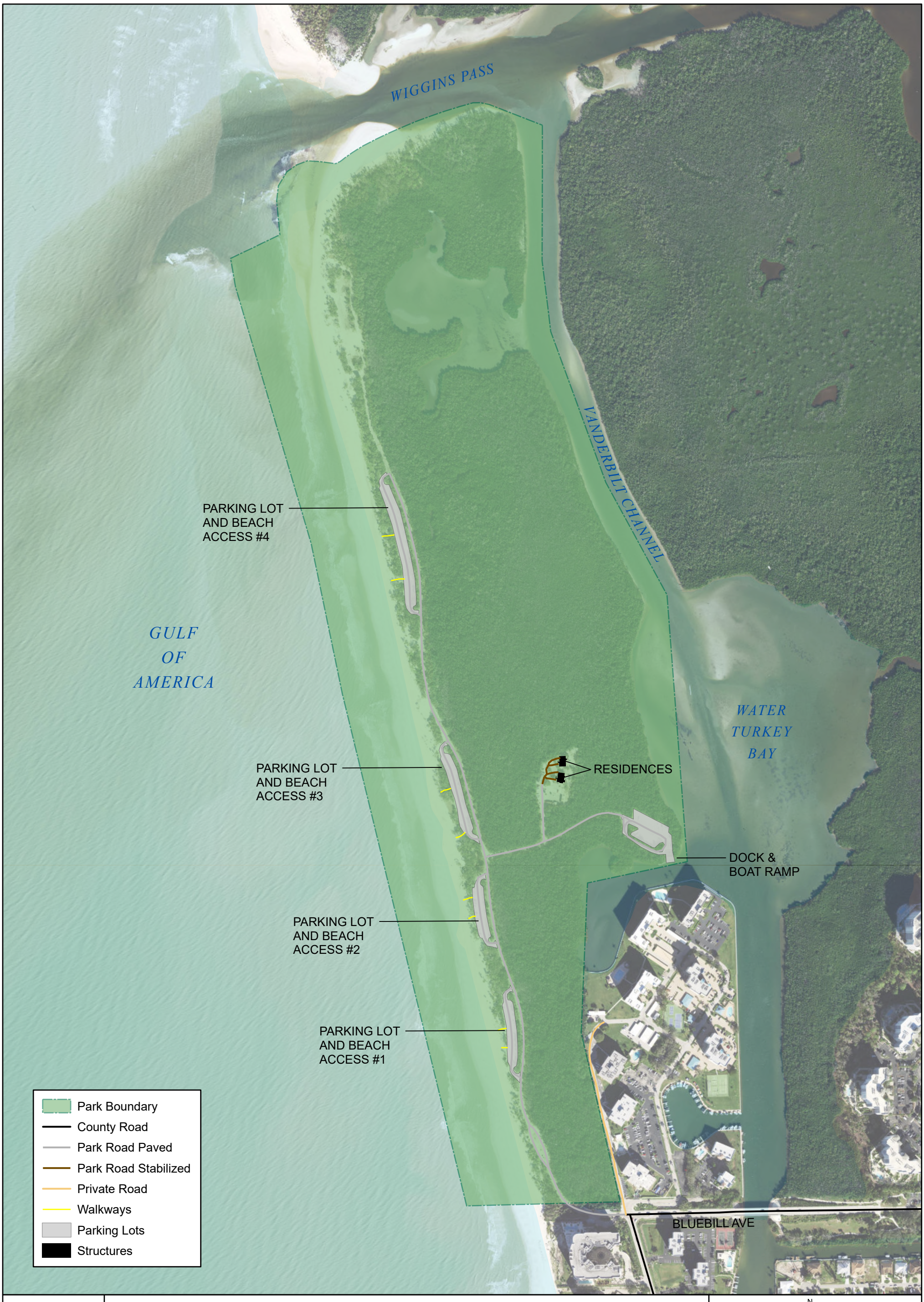
Objective: Improve space for ingress/egress, traffic management and turning radius.

Actions:

- Evaluate feasibility of a reservation system.
- Install an exterior electric gate at the park entrance.

Situated in an urban setting, the park is well attended, often experiencing traffic congestion at the entrance, especially during peak use days. Gridlock occurs as the park fills due to vehicles attempting to enter, exit or avoid the park altogether by turning around. Prior to Hurricane Ian in 2022, all admission fees were collected at the ranger station, which resulted in a traffic bottleneck and corresponding stacking of vehicles. The former ranger station will not be replaced for fee collection – instead, fees will be collected by a kiosk payment system situated in the beach access parking areas (see objectives below).

