SPRING HAMMOCK PRESERVE

Land Management Plan

2014

SPRING HAMMOCK PRESERVE
LAND MANAGEMENT PLAN

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Spring Hammock Preserve

Executive Summary

Acres: 1,499.28 Acres

Location: Longwood, Florida Sections: 21, 26, 27, 28, 29, and 35 Township: 20 South Range: 30 East

Dates of Acquisition: 1927, 1974, 1979, 1980, 1986, 1987, 1988, 1989, 1993, 1995, 1996, 2003

Key Resource Issues: For this management plan, all of the existing and proposed improvements and structures are located on County owned property only (with the exception of a small section of the Cross Seminole Trail that has already been constructed). Spring Hammock Preserve holds significant importance through the natural, recreational, and cultural resources it offers and the ecosystem services it provides. The preserve acts as a natural filtering system for the Soldier's Creek Drainage Basin before draining into Lake Jesup. As a watershed and wetlands area, it provides natural habitat for numerous species of plants and animals, and provides storage for flood and storm water. Cultural resources include historical areas and archaeological sites. The Preserve also contains five acres of active based recreational facilities including: five baseball fields, two softball fields, and two soccer/multi-purpose fields, all of which are located within Soldier's Creek Park. Seminole County's Cross Seminole Trail (CST) also bisects the preserve from west to east offering an alternative avenue for enjoying this regional resource. Incompatible uses on this property include hunting, and motorized vehicles of any kind (unless otherwise designated – access roads).

GENERAL DESCRIPTION:

- Security – The geographical location and dissection of the Preserve by several roadways creates a challenge for the overall security of the site. All possible locations for access whether designated or not, are regularly evaluated and methods for control considered. The additional and more frequent presence of Parks and Recreation, Seminole County Natural Lands Program (SCNLP) staff and Police, should act as an effective deterrent to vandalism. Security of the site will continue to be monitored and further corrective actions may be required.

- Restoration – The preserve contains a variety of habitats including hydric hammock, floodplain forest and mesic and scrubby flatwoods. Staff will be evaluating the use of mechanical treatment and prescribed fire as a restoration tool at this property.

- Fire – Spring Hammock contains two fire dependent plant communities' mesic and scrubby flatwoods. Seminole County Natural Lands Program has developed a comprehensive

Prescribed Burn Plan to address the use of fire as a management tool to maintain the ecological integrity of the preserve.

- Invasive and Exotic Species – The preserve contains several invasive and exotic plant species with air potato being the most problematic. Other invasive plant species found on site include the Japanese climbing fern, old world climbing fern, camphor and wild balsam apple. The brown anole, greenhouse frog, and feral hog are species of exotic fauna that have been recorded at the site.

- Wildlife and Plants – Spring Hammock Preserve is home to several listed animal species including the bald eagle, eastern indigo snake, gopher tortoise, and American alligator, as well as the listed plant species Okeechobee gourd, Florida willow, and bipinnate cuplet fern.

- Cultural Resources – Two archeological sites have been recorded within the preserve. Spring Hammock 1, 8SE70, is a small, prehistoric shell midden and is considered to be a potentially significant cultural resource. A single Suwannee projectile point was located at Soldiers Creek 2 (8SE71) but is not considered culturally significant.

- Education – Located on the preserve is the Seminole County School Board's Environmental Studies Center (ESC) which provides multi-disciplinary environmental education to more than 10,000 students annually. The Seminole County Natural Lands Program (SCNLP) had an agreement with the school board to provide environmental education camps (Eco Camp) during winter, spring and summer break in 2012 at the ESC and will be exploring future use of the facilities. The preserve has also been used as an outdoor learning destination for both high school and college students. The Natural Lands Program provides interpretive hikes on this property as well.

Key Land Use/Recreation Issues: Land use for Spring Hammock Preserve is designated as Preservation Managed Lands on the Seminole County Future Land Use Map, which is consistent with the long-range intended preservation and passive use of the site.

General Description:

- Access – There are three access points into Spring Hammock. The entrance point located on the west side of County Road 419 provides access to active based recreational facilities. The adjacent entrance, located on the east side of CR 419, provides access to the Environmental Studies Center as well as parking for use of the trail system within the preserve. The third access point is Big Tree PARK which serves as a trail head for the Cross Seminole Trail which bisects SHP.

- Public recreation – The site is open for active based recreational opportunities at Soldier's Creek Park as well as hiking, non-motorized biking, and equestrian use via walking paths and the CST. The County has developed a visitor services/recreation plan for the property.

