Panther Walk Preserve Multi-Parcel Project
Final Management Plan

Managed by:

Collier County, FL
Conservation Collier Program

April 2023 - April 2028
10-year update

Prepared by: Collier County Conservation Collier Staff

CONSERVATION COLLIER

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Land Management Plan Executive Summary

Lead Agency: Conservation Collier Program, Parks & Recreation Division, Collier County Public Services Department

Properties included in this Plan: Panther Walk Preserve Multi-Parcel Project Area consists of 296 parcels (599.7 acres) that follow the historic flow way of the Horsepen Strand. Parcels are in the North Golden Gate Estates, east of Everglades Blvd, between Immokalee Rd and 56th Ave NE. To date, 16 parcels (30.7 acres) have been acquired (Table 5.1.1 and Figure 5.1.2). Complete legal descriptions are provided in the appendix (Table 12.2).

Total Acreage: 599.7

Management Responsibilities: Collier County Conservation Collier Program staff

Designated Land Use: Preservation and Recreation

Unique Features: The project area covers the upper stretches of the Horsepen Strand, which protects water resources and provides habitat/corridors for wildlife and plants.

Desired Future Conditions:

> **Vegetation:** A preserve with a matrix of high-quality strand forest, marshes, and flatwoods with mixed-age stands, a diverse understory, and less than 10% infestation of non-native vegetation.
>
> **Wildlife:** A preserve with the appropriate vegetative communities, resource use, and connectivity to support wildlife species native to that habitat.
>
> **Recreation:** A preserve with the amenities required for the public to engage in passive natural resource-based recreation safely
>
> **Preserve Safety and Security:** A preserve free of littering, dumping, illicit activities, neighbor disturbances, unauthorized vehicles, and after-hours trespass.

Public Involvement

As part of the Land Management Plan Update drafting process, a public meeting was held on May 11th, 2023, to gather input from members of the public and preserve stakeholders.

Introduction

Panther Walk Preserve Multi-Parcel Project Area consists of 296 parcels (599.7 acres) that follow the historic flow way of the Horsepen Strand in the Northern Golden Gate Estates. To date, 16 parcels (30.7 acres) have been acquired (Table 5.1.1 and Figure 5.1.2). It is primarily comprised of cypress forests, marshes, and pine flatwoods. The 10.69-acre “core” preserve was acquired between 2007-2014. The Panther Walk Preserve Multi-Parcel Project Area was approved on February 28, 2023; 21.16 acres have been acquired since then. Acquisitions in this area have been purchased with funds from the Conservation Collier acquisition fund or received as donations. County holds fee simple title. The “core” preserve contains a seasonal hiking trail. This trail will be extended where feasible as more continuous parcels are acquired. The Conservation Collier Program manages this parcel under authority granted by the Conservation Collier Ordinance 2002-63, as amended. Conservation, restoration, and passive public recreation are the designated uses of the property. Management activities allowed are those necessary to preserve and maintain this environmentally sensitive land for the benefit of present and future generations. Public use of this site must be consistent with these goals.

Conservation Collier: Land Acquisition Program and Management Authority

Voters originally approved the Conservation Collier Program in November 2002 and subsequently confirmed it in November 2006 by ballot referendum. On November 3, 2020, the Collier County electors approved the Conservation Collier referendum with a 76.5% majority which reestablished the acquisition portion of the Program. These voter-approved referendums enable the program to acquire environmentally sensitive lands within Collier County, Florida (Ordinance 2002-63, as amended). Properties must support at least two of the following qualities to qualify for consideration: rare habitat, aquifer recharge, flood control, water quality protection, and listed species habitat. The BCC appointed Conservation Collier Land Acquisition Advisory Committee (CCLAAC) to consider any selected or nominated properties that an owner has indicated a willingness to sell. The committee recommends property purchases for final approval by the BCC.

Lands acquired with Conservation Collier funds are titled to “COLLIER COUNTY, a political subdivision of the State of Florida, by and through its Conservation Collier program.” The Board of County Commissioners of Collier County (BCC) established the Conservation Collier Program to implement the program and manage acquired lands. As such, Conservation Collier holds management authority for the HHH Ranch Preserve.

Purpose and Scope of Plan

The purpose of the interim plan is to provide management direction for the Panther Walk Preserve Multi-Parcel Project Area by identifying the desired future conditions of each element and the appropriate tools to achieve these conditions. This plan seeks to balance natural resource conservation (listed species protection, habitat restoration, and invasive species management) with outdoor recreational and education use. This plan is divided into sections that include an introduction, parcel description, management element conditions, objectives, potential tools, and a projected budget. This plan will be updated on a five-year cycle, with the next update due in 2028.

Plan	Year Approved by Board of County Commissioners
Interim Management Plan - Oetting Parcels	2007
Interim Management Plan - Freitas Parcels	2008
Final Management Plan	2010
Final Management Plan 5-year Update	2015
Final Management Plan 10-year Update	2023

Parcel Description

1. Location

1.1. Description

Panther Walk Preserve Multi-Parcel Project Area consists of 296 parcels (599.7 acres) that follow the historic flow way of the Horsepen Strand. Parcels are in the North Golden Gate Estates, east of Everglades Blvd, between Immokalee Rd and 56th Ave NE. To date, 16 parcels (30.7 acres) have been acquired (Table 5.1.1 and Figure 5.1.2). Complete legal descriptions are provided in the appendix (Table 12.2).

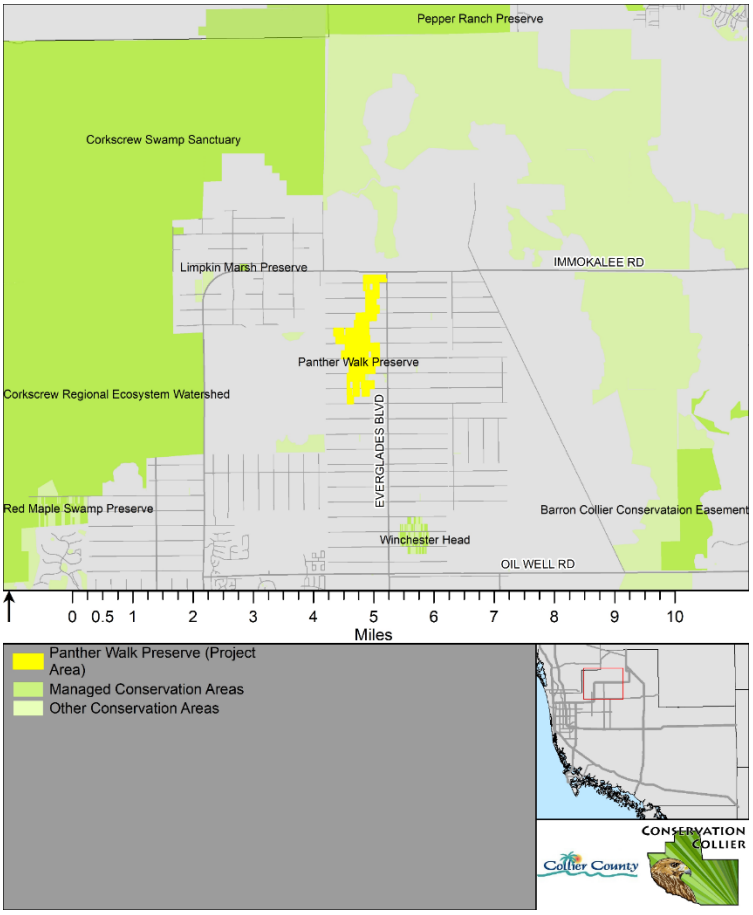


Figure 1.1.1. Overview map and surrounding conservation areas

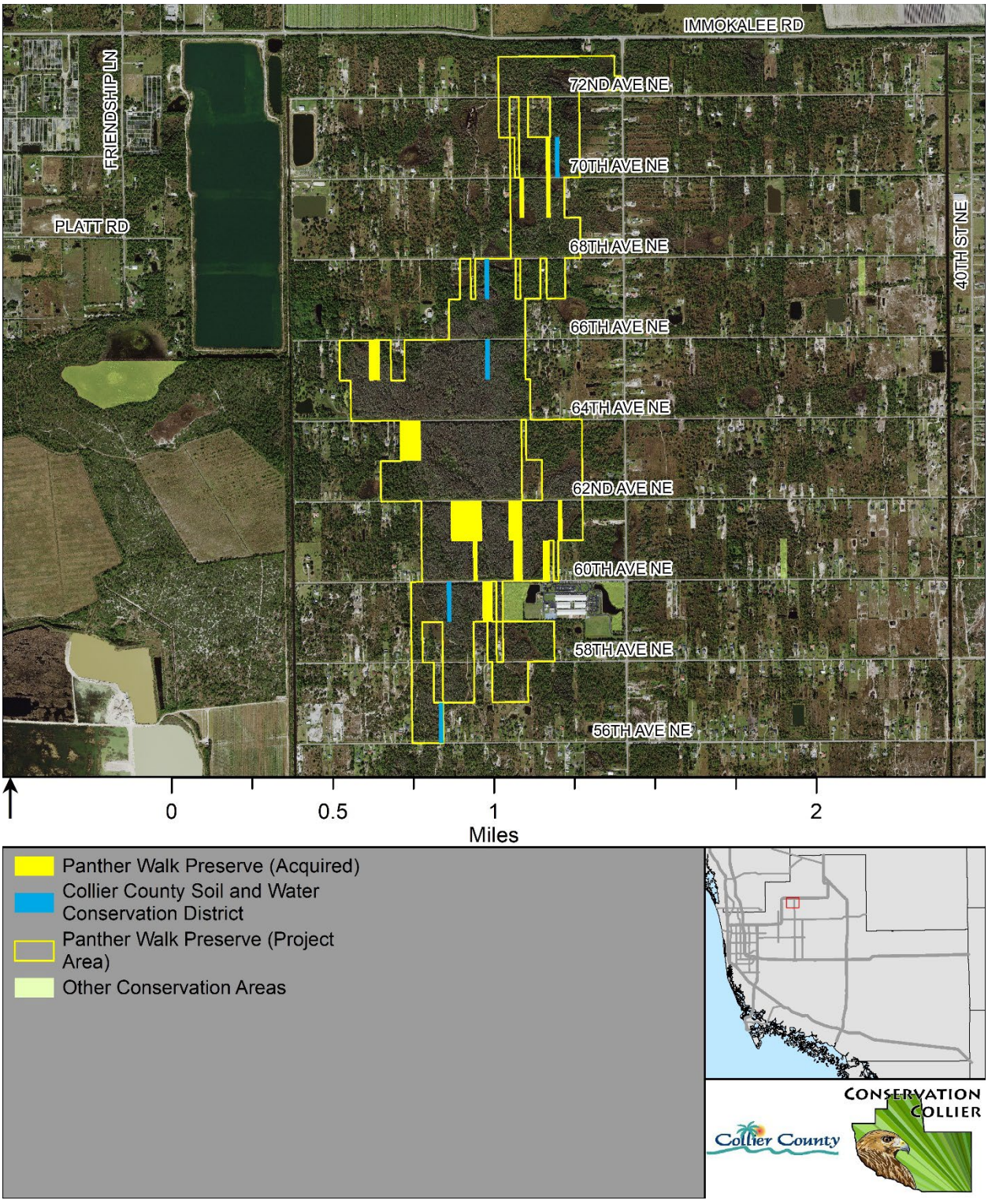


Figure 1.1.2. 2022 Aerial close-up

2. Physiography

2.1. Description

LIDAR and Surface Waters

A Light Detection and Ranging (LIDAR) map provides information about the elevation of the Earth's surface. The topographical map of the Preserve (Figure 2.1.1) indicates surface features of lower elevation in deepening shades of blue. These parcels fall within or are adjacent to the northern reaches of the Horsepen Strand. Strands are a type of forested swamp that form slow-flowing, linear drainage channels across flatlands with high water tables. The Horsepen Strand begins at Immokalee Rd in the Northern Golden Gate Estates and flows south into the North Belle Meade area north of I-75 (Figure 2.1.4). The deepest sections of the strand are indicated by the light yellow to blue areas in Figure 2.1.1. These sections retain water until the driest part of the year, February-May. All but the highest elevation areas experience some surface water ponding during the peak of the wet season. Water once flowed uninterrupted from north to south. East-west roadside swales now divert water into the Golden Gate Canal to the west. Reconnecting the Horsepen Strand has been proposed to improve stormwater treatment, flood protection, water quality treatment, habitat restoration, and wetland rehydration. This potential project was named the Horsepen Strand Conservation Area by the Collier Soil and Water Conservation District.