For the purpose of managing visitor use, an electric gate should be explored to control access outside of park operating hours and when the park has reached capacity. This gate should be located just beyond the entrance area roundabout and will remain open until capacity is reached.



DELNOR-WIGGINS PASS STATE PARK
Existing Facilities

N

0 500 Feet 1,000

This graphical representation is provided for informational purposes and should not be considered authoritative for navigational, engineering, legal, and other uses.

1. Entrance Area - Install an exterior electric gate.
2. Northernmost Parking Area - Remove and restore to maritime hammock.
3. Parking Areas and Fee Collection - Reconstruct four previous parking areas and install kiosk payment system.
4. Beach Access Amenities - Construct three restrooms.
5. North Point Nature Trail - Develop trail with interpretation.

DELNOR-WIGGINS PASS STATE PARK
Conceptual Land Use Plan

N

0 450 900 Feet

This graphical representation is provided for informational purposes and should not be considered authoritative for navigational, engineering, legal, and other uses.

Potential Alternative Entry Solutions
Online reservation is a visitor use management approach for adhering to carrying capacities and significantly improving the visitor experience. Online reservation systems have been successfully implemented at excessively high visitation parks, including three other state parks with similar visitation patterns. With an annual attendance exceeding 1,500,000, this approach to visitor use management should be considered for Delnor-Wiggins Pass State Park in effort to avoid congestion and maintain the high level of resource-based recreational experience expected by visitors.

Beach Access Parking

Objective: Reconstruct four of the former five parking areas.

Actions:
- Remove the northernmost parking area.
- Restore former approximately 1-acre parking area to maritime hammock.
- Reconstruct four of the previous parking areas.
- Install kiosk payment systems for park entry and other use fees.

The beach at the park experiences very high public demand for recreational use, particularly during peak beach use seasons. Before recent storm events, the park offered five beach use areas, each consisting of parking areas, restrooms and boardwalks to the beach. The maintenance of the northernmost use area has been problematic, as the northern vicinity of the park is highly dynamic. Infrastructure in this portion of the park has been repeatedly destroyed by storm surge events. Rationale for not reconstructing the northernmost beach use area, and thereby reducing the amount and distribution of infrastructure, including pavilions, is multi-fold – avoiding future costly damages, minimizing structural debris post storms and maximizing natural areas that serve to buffer use areas. Such reduced infrastructural footprints will allow for the natural accumulation of sand and gradual restoration of approximately 1 acre of maritime hammock. The tree canopy afforded by this natural community would provide adequate shade for park visitors in lieu of pavilions. In addition, an on-grade non-paved delineated hiking trail will lead park visitors through the restored maritime hammock community to the north end of the island and back. Delineation of the trail by post-and-rope fencing will be necessary until vegetation reestablishes.

Recognizing the need for on-site parking, four of the former five paved parking areas will be reconstructed on their former footprints and connected by roads on their former alignments. As prior to Hurricane Ian the park was characterized by a canopy of mature maritime hammock, the peripheries of the parking areas will be revegetated, which will reestablish park aesthetics and ecological value, cast shade and protect park infrastructure from storm impacts.

Eight kiosk systems for self-service payment will be installed throughout the four reconstructed parking areas. Each parking area will have two units, one at the north end and one at the south end.

Criteria for placement includes visibility, ease of access and pedestrian safety. A ninth kiosk will be placed at the boat ramp east of the beach access parking areas where visitors frequently arrive by personal watercraft.

Beach Access Amenities

Objective: Construct replacement restrooms.

Action:

- Design and construct three restrooms to accommodate beach users.

In the interest of consolidating facilities and reducing structural footprints, three restrooms will be reconstructed – one between the first and second parking areas, one between the second and third and one at the northern terminus of the fourth parking area. Capacity of the restrooms will need to be high to accommodate the use that was previously distributed across five separate restrooms.

Infrastructure in beach access areas parkwide should be limited to the construction of replacement restrooms. Repeated damage by storm surge events in this dynamic, coastal environment warrants a reduced infrastructural footprint with resilience in mind. Pavilions and other structures are not to be rebuilt in accordance with this principle, thereby reducing financial impacts and decreasing the incidence of debris following major storms.