Spring Hammock Preserve
Seminole County, Florida

LAND MANAGEMENT PLAN

INTRODUCTION

Any existing or future amenities discussed in this management plan occur solely on Seminole County owned land. Currently there are no plans to develop any of the state lands leased to the county for any type of recreation or active management. The gross income generated on the property occurs on Seminole County owned land only. Gross income, including the softball fields, is approximately $80,000 per year. All of the revenue from the softball fields goes back to our parks division, who is not responsible for management of the state owned lands. That falls within our Greenways and Natural Lands Division. That revenue as it relates to Spring Hammock Preserve is approximately $300 per year (all associated with hikes). Revenue from the School Board for the Environmental Studies Center, also located on County property, is approximately $150,000/year – which goes back to the school board for managing the ESC.

Seminole County contains many treasured natural resources such as Spring Hammock, the Wekiva River, Econlockhatchee River and many hammocks, streams and lakes, all of which have significant environmental importance. It is in the best interest of the citizens of Seminole County that all appropriate actions be taken to assure the protection for future generations of our most precious natural resources. The Conservation and Open Space Elements of the Comprehensive Plan lay the framework for protecting the County's natural resources. Acquiring, protecting, restoring and the passive use of important natural/environmental lands located within Seminole County is the most direct and successful method to reach this goal.

Toward this end, County residents overwhelmingly approved on November 6, 1990 and again in 2000, bond referendums totaling approximately $25 million in general obligation bonds to acquire environmentally sensitive lands. The bonds would be repaid with up to 1/4 mil. Advalorem tax assessment over a twenty year period. Examples of land purchased and preserved, restored and thereafter, used for passive recreational purposes include, uplands, corridors and parcels along major rivers, lakes and streams, such as land in the general area of the Wekiva River; the Econlockhatchee River, the St. Johns River, Lake Jesup and Spring Hammock Preserve.

The goal of the County's Natural Land's acquisition program is to preserve for future generations, the rich biological diversity of Seminole County's most significant natural areas.

This is accomplished through:

- The protection of important natural/ environmental lands through acquisition and land stewardship.

- The provision of opportunities for existing residents and future generations to enjoy wild and scenic areas through passive recreation and educational uses.

To provide sound land stewardship and provide public enjoyment of these resources, this Management Plan, which balances both resource needs with use impacts, has been developed. This Management Plan describes the resource management activities needed to preserve and or restore natural systems, the appropriate passive recreational uses for public enjoyment and public safety measures.

During the first ten-year period of active management, several key governing documents were adopted, the collection of baseline data was initiated and several properties were open for public access. A Natural Lands Ordinance, Prescribed Fire Plan and Resource Monitoring plan were major accomplishments during this cycle. These provided the necessary tools and information to create this comprehensive management plan. The second 15 year period for the Natural Lands Program focuses on opening of additional properties, developing outreach and volunteer programs, refining the maintenance, operations and resource monitoring programs, and developing and implementing an exotic species management plan. This Plan is intended to be updated on a periodic (10 yr.) basis as needs and opportunities arise to better accomplish the stated goals of the program.

To date, over 6,600 acres have been purchased through this program, including 9 properties that are open to the public. The Natural Lands Program (NLP) is a program under the Greenways and Natural Lands Division (GNL) which in turn is within the Seminole County Leisure Services Department. The entire Spring Hammock Preserve is managed under the Leisure Services Department and is managed for multi-use recreation purposes including an active softball/baseball complex. There is a lease agreement with the Seminole County School Board for the property where the Environmental Studies Center is located. The School Board is responsible for upkeep of their facilities and the Leisure Services Department is responsible for the resource management and paved and unpaved road/trail upkeep (Appendix A).

Past Uses

Spring Hammock Preserve (SHP) is a well-known landmark to both residents and visitors because of its oasis-like appearance in the midst of a rapidly growing urban area. History and legend of the hammock indicate that the area was once known as “Devil’s Bend,” and that County Road (CR) 427 was once known as “Old Bear Trail.” Seminole Indians lived in Spring Hammock around 1830-1850.

In 1927, the Big Tree Park site was donated to Seminole County after the death of its owner, State Senator M.O. Overstreet. On this site once stood the “Senator” 3,500 year old cypress tree and one of the largest known living cypress trees. This tree was named “The Senator” in honor of Senator Overstreet and was lost to an arson fire on January 16, 2012.

In 1970, a bond referendum was held in Seminole County for purchasing future park lands. This resulted in the purchase of a 312-acre parcel (known as Soldier's Creek Park) within the Spring Hammock acquisition area by the County in 1974.

In response to continued community interest and county efforts, the Spring Hammock Preserve was designated in 1980 as a priority acquisition project of the Department of Natural Resources Conservation and Recreational Lands Program (CARL). This program, under the direction of the Board of Trustees of the Internal Improvement Trust Fund, was established to preserve significant environmental lands through cooperation between private property owners, local jurisdictions, and the State of Florida.

Between 1993 and 2008, Seminole County purchased, had a lease agreement in place, or was deeded property that provided the contiguous 1,500 acre publicly owned Spring Hammock Preserve

Today most of Spring Hammock Preserve is still in a natural state. However, the surrounding areas have been developed (commercial, industrial, agricultural, residential and recreational).