Aquifer Recharge Potential

The preserve is within a Priority 4 and 5 CLIP4 Aquifer Recharge designation and not within the protection zone of the Collier County Utilities Golden Gate Wellfield (Figure 2.1.2). The preserve protects portions of the surficial aquifer that are sensitive to contamination.

Soils

Nine (9) soil types are mapped within the project area (Figure 2.1.3). Soils present are various types of fine sands. 7 of the 9 soil types were hydric, one of which is depressional. A Hydric is soil formed under saturation, flooding, or ponding conditions long enough during the growing season to develop anaerobic conditions in the upper part (Federal Register, 1994). Hydric soils are found within the trough of the Horsepen Strand, with depressional, hydric soils found in marshes. Drier soils are located around the edges of the strand and are predominant in the surrounding area (Figure 2.1.3).

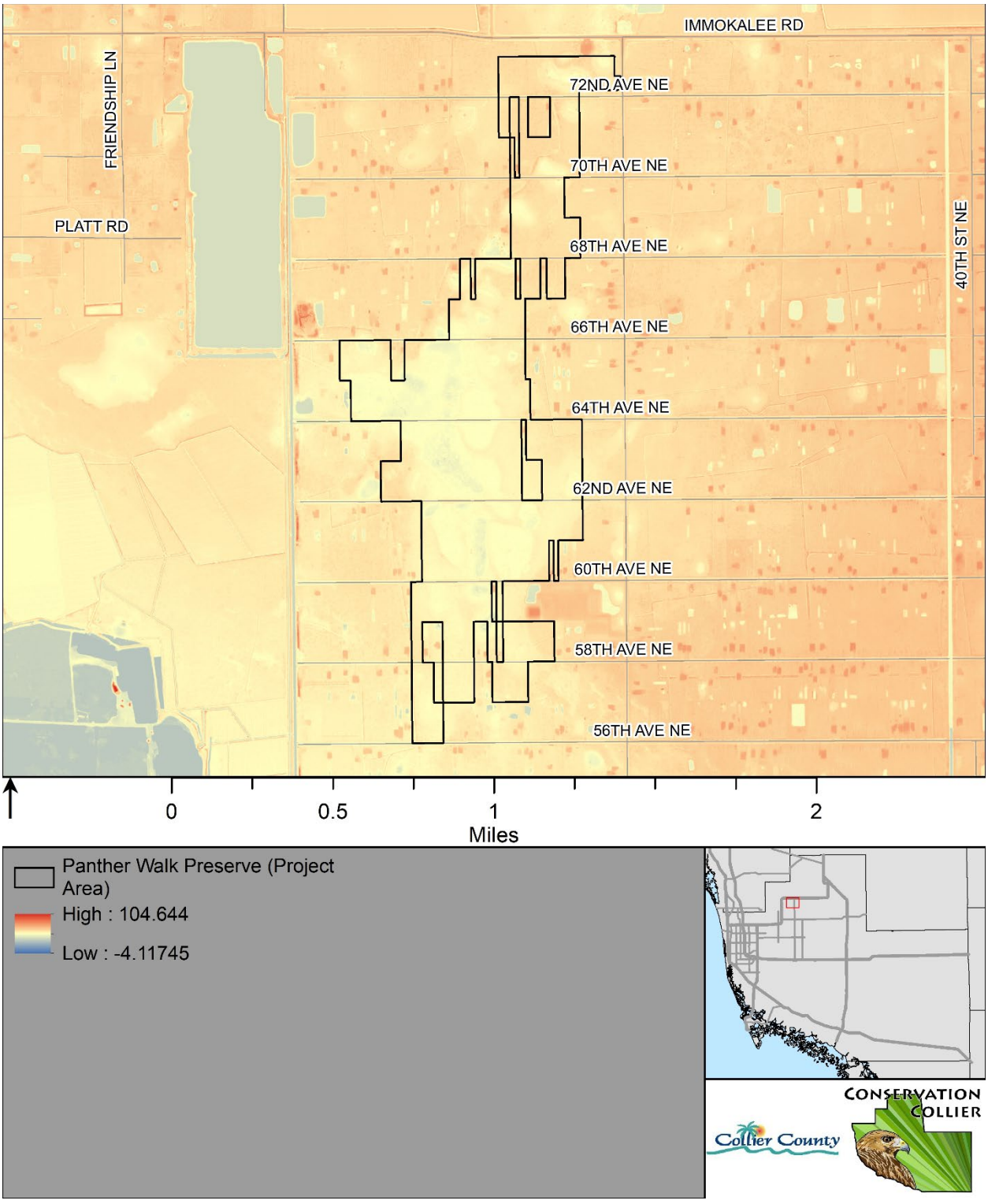


Figure 2.1.1. Topographical Map (LIDAR)

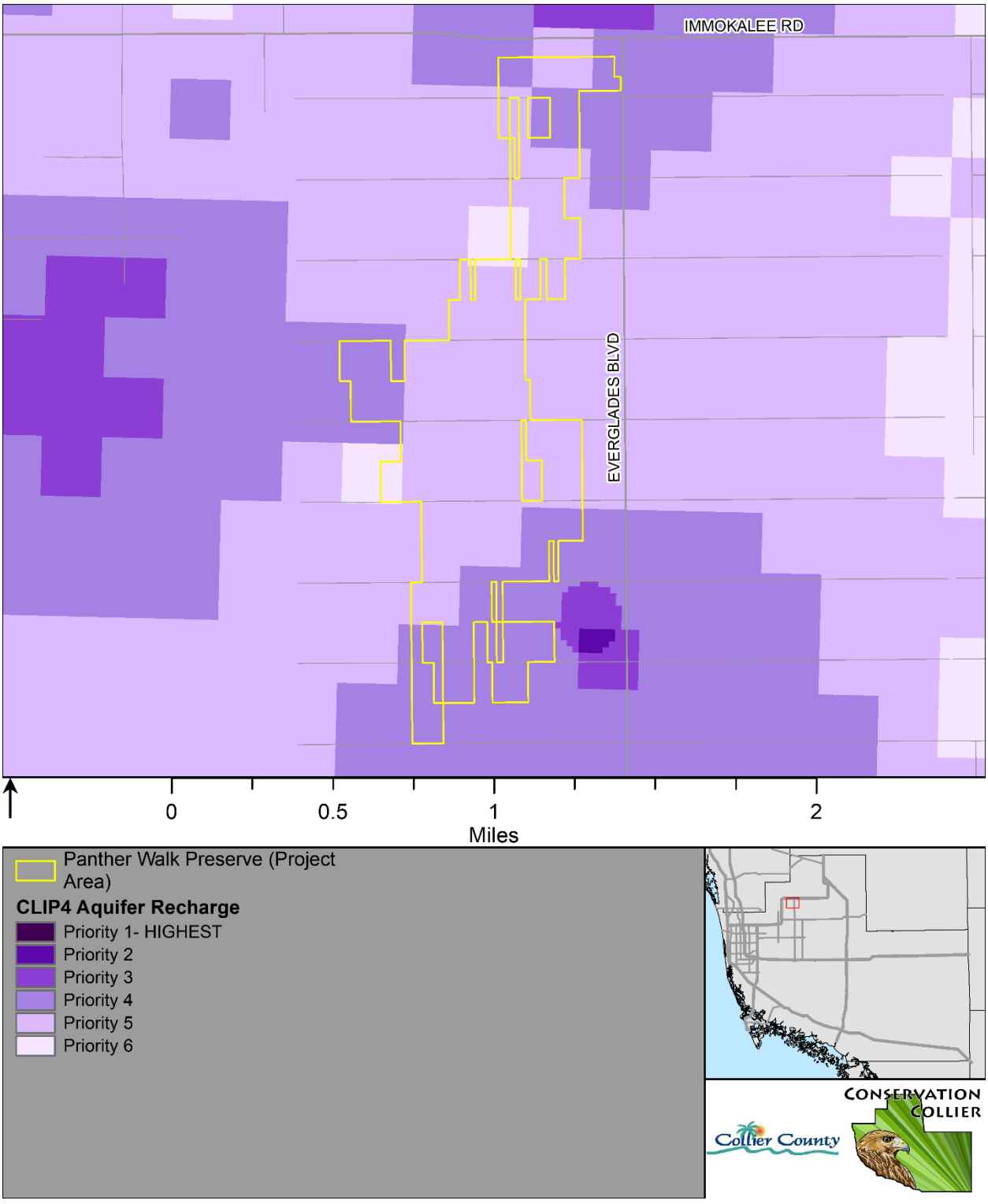


Figure 2.1.2. Aquifer Map (CLIP4 Aquifer Priority Map)

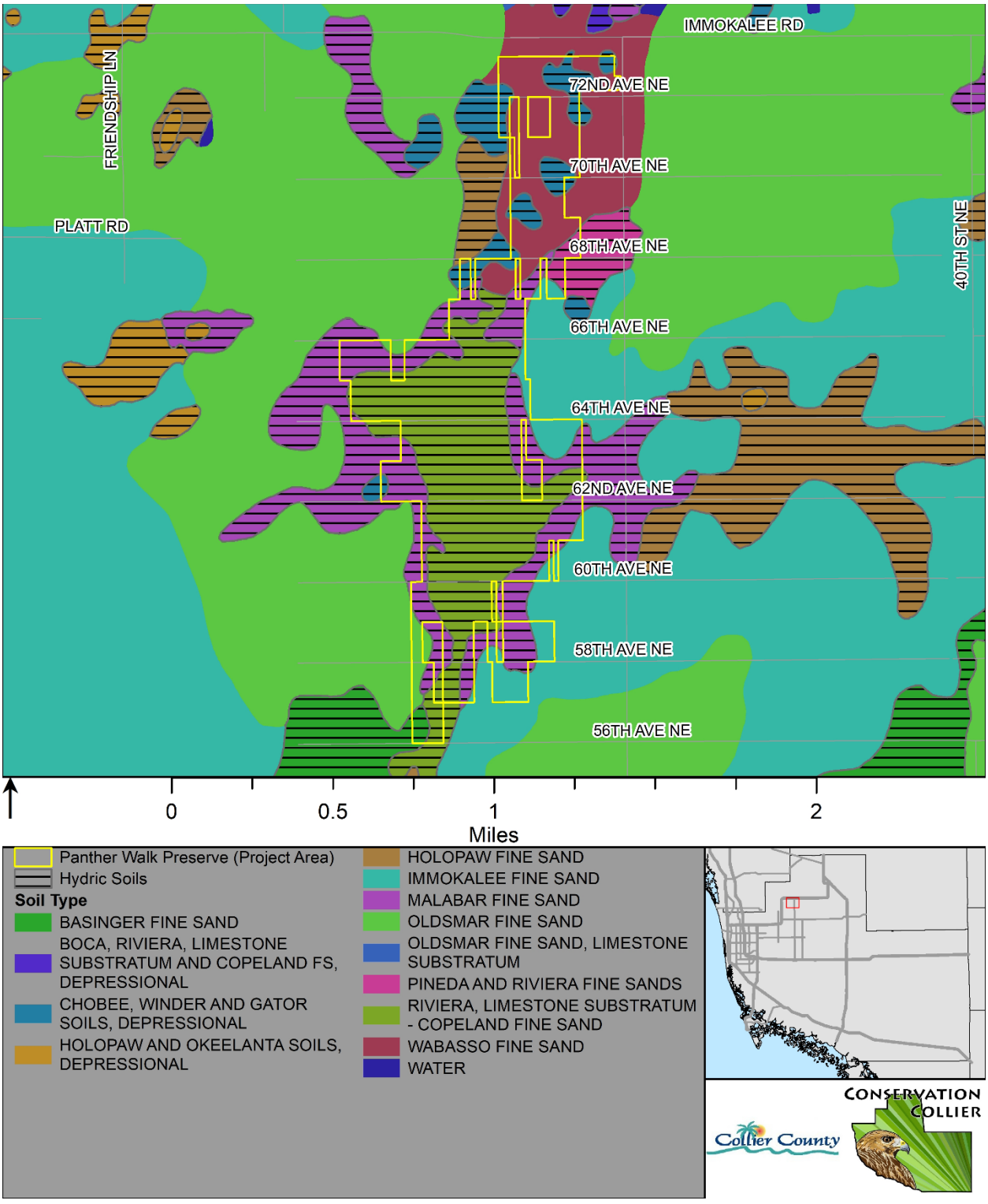


Figure 2.1.3. Hydric Soils Map (Collier County Soils Survey)