Objective: Reestablish interpretive programming.

Action:

- Implement roving interpretive programming.

Where interpretive signage was previously distributed throughout the beach access use areas, signage should now be consolidated or altogether removed and replaced by roving personal programs that can be rapidly relocated in preparation for storms. Interpretive focus should be on the dynamic conditions of this fragile coastal and estuarine landform, natural resource protection, recovery and resilience. Included within these themes should be interpretation of the park's namesake pass.

North Point Trail

Objective: Provide hiking access through northern extent of park uplands.

Actions:

- Install trailhead elements at north end of the northernmost parking area.
- Delineate narrow gauge trail through restored maritime hammock.

A 0.25-mile out-and-back hiking trail extending to the northernmost upland point of the park at the namesake pass should begin at the north end of the northernmost parking area. Parking for the trail will be satisfied by the parking of this beach access area. Basic trailhead elements should include signage for interpretation and orientation. The trail itself is intended to be narrow gauge, adhering to the upland interior between the beach and bayside mangrove swamp. The ambient natural community, once restored, will be maritime hammock. To deter departure from the trail and avoid trampling of the peripheral restoration project, post-and-rope fencing should be extended along the trail.

Long-Range Parking Alternatives

Objective: Evaluate off-site parking alternatives.

Actions:

- Continue to evaluate off-site parking with Collier County.

Public beach access is limited in Collier County. Vanderbilt Beach Park, which includes a 375-space multi-level parking facility, is located less than two miles from the park, at the southern end of Gulfshore Drive. There are also 158 parking spaces at Conner Park, about 0.25 miles east of the park on Bluebill Avenue, with a county-run shuttle service to the park entrance that operates during peak season.

The availability of beach access and the dense local resident population generate high traffic volumes on these roads when the weather is conducive for beach going. For many years, DRP and Collier County have sought solutions to the frequent traffic congestion problems outside the park gate and on Gulfshore Drive and Bluebill Avenue during peak attendance. As alternative solutions to high-capacity parking within the park may prove infeasible – on account of spatial and geotechnical limitations, or other limiting factors – off-site locations may be necessary. Given that such locations would be outside of DRP jurisdiction, implementation is only obtainable by local governmental partnerships.

Objective: Consolidate parking to maximize natural areas within the park, environmental resilience and operational efficiency.

Actions:

- Conceptualize and design a multi-level parking facility.
- Develop a stabilized walkway between the parking facility and the beach access.

While the existing series of paved parking areas with direct access to the Gulf beach is the only viable configuration at this time, alternative modes of parking are under long-range consideration. Future catastrophic storm events may necessitate retreat from the Gulf front.

The series of beachside parking areas occur over a former natural landscape consisting of coastal strand, maritime hammock and beach dune. Maintaining this altered condition precludes the natural formation of dunes, particularly following storm surge events, which typically deposit large volumes of sand.

Most recently, hurricanes Helene and Milton deposited an average of 4 feet of sand across all parking areas, necessitating sand redistribution via scraping, sifting and artificial dune construction. Inevitably, some sand is lost entirely with larger debris removal. If these Gulfside parking areas are removed and restored to former natural areas, sand will be allowed to remain in place following storm events to naturally replenish the dunes, beach and nearshore bars, which may make the landform of the park more resilient. Assuming that the observed sand accretion patterns persist, the eventual result would be a high dune ridge stabilized by mature maritime hammock. While sand deposits from storm events would inundate the restored hammock in this area, the vegetation would predictably regenerate over top, such that the in situ remains of inundated vegetation would form stabilizing substrate for the accreting dunes and successional hammock. In the absence of parking areas and other infrastructure, the total area of restored natural community is estimated at 14 acres.

Well-preserved, high functioning coastal habitats improve both the ecological and infrastructural resilience of the park. Recognizing its long-range nature and multitude of variables, an alternative to the current parking configuration will be evaluated over the 10-year planning period. An alternative configuration may entail construction of a multi-level parking facility with comparable capacity to current parking within an existing developed space.