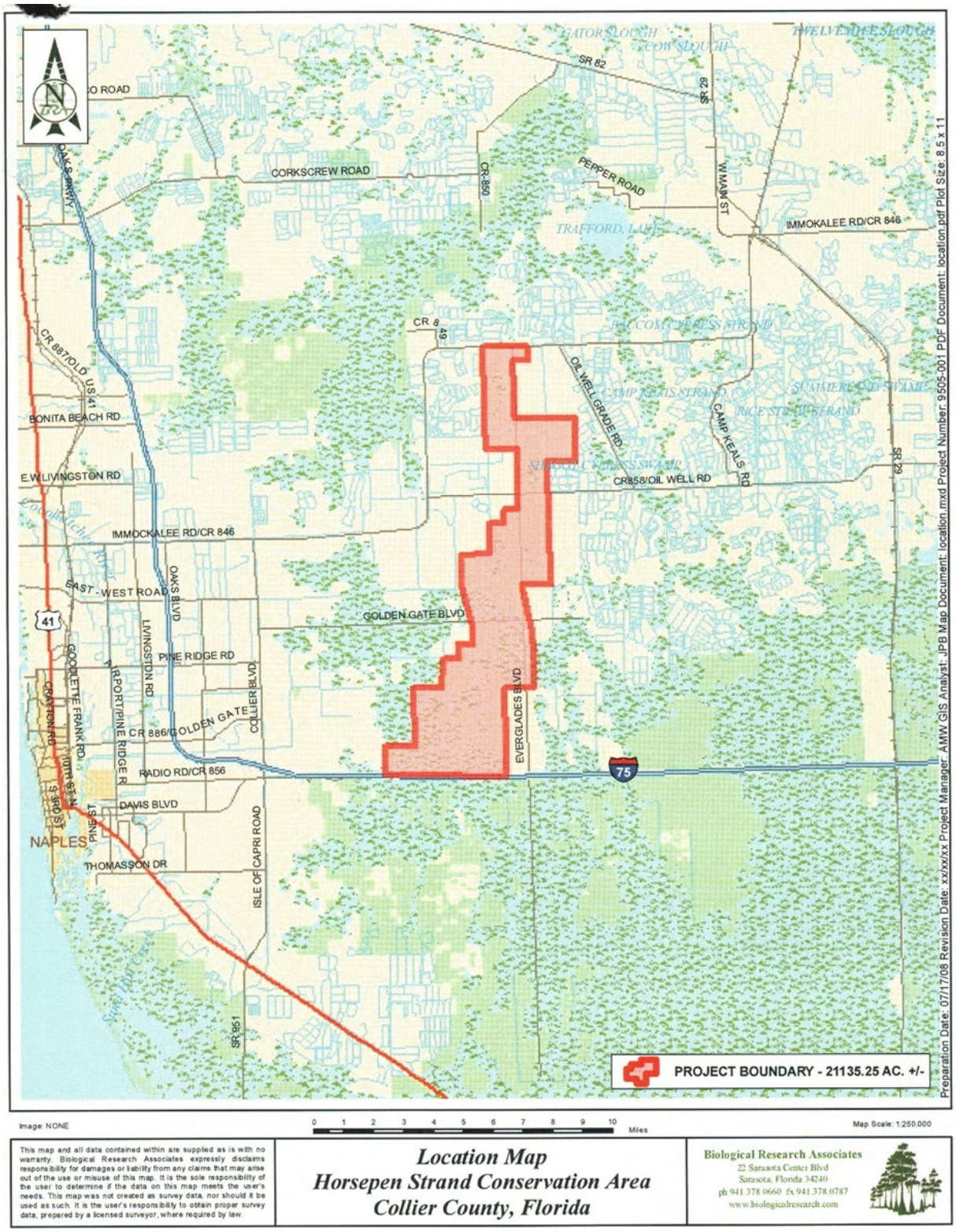


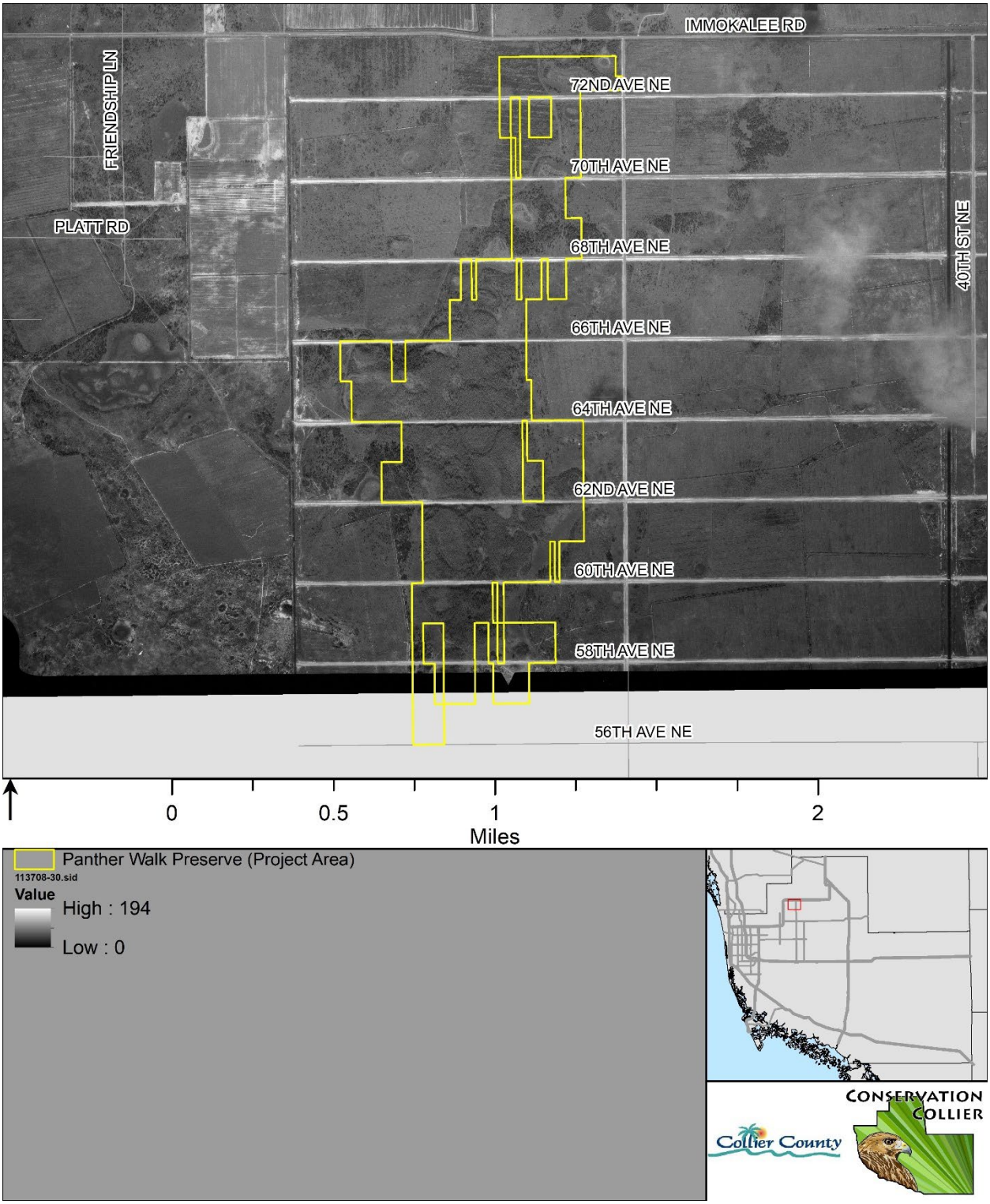
Figure 2.1.4. Horsepen Strand Conservation Area

3. Historical Land Use

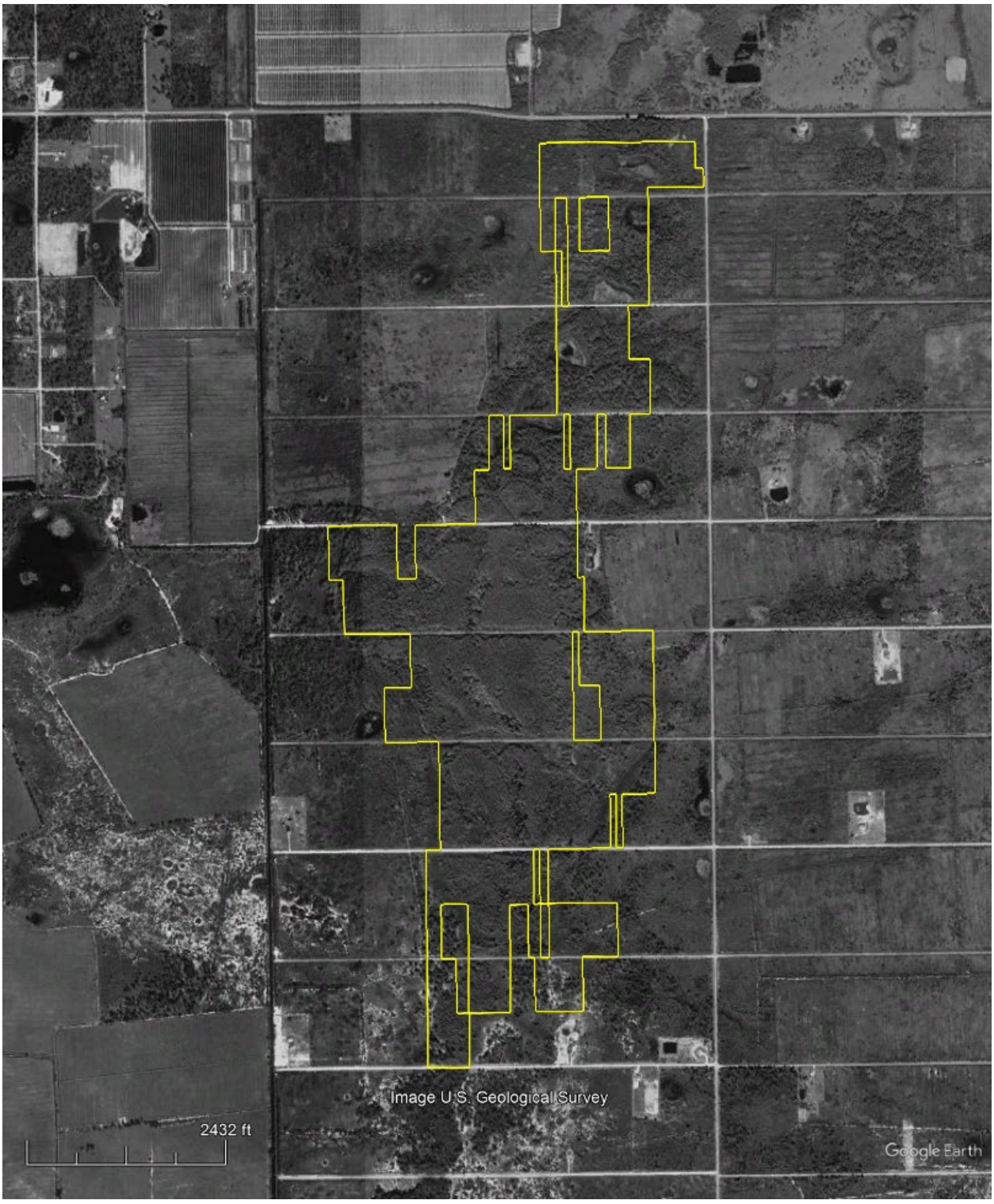
3.1. Description

During the late 1950s and 1960s, Gulf American Land Corporation (GALC), a land development company, was the largest land sales company in the United States. In the late 1960s, GALC sold 173,000 miles of land to about 40,000 buyers. Between the 1940s and 1960s, the area was logged, 183 miles of roads and 813 miles of flood control canals were built, and 1 ¼-5 acre lots were platted to create Golden Gate Estates, the world's largest subdivision. In 1969, General Acceptance Corp (GAC) took over GALC and its sister companies before the completion of utilities. GAC entered into Chapter 11 bankruptcy protection in 1975 and did not finish installation of utilities. There was virtually no development around the preserve until the late 1990s (Photoset 3.1.1). There are still very few homes directly within the Horsepen Strand, but the development of the drier lots surrounding the strand has increased significantly.

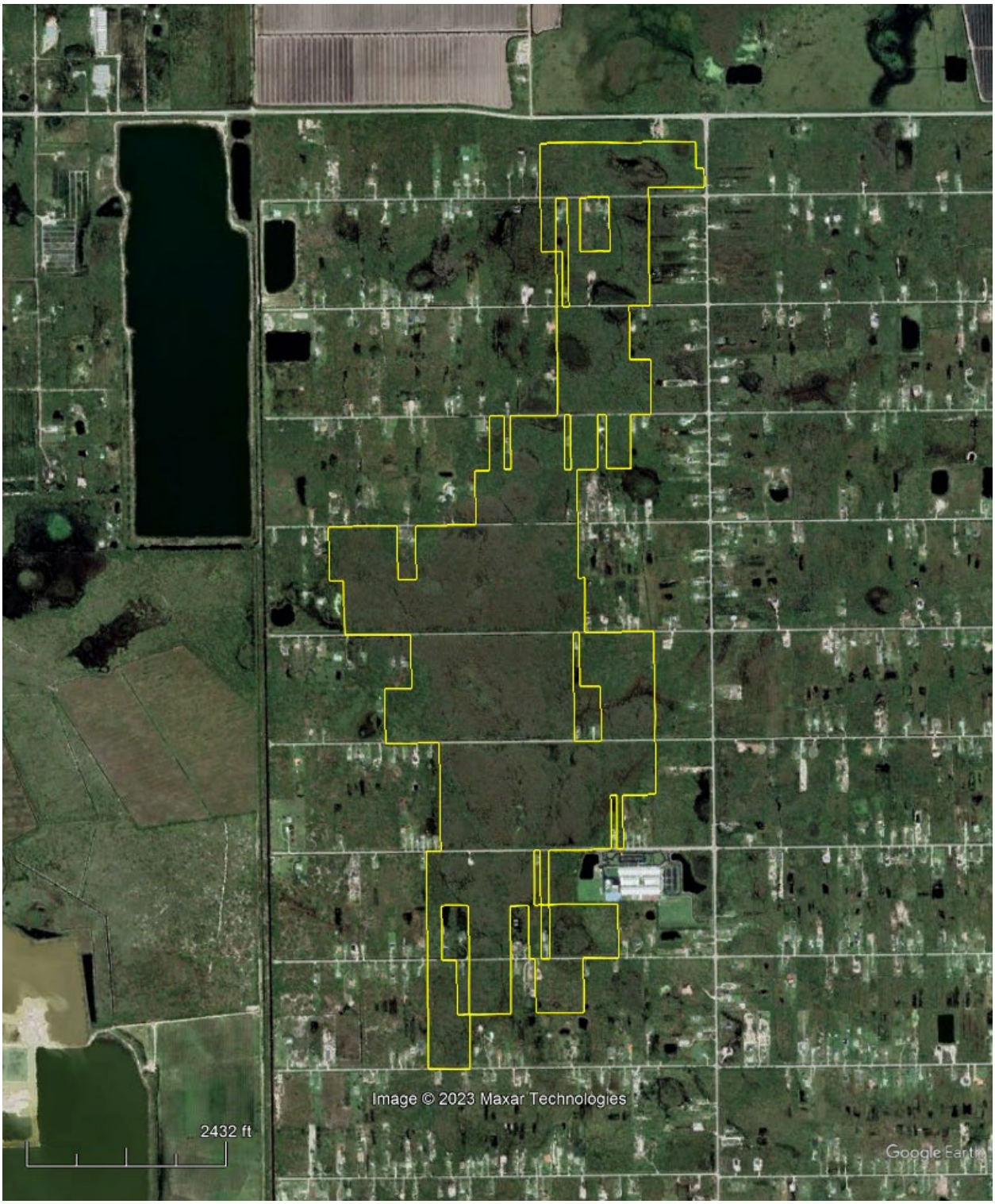
Photoset 3.1.1. Historical Aerial Imagery



1973 Aerial Imagery



January 1995 Aerial Imagery



October 2022 Aerial Imagery

4. Adjacent Land Use

4.1. Description

The project area lies entirely within the Northern Golden Gate Estates subdivision. This low-density residential area is comprised of single-family homes on 1 ¼-5 acres lots. Approximately 50% of the lots surrounding the preserve are vacant, but the area is experiencing increasing development pressure. Just south of the visitor trail is Estates Elementary School. The land on the north side of Immokalee Road is a mixture of agricultural lands and conservation easements. The easement connects the Horsepen Strand to the Corkscrew Regional Ecosystem Watershed (Figure 1.1.1). Land west of the preserve between Golden Gate Main Canal and Immokalee Road is currently agricultural but is slated for development of the Immokalee Road Rural Village community.

5. Acquisition and Expansion

5.1. Acquisition Description

The Oetting properties were nominated for acquisition in 2005 and purchased in 2007. The Freitas properties were nominated in 2007 and purchased in 2008. The Tuscany Pointe properties were donated for offsite mitigation in 2013. The Stebbins parcels were donated one year later, in 2014. Conservation Collier began targeting the greater Horsepen Strand area during Acquisition Cycle 10 in 2021. The Panther Walk Preserve Expansion Area (areas immediately adjacent to the existing preserve) was approved for acquisition by the Board of County Commissioners (BOCC) on January 25, 2022. Properties within the Panther Walk Preserve Multi-Parcel Project Area (area following the Horsepen Strand) were approved for acquisition by the BOCC on February 28, 2023 (Figure 5.1.2).

Table 5.1.1. Acquired Parcel Attributes

Seller	Folio(s)	Acreage	Price	Acquisition Date
Oetting	38847040004, 38847080006	1.14, 1.14	$50,000	6/11/2007
Freitas, Virginia J	38847240008	2.27	$43,200	7/14/2008
Tuscany Pointe (Lynx Zuckerman at Naples LLC)	38845720009, 38845680000	2.27, 2.73	Donation	12/20/2013
Stebbins, Barry S	38847200006	1.14	Donation	5/7/2014
Selvig, Maribeth	39150640006	1.14	Donation	9/26/2022
Burns, Sandra	38848880001	1.14	$30,000	1/30/2023
Johnson, Tim R	38845560007	1.14	$30,000	1/30/2023
Meyer Trust	38848720006	1.59	$72,000	1/30/2023
Sanchez, PS & NE	39143120009	2.73	$63,000	1/30/2023
Thommen, William F	38843200000	5.00	$100,000	1/30/2023

Wright, David	39151800007	1.14	$30,000	1/30/2023
Zhuang, Joseph	38844800001	2.73	$63,000	1/30/2023
Aguilar, Jorge	39151960002	1.14	$40,000	2/13/2023
Pena, John	38846440003	2.27	$52,000	2/13/2023

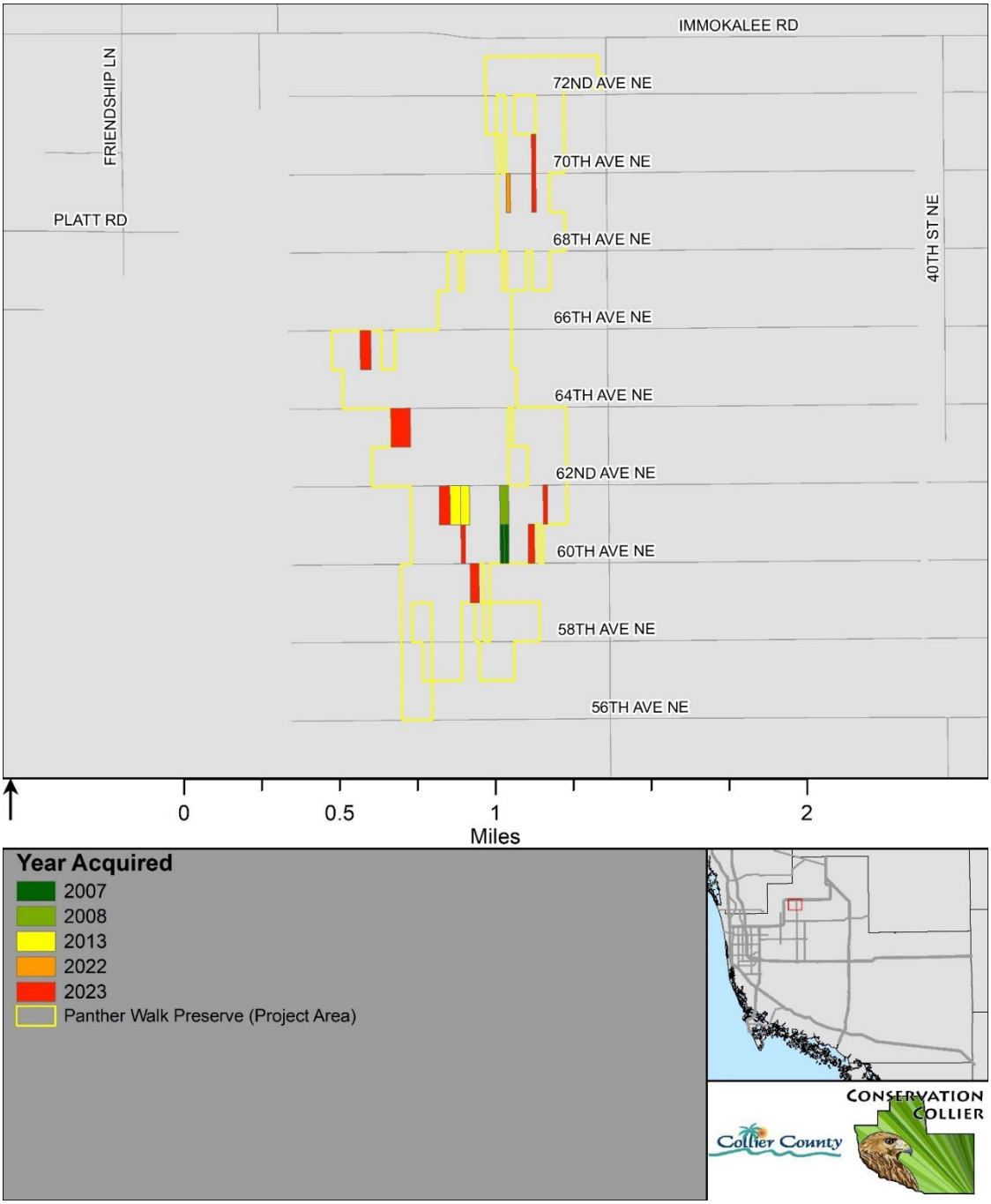


Figure 5.1.2. Parcel Acquisition History

5.2. Potential Preserve Expansion

The 296 parcels within the Panther Walk Preserve Multi-Parcel Project Area are approved for purchase as they become available. Parcels adjacent to the project area must be evaluated and approved on an individual basis before acquisition.

Management

6. Vegetation Management

6.1. Current Vegetative Community Conditions

The Florida Land Cover Classification System habitats are identified (Figure 6.1.1). Non-native species are denoted with an *. Plant communities identified statewide under this cooperative land cover system partially rely on aerial imagery for plant community classification. The native plant communities are remarkably intact throughout the project area. Most invasive plant infestations are relegated to the roadsides and edges of developed lots. Although not old growth, the area's cypress trees are relatively large. Plant communities are listed below in order of most to least common. Representative photos can be found in Photoset 11.1. A botanical inventory of the “core” preserve was completed in 2021 (Table 11.3.).