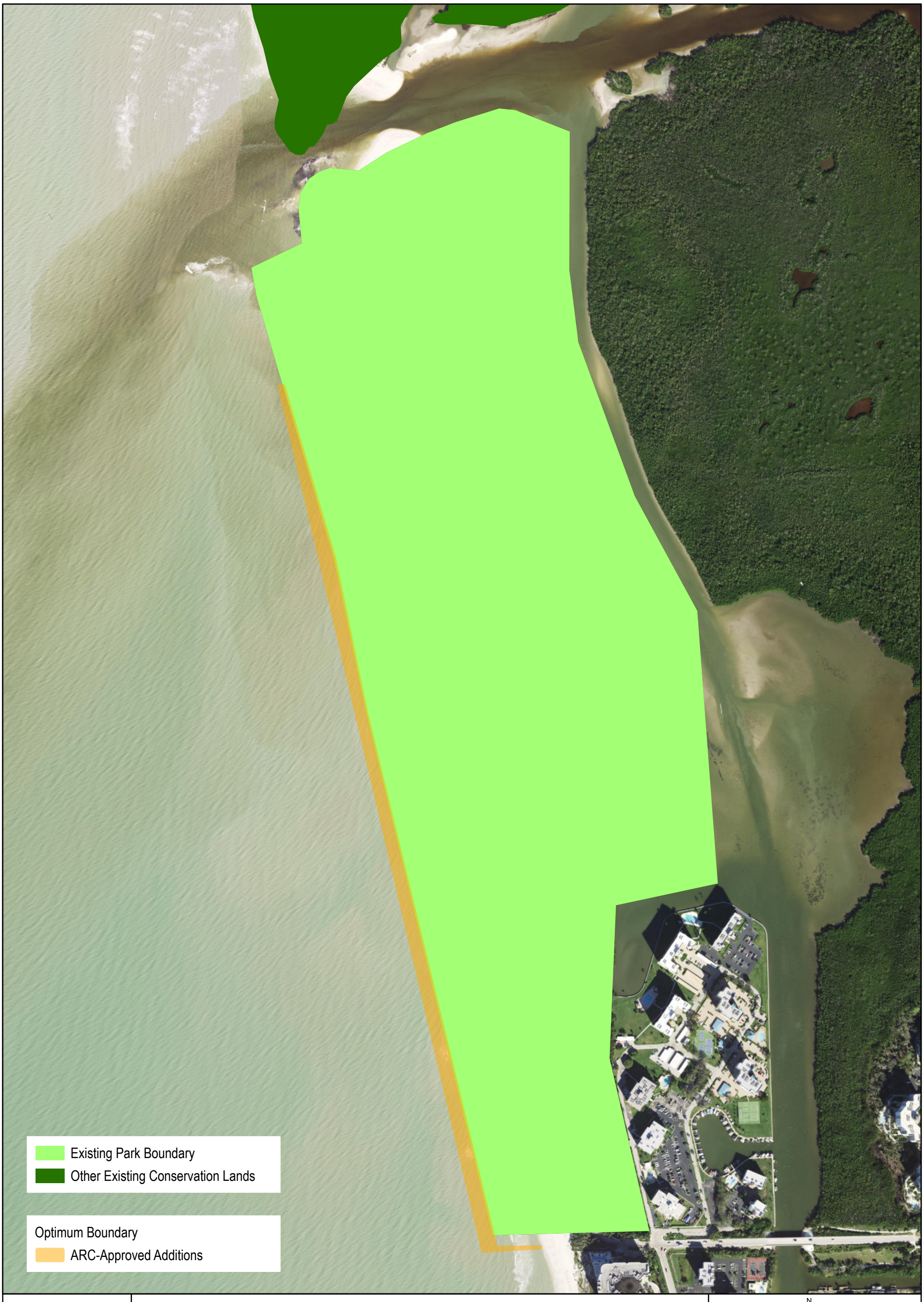
A reasonable conceptual location for alternative parking within the park is the current boat ramp use area, a space that is largely underutilized due to traffic congestion and the shallow depths of adjacent waters. This approximate 1-acre developed area has sufficient space to support a multi-level parking facility. This concept is compatible with the kiosk payment system. To best serve visitors with accessibility needs, annual pass holders and other arrivals on a first-come basis, up to 80 parallel parking spaces could be situated along the main entrance road prior to the multi-level parking facility.

To facilitate beach access from the potential site, a stabilized walkway should extend east-west, parallel along the existing road.

The conceptual parking facility should not displace the current boat ramp, paddlecraft launch/landing or docks.

OPTIMUM BOUNDARY

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



DELNOR-WIGGINS PASS STATE PARK
Optimum Boundary

N
0 350 700 Feet

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