2211 Cypress – Dominated entirely by cypress, or species that are important in the canopy: long hydroperiod.

Notes: Includes areas labeled as 2213 Isolated Freshwater Swamps. The deepest sections of the strand are almost exclusively cypress or willow; other hardwoods can be found near ecotonal areas. Numerous listed epiphytes are found in this habitat.

Major Canopy Components: Bald cypress (*Taxodium distichum), and* laurel oak (*Quercus laurifolia)*

Major Midstory Components: Strangler fig (*Ficus aurea*), coastal plain willow (*Salix caroliniana*), dahoon holly (*Ilex cassine*), and cabbage palm (*Sabal palmetto*)

Major Understory Components: Swamp fern (*Telmatoblechnum serrulatum),* bull tongue arrowhead (*Sagittaria lancifolia),* maidencane (*Panicum hemitomon),* sawgrass (*Cladium jamaicense),* pickerel weed (*Pontederia cordata),* alligator flag (*Thalia geniculata), and other submerged aquatic vegetation*

1311 Mesic Flatwoods – Flatland with sand substrate; mesic; statewide except extreme southern peninsula and Keys; frequent fire (2-4 years); open pine canopy with a layer of low shrubs and herbs; longleaf pine and/or slash pine, saw palmetto, gallberry, dwarf live oak, wiregrass

Notes: This community is being invaded by hardwoods due to fire suppression.

Major Canopy Components: Slash pine (*Pinus elliottii), c*abbage palm (*Sabal palmetto),* laurel oak (*Quercus laurifolia),* melaleuca* (*Melaleuca quinquenervia*), *and Brazilian pepper** (*Schinus terebinthifolius*).

Major Midstory Components: Cabbage palm (*Sabal palmetto),* melaleuca* (*Melaleuca quinquenervia*), myrsine (*Myrsine cubana*), Brazilian pepper* (*Schinus terebinthifolia*)

Major Understory Components: Saw palmetto (*Serenoa repens*), bracken fern (*Pteridium aquilinum),* gallberry (*Ilex glabra*), swamp fern (*Telmatoblechnum serrulatum*), grapevine (*Vitis*

spp.), greenbriar (*Smilax* spp.), poison ivy (*Toxicodendron radicans*), rusty lyonia (*Lyonia ferruginea)*,

22211 Hydric Pine Flatwoods – Forest with sparse to moderate canopy of slash pine. The understory is grasses, wiregrass, forbs, and at times with sparse saw palmetto.

Notes: This habitat occurs at the margins of the strand and includes open wet prairies between stands of pines. It has the highest infestation of melaleuca.

Major Canopy Components: Slash pine (*Pinus elliottii), c*abbage palm (*Sabal palmetto),* laurel oak (*Quercus laurifolia),* melaleuca* (*Melaleuca quinquenervia*)

Major Midstory Components: Cabbage palm (*Sabal palmetto*)*,* wax myrtle (*Myrica cerifera*)

Major Understory Components: Sawgrass (*Cladium jamaicense)*, broomsedge (*Andropogon* spp.), swamp fern (*Telmatoblechnum serrulatum*), wiregrass (*Aristida stricta)*, various rushes and sedges

2112 Mixed Scrub-Shrub Wetlands – Wetlands that are dominated by woody vegetation less than 20ft in height. This can occur in many situations, but in most cases involves transitional or disturbed communities on hydrologically altered sites. Persistent examples of shrub wetlands include shrub bogs and willow swamps.

Major Canopy Components: Coastal plain willow (*Salix caroliniana*)

Major Midstory Components: Coastal plain willow (*Salix caroliniana*), *w*ax myrtle (*Myrica cerifera),* and buttonbush (*Cephalanthus occidentalis*)

Major Understory Components: Swamp fern (*Telmatoblechnum serrulatum*), sawgrass (*Cladium jamaicense*), alligator flag (*Thalia geniculata*), and other emergent plants

2120 Marshes – Long hydroperiod; dominated by grasses, sedges, broadleaf emergents, floating aquatics, or shrubs. (FNAI)

Notes: Due to their open nature, these plant communities are at risk of destruction by offroad vehicles

Major Canopy Components: Coastal plain willow (*Salix caroliniana*)

Major Midstory Components: Coastal plain willow (*Salix caroliniana*)

Major Understory Components: Swamp fern (*Telmatoblechnum serrulatum),* bull tongue arrowhead (*Sagittaria lancifolia),* maidencane (*Panicum hemitomon),* sawgrass (*Cladium jamaicense),* pickerel weed (*Pontederia cordata),* alligator flag (*Thalia geniculata), and other submerged aquatic vegetation*

18212 Residential Low Density - Structures within low-intensity urban areas.

18312 Rural Open Pine - Rural Open but with scattered to dense pines.
Notes: Homes in this subdivision have varying levels of native vegetation remaining on the lots. Most lots have a significant portion where the understory is mowed, but the mature pines and cabbage palms remain.

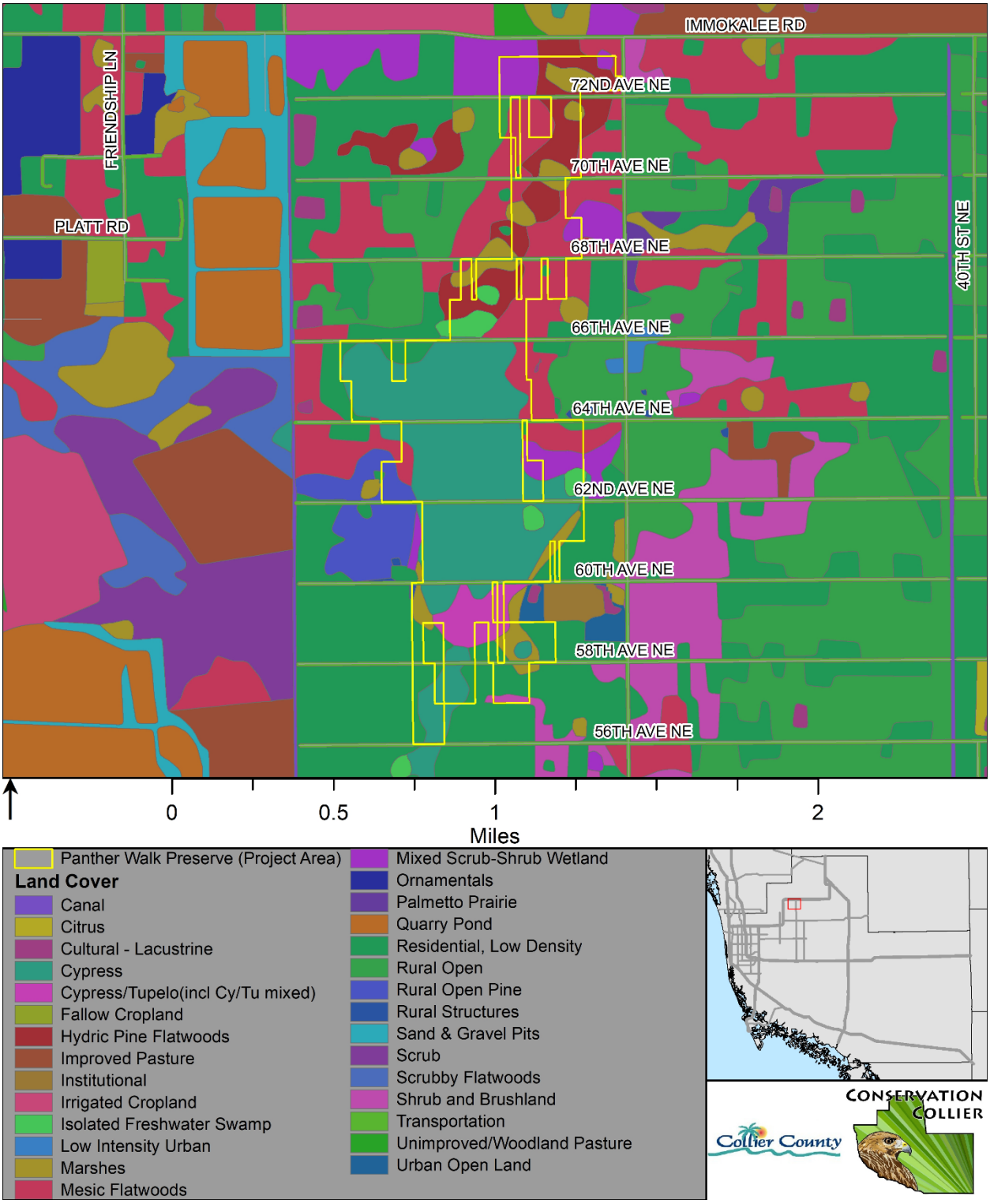


Figure 6.1.1. Florida Cooperative Land Cover Classification System Map

Table 6.1.2. Threatened and Endangered Plant Species

Common Name	Scientific Name	Protection Status
Hand fern	*Cheiroglossa palmata*	State Endangered
Stiff-leaved wild-pine, Cardinal airplant	*Tillandsia fasciculata*	State Endangered
Fuzzy-wuzzy air plant	*Tillandsia pruinosa*	State Endangered
Giant air plant	*Tillandsia utriculata*	State Endangered
Reflexed wild-pine, Northern needleleaf	*Tillandsia balbisiana*	State Threatened

6.1.3. Vegetation Management Concerns

Compared to other unmanaged natural areas, the project area has a low (<30%) infestation of invasive plant species. Most infestations are found along the roadsides, with Brazilian pepper colonizing the berm and West Indian marsh grass (*Hymenachne amplexicaulis*) and torpedo grass (*Panicum repens*) growing within the swales (Photoset 6.3.5). Melaleuca can be found in flatwood habitats. Old-world climbing fern (*Lygodium microphyllum*) is found sporadically throughout the area (Photoset 6.3.5). Drainage and fire suppression has allowed hardwoods and palms to proliferate, shifting the balance in some areas from flatwoods to hammocks. Offroad vehicle use has damaged vegetation in many parts of the project area, especially the open prairies present between habitat types.

6.2. Desired Future Conditions

A preserve with a matrix of high-quality strand forest, marshes, and flatwoods with mixed-age stands, a diverse understory, and less than 10% infestation of non-native vegetation.

6.3. Management Tools

6.3.1. Invasive Plant Removal

Since the acquisition, the “core” preserve has received annual treatments for FISC (Florida Invasive Species Council) Category I & II species. Herbicidal treatment will be extended to new parcels as they are acquired with a preference towards those with contiguous boundaries. Mechanical removal may be used along roadsides to improve aesthetics.

6.3.2. Native Plant Restoration

If necessary, native plantings will be utilized following the reduction of non-native and invasive species by chemical and mechanical means. However, this need is not expected based on the low infestation rates and diverse available seed sources. Native cabbage palms and other overgrown vegetation may be thinned to promote diverse growth and protect the habitat from catastrophic wildfires.

6.3.3. Prescribed Fire

Plant communities within this preserve depend on varying fire return intervals; prescribed fire will be an important land management tool for the flatwoods on this preserve. Before a prescribed fire can be implemented, land managers will survey the property to design management zones. These

management zones will require the installation of firebreaks around their perimeter that act as control lines for the safe application of prescribed fire. A fuel reduction of cabbage palms (*Sabal palmetto*) and melaleuca (*Melaleuca quinquenervia)* may also be necessary before a prescribed fire can be applied to the preserve.

6.3.4. Hydrological Restoration

The construction of roads, ditches, and canals has interrupted the natural flow of water through the Horsepen Strand. These interruptions have altered the hydroperiod and, therefore, the distribution/composition of plant communities. Despite this, little mixture of species from disparate communities (i.e., young saw palmetto growing amongst mature cypress) has been observed, suggesting that these alterations may not be reshaping the present communities to a large degree or that the alterations happened long enough ago that the plant communities have already entirely shifted. The onsite flow cannot be restored to its pre-development state. The preserve must be managed to benefit the vegetative communities most suited for its current and future conditions. As land has become more expensive, the development of wetland lots has increased (Photoset 6.3.5). Homes are built several feet above grade, which requires large amounts of fill. This fill displaces water and forces it into the strand and other drainage ways. Minor changes, such as the installation of additional culverts, may restore some of the strand's previous function.

Photoset 6.3.5 Vegetation Management Concerns

Old-world climbing fern (*Lygodium microphyllum*) growing within the center of the Horsepen Strand.

Typical Brazilian pepper (*Schinus terebinthifolius*) growth along the roadside swale

Construction within Horsepen Strand

6.4. Partnership Opportunities

Conservation Collier will continue to seek funding assistance from the Florida Fish and Wildlife Conservation Commission (FWC) Upland Invasive Exotic Plant Management Program. This program has been critical in conducting initial and otherwise cost-prohibitive invasive plant

removal projects over the past 20 years. Revegetation needs are expected to grow as invasive vegetation is removed. Conservation Collier intends to cultivate a lasting partnership with Growing Climate Solutions to meet those needs when feasible. Like other Conservation Collier preserves implementing prescribed fire, management partnerships will continue to exist within the prescribed fire realm. In conducting prescribed burns, Conservation Collier will continue its partnerships with the Florida Forest Service, U.S. Fish and Wildlife Service, FWC, Greater Naples Fire Department, South Florida Water Management District, and the Florida Department of Environmental Protection. Staff will seek opportunities to partner with researchers from higher education institutions to enhance conservation efforts of the native plant communities found on the preserve.

7. Wildlife Management

7.1. Current Wildlife Community Conditions

The low-density residential development pattern of the Northern Golden Gate Estates is compatible with the habitat needs of many species. Wildlife currently thrives in the Estates because they can travel relatively uninhibited throughout the neighborhood and into the nearby Corkscrew Regional Ecosystem Watershed. The high-quality habitats in the project area and the surrounding undeveloped lots provide the necessary refugia and foraging grounds for "urban" wildlife (Tables 7.1.1. and 7.1.3). The project area represents not only the flowway of the Horsepen Strand but also a corridor that connects the interior of the Estates to the larger conservation and agricultural areas to the north. This connection allows wide-ranging species, such as the endangered Florida Panther and Florida black bear, to utilize this area as a part of their greater territories. Wetlands of varying depths provide habitat and foraging grounds for a variety of both aquatic and terrestrial species, including several listed species of wading birds.

Table 7.1.1. Observed Threatened and Endangered Wildlife Species

Type	Common Name	Species	Protection Status
Mammals	Florida Panther	*Puma concolor coryi*	Federally Endangered
Birds	Little blue heron	*Egretta caerulea*	State Threatened
	Florida sandhill crane	*Antigone canadensis pratensis*	State Threatened

Table 7.1.2. Potential Threatened and Endangered Species

Type	Common Name	Species	Protection Status
Mammals	Big Cypress fox squirrel	*Sciurus niger avicennia*	State Threatened
	Everglade's mink	*Neovison vison evergladensis*	State Threatened
	Florida bonneted bat	*Eumops floridensis*	Federally Endangered
Birds	Audubon's crested caracara	*Polyborus plancus audubonii*	Federally Threatened
	Everglade's snail kite	*Rostrhamus sociabilis plumbeus*	Federally Endangered
	Roseate spoonbill	*Platalea ajaja*	State Threatened
	Tricolored heron	*Egretta tricolor*	State Threatened

	Wood stork	*Mycteria americana*	Federally Threatened
Reptiles	American alligator	*Alligator mississippiensis*	Federally Threatened SA
	Eastern indigo snake	*Drymarchon corais couperi*	Federally Threatened
	Gopher tortoise	*Gopherus polyphemus*	State Threatened

Table 7.1.3. Other Observed Wildlife Species

Type	**Common Name**	**Species**
Mammals	nine-banded armadillo	*Dasypus novemcinctus*
	eastern gray squirrel	*Sciurus carolinensis*
	raccoon	*Procyon lotor*
	Virginia opossum	*Didelphis virginianus*
	North American river otter	*Lontra canadensis*
	white-tailed deer	*Odocoileus virginianus*
	marsh rabbit	*Sylvilagus palustris*
	Florida black bear	*Ursus americanus floridanus*
	bobcat	*Lynx rufus*
	cat	*Felis catus*
Reptiles	black racer	*Coluber constrictor*
	chicken turtle	*Deirochelys reticularia*
	brown anole	*Anolis sagrei*
Amphibians	southern leopard frog	*Lithobates sphenocephalus*
	squirrel tree frog	*Hyla squirrella*
	Cuban tree frog	*Osteopilus septentrionalis*
Birds	great blue heron	*Ardea herodias*
	great egret	*Ardea alba*
	green heron	*Butorides virescens*
	American bittern	*Botaurus lentiginosus*
	white ibis	*Eudocimus albus*
	limpkin	*Aramus guarauna*
	belted kingfisher	*Megaceryle alcyon*
	anhinga	*Anhinga*
	black-bellied whistling-duck	*Dendrocygna autumnalis*
	wild turkey	*Meleagris gallopavo*
	red-shouldered hawk	*Buteo lineatus*
	Cooper's hawk	*Accipter cooperii*
	swallow-tailed kite	*Elanoides forficatus*
	black vulture	*Coragyps atratus*
	turkey vulture	*Cathartes aura*
	American crow	*Corvus brachyrhynchos*
	blue jay	*Cyanocitta cristata*
	red-bellied woodpecker	*Melanerpes carolinus*
	pileated woodpecker	*Dryocopus pileatus*

	downy woodpecker	*Dryobates pubescens*
	yellow-bellied sapsucker	*Sphyrapicus varius*
	yellow-rumped warbler	*Dendroica coronata*
	pine warbler	*Setophaga pinus*
	northern parula	*Setophaga americana*
	blue-gray gnat catcher	*Polioptila caerulea*
	northern mockingbird	*Mimus polyglottos*
	gray catbird	*Dumetella carolinensis*
	mourning dove	*Zenaida macroura*
	common ground dove	*Columbina passerina*
	northern cardinal	*Cardinalis*
	white-eyed vireo	*Vireo griseus*
	great crested flycatcher	*Myiarchus crinitus*
	tree Swallow	*Tachycineta bicolor*
	common grackle	*Quiscalus quiscula*
Insects	queen butterfly	*Danaus gilippus*
	Zebra Longwing butterfly	*Heliconius charitonius*
	Phaon crescent butterfly	*Phyciodes phaon*
	Red imported fire ant	*Solenopsis invicta*

7.1.4. Wildlife Management Concerns

Increasing development within and around the project area may stretch the tolerances of some species currently utilizing the area. The associated increase in vehicular traffic will undoubtedly negatively impact wildlife. Roads are spaced every quarter mile, which means all, but the narrowest-ranging species make crossings on a regular basis. In this neighborhood, most lots are developed in such a way that a portion, usually the back third, retains its native vegetation. However, the narrow width of the lots leaves little room for animals to move between homes. Several bottlenecks within the project area could be jeopardized by development. Lots within the project area are typically less desirable for building due to the wetlands present, but there is no guarantee of protection unless acquired. There are human/wildlife conflicts in the neighborhood, such as wildlife getting into trash and predation of pets and hobby livestock. Protecting space for wildlife may be interpreted by the public as inviting these conflicts. This project aims to conserve wildlife and habitat already present. It is unlikely that any management activities on the preserve will increase the amount of wildlife in the area.

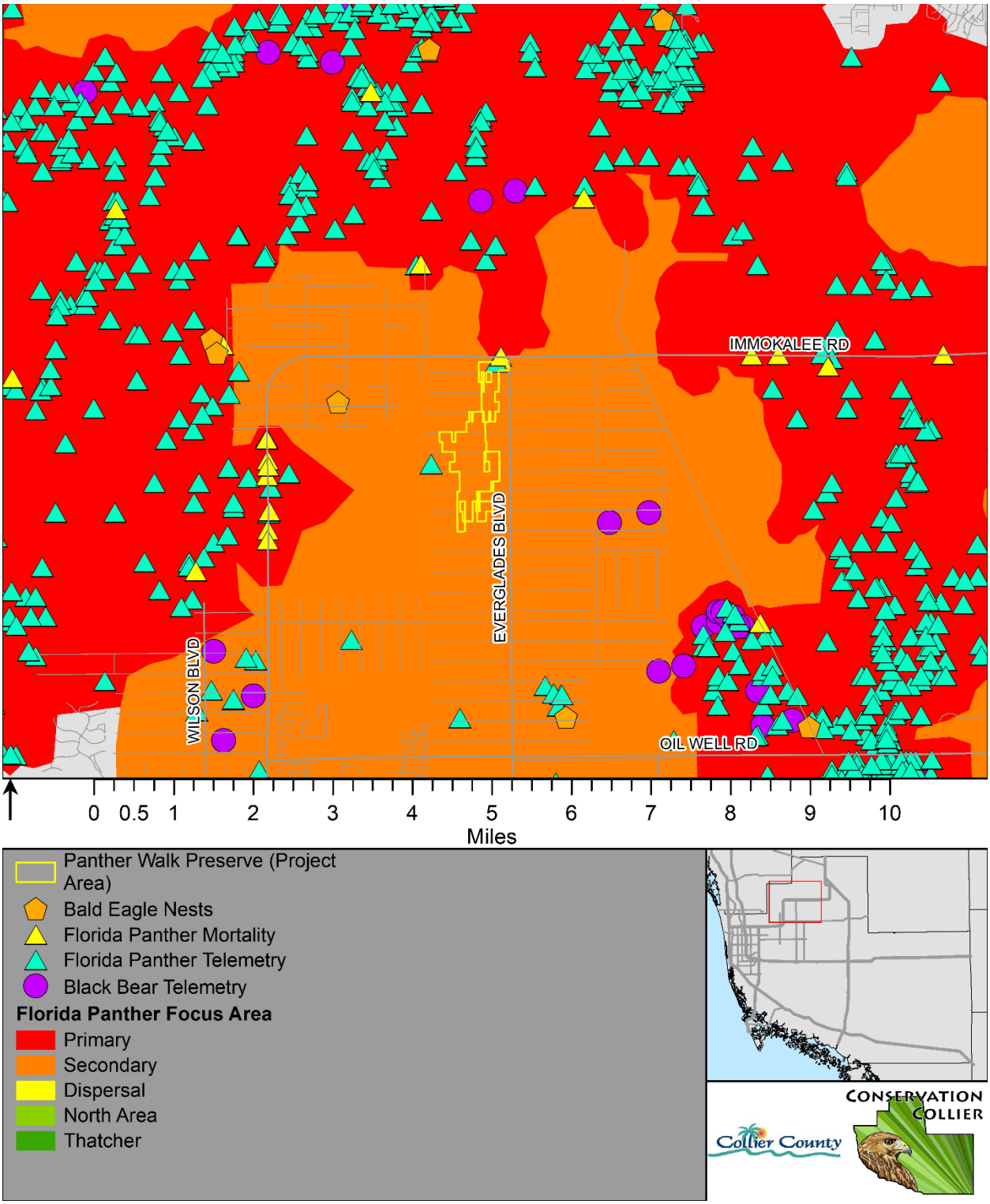


Figure 7.1.5 – Wildlife Spatial Data

7.2. Desired Future Conditions

A preserve with the appropriate vegetative communities, resource use, and connectivity to support wildlife species native to that habitat.

7.3. Management Tools

7.3.1. Habitat Improvements

Treatment and removal of invasive plant species, primarily melaleuca, Brazilian pepper, and old-world climbing fern, will promote the growth of native species that provide natural forage and cover for wildlife. Restoring fire to the landscape where feasible will increase diversity in the understory and benefit pine flatwood species.

7.3.2. Connectivity

Not all parcels within the area need to be acquired for the benefits of this project to be realized. Creating a protected, contiguous north/south corridor will benefit wildlife the most. If this is achieved, a wildlife underpass should be considered on Immokalee Road west of Everglades Boulevard (Figure 1.1.1.). This would provide a safer connection between the project area and the conservation easement to the north, which connects to CREW (Figure 7.1.5). Currently, wildlife freely moves through and between the developed lots. Maintaining gaps between homes will allow this movement to continue—a less ideal but more realistic corridor may be a meandering or steppingstone acquisition pattern. Although habituated to human presence, wildlife will benefit from areas sheltered from human encroachment for many parts of their lifecycle. Isolated parcels acquired within the project area can provide these important refugia.

7.3.3. Monitoring

Conservation Collier staff will continue to partner with the non-profit conservation organization, the fStop Foundation, which maintains a network of motion-sensor trail cameras throughout the “core” preserve to contribute to data collection for a wildlife utilization species inventory. The footage is shared with the FWC Panther Team and provides opportunities for researchers to track utilization by imperiled wildlife species. Cameras will continue to be deployed at the preserve to maintain passive monitoring of wildlife.

7.4. Partnership Opportunities

Conservation Collier staff will continue to partner and share data and observations with wildlife management agencies such as the Florida Fish and Wildlife Conservation Commission and the United States Fish and Wildlife Service (USFWS) where possible. Grant funding may be available to enhance imperiled wildlife species’ habitats, such as the USFWS Partners Grant. Staff will continue to partner with organizations such as the fStop Foundation for monitoring and outreach opportunities. Staff will seek opportunities to partner with researchers from higher education institutions to enhance conservation efforts of the wildlife species that utilize the preserve.

8. Recreation Management

8.1. Current Recreational Opportunity Conditions

The “core preserve” features a 1/3 mile seasonally inundated hiking trail (Figure 8.1.1., Photoset 8.1.2.)

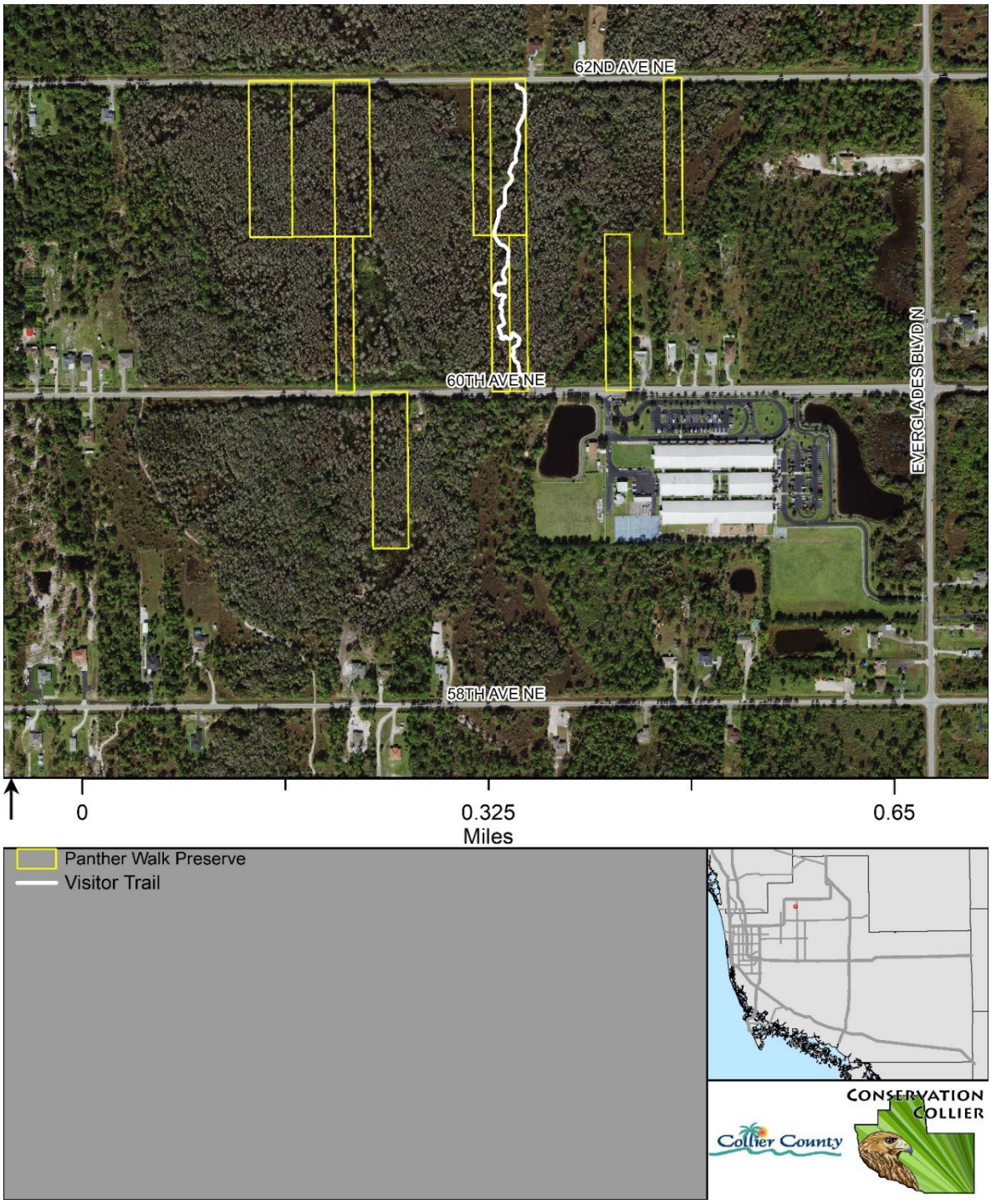


Figure 8.1.1. Visitor trail

Photoset 8.1.2 Visitor Trail

Trailhead at 60th Ave NE

Visitor trail during dry season, note the vehicle choke point between the cypress trees

8.2. Desired Future Conditions

A preserve with the amenities required for the public to safely engage in passive natural resource-based recreational activities.

Table 8.2.1. Compatible Recreational Activities

Recreational Activity	Compatible Use
Passive nature-based recreation (hiking, photography, wildlife viewing, environmental education, etc.)	Yes
Equestrian	No
Hunting	No
Fishing	No
Water-based Recreation (paddling, swimming, etc.)	No
Biking	No

8.3. Management Tools

8.3.1. Access Improvements

Each parcel has road frontage and adequate shoulder for parking. Flooded conditions within the parcels primarily limit access. Routing future trails along the margin of the strand will increase the period where visitors can utilize the trail without getting wet.

8.3.2. Amenity Installation/Enhancement

In addition to the current trail, a network of trails and roads through the project area can be modified for visitor use. Additions to this trail network can be made as adjacent parcels are acquired. Amenities to improve visitor experience include benches and interpretive signage. Trails and amenities will be designed in such a way as to minimize disturbance to sensitive species and habitats.

8.4. Partnership Opportunities

There may be opportunity to route the visitor trail through the Estate Elementary conservation easement to the west of the school near the current trailhead.

9. Preserve Safety and Security Management

9.1. Current/Predicted Human Conflict Conditions

Like other secluded, public properties, the preserve may attract those wishing to trespass and engage in illicit activities. There is a history of dumping along the roads within the project area. Numerous trails throughout the surrounding areas experience varying degrees of off-road vehicle

traffic. Occasionally, off-road vehicles use the current visitor trail. However, the narrow nature of the trail discourages most use.

Photoset 9.1.1: Site Security Issues

Offroad vehicle trespass on current trails

Offroad vehicle trail on the Wright parcel

9.2. Desired Future Conditions

A preserve free of littering, dumping, illicit activities, neighbor disturbances, unauthorized vehicles, and after-hours trespass.

9.3. Management Tools

9.3.1. Site Security Improvements

Staff will monitor for signs of trespass/illegal activities. Staff will collaborate with adjacent landowners to address issues as they arise. Site security may be enhanced by installing removable bollards at trailheads and blocking other trails completely. Trails will be cut through the vegetation so that numerous choke points prevent easy vehicular access.

9.3.2. Debris Removal

Debris will continue to be removed and disposed of offsite as it is encountered. Staff will monitor the preserve boundaries for signs of illegal dumping. Staff will erect educational signage and work collaboratively with the Collier County Sheriff's Office to address repeat offenses.

9.4. Partnership Opportunities

Staff will collaborate with the Collier County Sheriff's Office and FWC Law Enforcement to prevent and respond to any criminal site security and safety issues as they present themselves.

10. Budget

It is difficult to predict upcoming expenses due to the rapid acquisition pace within the project area. We can estimate costs on a per-acre basis and then extrapolate that number to the current acreage. Initial invasive plant treatments are expected to cost between $400-800/acre. Twenty additional acres have been acquired in 2023 and will be scheduled for initial invasive plant treatments in 2024 for an estimated cost of $8,000-16,000. Invasive plant maintenance is expected to cost between $200-400/acre. Therefore, the estimated cost to treat the same 20 acres in 2025 will be between $4,000-8,000. Parcels may or may not be immediately brought into treatment rotation upon acquisition based on their infestations and continuity. Mechanical vegetation removal costs approximately $1,600 per day. Approximately one mile of trail/fire break or 1/2 acre of land can be cleared daily. Anticipated land clearing includes removing Brazilian pepper hedges along roadsides and thick melaleuca stands, there are less than 2 acres of clearing necessary based on current holdings. Trail and firebreak installation is not expected until large contiguous swaths of land are acquired. In-house trail maintenance is estimated to cost $250 per year for our current trail. Each grouping of parcels will require signage ($30/sign). Currently, 12 signs are needed, with an estimated 5-10 additional needed each year.

11. Appendix

Photoset 11.1: Representative Site Photos

Wetlands plants growing at the margin of cypress strand forest and marsh on the Johnson parcel

Wet prairie situated between pine flatwood and mixed wetland hardwoods found southwest of Estate Elementary School

Unimpacted freshwater marsh found on the Selvig parcel

Pine flatwood found on the Gonzalez parcel

Oak and pine hammock on the Wright parcel

Table 11.2. Legal Description

Folio	Calculated Acres	Total Acres	Legal Description
38843200000	5	5	GOLDEN GATE EST UNIT 42 TR 42
38844800001	2.73	2.73	GOLDEN GATE EST UNIT 42 E 180FT OF TR 60
38845560007	1.14	1.14	GOLDEN GATE EST UNIT 42 W 75FT OF E 150FT OF TR 68 OR 684 PG 438
38845680000	2.73	2.73	GOLDEN GATE EST UNIT 42 W 180FT OF TR 69
38845720009	2.27	2.27	GOLDEN GATE EST UNIT 42 E 150FT OF TR 69
38846440003	2.27	2.27	GOLDEN GATE EST UNIT 42 W 150FT OF TR 78
38847040004	1.14	1.14	GOLDEN GATE EST UNIT 42 E 75FT OF TR 84
38847080006	1.14	1.14	GOLDEN GATE EST UNIT 42 W 75FT OF E 150FT OF TR 84 OR 1965 PG 918
38847200006	1.14	1.14	GOLDEN GATE EST UNIT 42 E 75FT OF W 180FT OF TR 85 OR 651 PG 374
38847240008	2.27	2.27	GOLDEN GATE EST UNIT 42 E 150FT OF TR 85 OR 617 PG 1056
38848720006	1.59	1.59	GOLDEN GATE EST UNIT 42 W 105FT OF TR 100
38848880001	1.14	1.14	GOLDEN GATE EST UNIT 42 E 75FT OF TR 101 OR 821 PG 1132
39143120009	2.73	2.73	GOLDEN GATE EST UNIT 47 E 180FT OF TR 32 OR 873 PG 1748
39150640006	1.14	1.14	GOLDEN GATE EST UNIT 47 W 75FT OF TR 92
39151800007	1.14	1.14	GOLDEN GATE EST UNIT 47 E 75FT OF W 180FT OF TR 101 OR 455 PG 787
39151960002	1.14	1.14	GOLDEN GATE EST UNIT 47 E 75FT OF W 180FT OF TR 102

Table 11.3 Panther Walk Preserve Plant List

Panther Walk Preserve Plant List

by Maureen S. Bonness and Jean McCollom
August 31, 2021

Scientific Name (with prior name)	Common Names	Native	Not Native	State	FNAI	FLEPPC
Acer rubrum	Red maple	N				
Agalinis harperi	Harper's false foxglove	N				
Ambrosia artemisiifolia	Common ragweed	N				
Ammannia latifolia	Pink redstem, Toothcups	N				
Amphicarpum muhlenbergianum	Blue maidencane	N				
Andropogon glomeratus var. *pumilus*	Bushy bluestem	N				
Andropogon virginicus var. *virginicus*	Broomsedge bluestem	N				
Aristida patula	Tall threeawn	N				
Asemeia violacea (=Polygala grandiflora, P. violacea)	Candyweed, Showy milkwort	N				
Axonopus furcatus	Big carpetgrass	N				
Azolla filiculoides (=A. caroliniana)	Waterfern	N				
Baccharis glomeruliflora	Saltbush	N				
Bidens alba	Spanish-needles	N				
Boehmeria cylindrica	False nettle, Bog hemp	N				
Boltonia diffusa	Smallhead doll's daisy	N				
Buchnera americana	American bluehearts	N				
Callicarpa americana	American beautyberry	N				
Carex lupuliformis	False hop sedge	N				
Carex verrucosa	Warty sedge	N				
Cassytha filiformis	Lovevine, Devil's gut	N				
Centella asiatica	Coinwort, Spadeleaf	N				
Cephalanthus occidentalis	Buttonbush	N				
Chamaecrista nictitans var. *aspera*	Hairy sensitive-pea	N				
Cirsium spp.	Thistle					
Cladium jamaicense	Sawgrass	N				
Coleataenia anceps (=Panicum anceps)	Beaked panicum	N				
Coleataenia rigidula (=Panicum rigidulum)	Redtop panicum	N				
Conoclinium coelestinum	Mistflower	N				
Conyza canadensis	Canadian horseweed	N				
Coreopsis leavenworthii	Leavenworth's tickseed	N				

Croton glandulosus var. septentrionalis (=var. glandulosus)	Vente conmigo	N				
Cuphea carthagenensis	Colombian waxweed		√			
Cuscuta indecora	Bigseed alfalfa dodder	N				
Cyperus haspan	Haspan flatsedge	N				
Cyperus ligularis	Swamp flatsedge	N				
Cyperus ovatus (=C. retrorsus)	Pinebarren flatsedge	N				
Cyperus polystachyos	Manyspike flatsedge, Texas sedge	N				
Cyperus prolifer	Dwarf papyrus		√			II
Desmodium incanum	Beggar's-ticks		√			
Dichanthelium commutatum	Variable witchgrass	N				
Dichanthelium ensifolium	Cypress witchgrass	N				
Dichanthelium erectifolium	Erect witchgrass	N				
Diodia virginiana	Buttonweed, Virginia buttonweed	N				
Edrastima uniflora (=Odenlandia uniflora)	Clustered mille graines	N				
Eleocharis interstincta	Knotted spikerush	N				
Eragrostis atrovirens	Thalia lovegrass		√			
Eragrostis bahiensis	Bahia lovegrass		√			
Eragrostis elliottii	Elliott's lovegrass	N				
Erechtites hieraciifolius	Fireweed, American burnweed	N				
Erigeron quercifolius	Southern-fleabane, Oakleaf fleabane	N				
Eupatorium capillifolium	Dogfennel	N				
Eupatorium leptophyllum	Falsefennel	N				
Euphorbia hyssopifolia (=Chamaesyce hyssopifolia)	Eyebane, Hyssopleaf sandmat	N				
Euploca polyphylla (=Heliotropium polyphyllum)	Pineland heliotrope	N				
Eustachys glauca	Prairie fingergrass	N				
Eustachys petraea	Pinewoods fingergrass	N				
Euthamia caroliniana	Slender flattop goldenrod	N				
Ficus aurea	Strangler fig, Golden fig	N				
Fimbristylis cymosa	Hurricanegrass		√			
Fuirena breviseta	Saltmarsh umbrellasedge	N				
Fuirena scirpoidea	Southern umbrellasedge	N				
Funastrum clausum (=Sarcostemma clausum)	Whitevine, White twinevine	N				
Galium tinctorium	Stiff marshl bedstraw	N				
Habenaria floribunda (=H. odonotopetala)	Toothpetal false reinorchid	N				
Hydrocotyle sp.	Marshpennywort	N				
Hydrolea corymbosa	Skyflower	N				

Hypericum hypericoides	St. Andrew's-cross	N				
Hyptis alata	Musky mint, Clustered bushmint	N				
Ilex cassine	Dahoon holly, Dahoon	N				
Juncus marginatus	Shore rush, Grassleaf rush	N				
Juncus megacephalus	Bighead rush	N				
Juncus paludosus		N				
Lachnanthes caroliana	Bloodroot, Carolina redroot	N				
Lindernia grandiflora	Savannah false pimpernel	N				
Ludwigia curtissii	Curtiss's primrosewillow	N				
Ludwigia maritima	Seaside primrosewillow	N				
Ludwigia microcarpa	Smallfruit primrosewillow	N				
Ludwigia octovalvis	Mexican primrosewillow	N				
Ludwigia peruviana	Peruvian primrosewillow		√			
Ludwigia repens	Creeping primrosewillow	N				
Lycopus rubellus	Water horehound	N				
Lygodium microphyllum	Small-leaf climbing fern		√			I
Lythrum alatum var. *lanceolatum*	Winged loosestrife	N				
Macroptilium lathyroides	Wild bushbean		√			II
Mecardonia acuminata subsp. *peninsularis*	Axilflower	N				
Melaleuca quinquenervia	Punktree		√			I
Melochia spicata	Bretonica peluda	N				
Melothria pendula	Creeping-cucumber	N				
Micranthemum glomeratum	Mudflower	N				
Mikania scandens	Climbing hempweed, Climbing hempvine	N				
Mitreola petiolata	Miterwort, Lax hornpod	N				
Mitreola sessilifolia	Swamp hornpod	N				
Morella cerifera (=Myrica cerifera)	Wax myrtle, Southern bayberry	N				
Myrsine cubana (=Rapanea punctata)	Myrsine, Colicwood	N				
Nekemias arborea (=Ampelopsis arborea)	Peppervine	N				
Nephrolepis exaltata	Wild Boston fern	N				
Nymphaea odorata	American white waterlily	N				
Oenothera simulans (=Gaura angustifolia)	Southern beeblossom	N				
Oxalis corniculata	Common yellow woodsorrel	N				
Panicum dichotomiflorum	Fall panicgrass	N				
Panicum hemitomon	Maidencane	N				
Panicum repens	Torpedo grass		√			I
Parthenocissus quinquefolia	Virginia-creeper, Woodbine	N				

Paspalidium geminatum	Kissimmee grass	N				
Passiflora suberosa	Corkystem passionflower	N				
Persicaria glabra (=Polygonum densiflorum)	Denseflower knotweed	N				
Persicaria hydropiperoides (=Polygonum hydropiperoides)	Mild waterpepper; Swamp smartweed	N				
Phlebodium aureum	Golden polypody	N				
Phyla nodiflora	Frogfruit, Capeweed	N				
Pinus elliottii var. densa	South Florida slash pine	N				
Pleopeltis michauxiana (=Polypodium polypodioides)	Resurrection fern	N				
Pluchea baccharis (=Pluchea rosea)	Rosy camphorweed	N				
Pluchea odorata	Sweetscent	N				
Polypremum procumbens	Rustweed, Juniperleaf	N				
Proserpinaca palustris	Marsh mermaid-weed	N				
Psilotum nudum	Whisk fern	N				
Ptilimnium capillaceum	Mock bishopsweed, Herbwilliam	N				
Quercus laurifolia	Laurel oak, Diamond oak	N				
Quercus minima	Dwarf live oak	N				
Quercus virginiana	Virginia live oak	N				
Rhexia mariana	Pale meadowbeauty, Maryland meadowbeauty	N				
Rhynchospora colorata	Starrush whitetop	N				
Rhynchospora divergens	Spreading beaksedge	N				
Rhynchospora inundata	Narrowfruit horned beaksedge	N				
Rhynchospora microcarpa	Southern beaksedge	N				
Richardia grandiflora	Largeflower Mexican clover		√			II
Sabal palmetto	Cabbage palm	N				
Saccharum giganteum	Sugarcane plumegrass	N				
Sacciolepis striata	American cupscale	N				
Sagittaria graminea	Grassy arrowhead	N				
Sagittaria lancifolia	Bulltongue arrowhead	N				
Salix caroliniana	Coastal Plain willow	N				
Sambucus nigra subsp. canadensis	American elderberry	N				
Schinus terebinthifolia	Brazilian pepper		√			I
Schizachyrium rhizomatum	Rhizomatous bluestem	N				
Scleria reticularis	Netted nutrush	N				
Scoparia dulcis	Sweetbroom, Licoriceweed	N				
Serenoa repens	Saw palmetto	N				
Setaria magna	Giant bristlegrass	N				
Setaria parviflora (=S. geniculata)	Knotroot foxtail, Yellow bristlegrass	N				

Sida ulmifolia (=S. acuta)	Common wireweed, Common fanpetals	N				
Sideroxylon reclinatum	Florida bully, Buckthorn	N				
Smilax auriculata	Earleaf greenbrier	N				
Smilax tamnoides	Bristly greenbrier	N				
Solanum tampicense	Aquatic soda apple		√			I
Solidago sp.	Goldenrod	N				
Spermacoce verticillata	Shrubby false buttonweed		√			II
Stenotaphrum secundatum	St. Augustine grass		√			
Symphyotrichum carolinianum (=Aster carolinianus)	Climbing aster	N				
Symphyotrichum dumosum (=Aster dumosus)	Rice button aster	N				
Symphyotrichum fontinale (=Aster fontinalis)	Florida water aster	N				
Symphyotrichum simmondsii (=Aster simmondsii)	Simmond's aster	N				
Taxodium ascendens	Pond cypress	N				
Taxodium distichum	Bald cypress	N				
Telmatoblechnum serrulatum (=Blechnum serrulatum)	Swamp fern	N				
Teucrium canadense	Wood sage, Canadian germander	N				
Thalia geniculata	Alligatorflag; Fireflag	N				
Thelypteris interrupta	Hottentot fern, Shiny Thelypteris	N				
Thelypteris kunthii	Southern shield fern	N				
Tillandsia balbisiana	Reflexed wild-pine, Northern needleleaf	N		T		
Tillandsia fasciculata	Stiff-leaved wild-pine, Cardinal airplant	N		E		
Tillandsia paucifolia	Potbelly airplant	N				
Tillandsia recurvata	Ball-moss	N				
Tillandsia setacea	Thin-leaved wild-pine, Southern needleleaf	N				
Tillandsia usneoides	Spanish-moss	N				
Toxicodendron radicans	Eastern poison-ivy	N				
Typha domingensis	Southern cattail	N				
Urena lobata	Caesarweed		√			I
Utricularia foliosa	Leafy bladderwort	N				
Utricularia sp.	Bladderwort	N				
Vicia acutifolia	Sand vetch, Fourleaf vetch	N				
Viola lanceolata	Bog white violet	N				
Vitis rotundifolia	Muscadine grape	N				
Vittaria lineata	Shoestring fern	N				
Woodwardia virginica	Virginia chain fern	N				

Xyris jupicai	Richard's yelloweyed grass		√			
Count						
176		**157**	**18**	**2**	**0**	**10**

State Codes: E=Endangered, T=Threatened
FNAI Codes: S1=critically imperiled; S2=imperiled because of rarity; S3=very rare in Florida or restricted range.
FLEPPC Codes: Category I = species has altered native plant communities; Category II = species with increasing abundance or frequency.

Sources. Scientific plant names and Native/Not-Native status is according to the Atlas of Florida Plants website as of August 2021. State status is from the Florida Department of Agriculture and Consumer Services 2018 list. The FNAI category is from Florida Natural Areas Inventory April 2019 list. The FLEPPC category is from the Florida Exotic Pest Plant Council 2019 list.

11.4. Public Meeting Comments and Staff Responses

Attendees of the meeting were receptive to the plan. There were several questions on the acquisition process, how to protect wildlife corridors and connectivity, invasive plants, and trail management.