10-YEAR UPDATE

1. In 1987, Seminole County entered into an agreement with Seminole County Public Schools to establish an environmental studies center (ESC) on the property. At this time a small building was placed on site and a school program established for 5th graders. In 2003, the agreement was revised to include a new environmental studies center that included a nature center, offices and outdoor classroom pavilions (all located on Seminole County property).
2. Spring Hammock Preserve became infested with air potato vine in the 1990's. In 2003, the County began to hold an annual "air potato raid" at Spring Hammock Preserve. In the past 10 years, over 40,000 pounds of air potato bulbils have been removed from the property. In conjunction with the air potato raid, a multi-phase project using grant funding to treat invasive exotic species, including air potato, began in 2006 and continues today. In 2013, the County received 2,000 air potato beetles (*Lilioceris cheni*) from The Florida Department of Agriculture – Division of Plant Industry and released all of the beetles on Spring Hammock Preserve. The program has been very successful and 2015 will the first year that no air potato raid will be held on the property.
3. In 2006, the paved Cross Seminole Trail segment through Spring Hammock Preserve was completed. This is a 2 mile portion of the 22-mile paved trail, running east to west through Seminole County that follows an old abandoned railway line and a powerline easement (Figure 1). A management plan for the trail was developed and approved by the Acquisition and Restoration Council (ARC) in 2012 (Appendix M).
4. In 2012 Seminole County held a spring break (one week) and summer environmental camp (7 weeks) for ages 7-12 at the ESC. Attendance was very good, averaging 20 students per week. Children learned about the plants and animals in their area (including presentation with live native reptiles); participate in hikes on the property,

including a “swamp walk” in the hydric hammock; and get to participate in fun water activities that served to educate the students about the aquifer.

5. In 2011, the County officially opened a mountain bike trail on the west side of State Road 419 and is currently working on a volunteer agreement with the Southern Off-Road Bike Association (SORBA) to assist with inspecting the mountain bike trail.
6. The County has completed a visitor services/recreation plan for Spring Hammock Preserve, including Soldier’s Creek Park (Appendix B).

Assessment and Analysis to Declare Whether or not Property Should be Surplused

The County has no plans to declare any portion of this property as surplus. All of the acreage comprising this property is considered essential for the conservation and sustainability of flora and fauna within this region of Florida and to meet the original purposes for acquisition. For these reasons, none of the lands currently located within Spring Hammock should be considered or declared surplus.

Identification of Land Within or Immediately Adjacent that Should be Purchased

Currently there are no proposed acquisition properties adjacent to SHP. The County feels that we have achieved our optimum boundary for this property.

Identification of Adjacent Land Uses that Conflict with the Planned use of the Property, if any.

There are no adjacent land uses that conflict with the existing or planned use of the property.

Alternative or Multiple Uses on the Property

The County has provided multiple uses for recreation on the property including an environmental education program, unpaved hiking trails, a paved trail, sports fields, mountain bike trail, and community park with restrooms, pavilion, playground and boardwalk. Refer to Figure 9.

A Description of Multiple Uses of the Property Considered by the Lessee and a Statement Detailing Why Such Uses were not Adopted

There were no uses considered that were not adopted. Since the developed areas of the property are owned by the County full fee and occur in two different programs (recreation program and the Natural Lands Program), all of the alternative uses have been adopted (softball fields, playgrounds, mountain bike trail).

Regional Significance

Spring Hammock Preserve is located in the south central portion of Seminole County in Sections 21, 26, 27, 28, 29, and 35, Township 20 South, Range 30 East. As shown on the Site Location Map (Figure 1), Spring Hammock is located within 5 miles of several urban areas, and is accessible by US 17-92, CR 427, General Hutchison Parkway, and SR 419. The Florida Trail Association has a hiking trail through the preserve, which also offers excellent pedestrian access to the site. The site is bordered on the west by CR 427, on the east by Lake Jesup, and on the south by the cities of Longwood and Winter Springs.

Spring Hammock Preserve (SHP) is an area of geographic and public significance. Its strategic location in the midst of a rapidly developing county increases its significance as a threatened natural resource. Also, its proximity to the major population centers of Maitland, Winter Park and Orlando due south, make it readily accessible to the regional area.

Spring Hammock Preserve is not located within or adjacent to any aquatic preserves or designated Areas of Critical State Concern. However, those parcels purchased under the Conservation and Recreation Lands (CARL) program and owned by the State have been designated as Outstanding Florida Waters (rule 62-302.700(9)(f)54, Florida Administrative Code (FAC)). Figure 1 identifies publically owned conservation areas within proximity to Spring Hammock Preserve. The closest such area, not owned by the County is the Lake Jesup Conservation Area managed by the St. Johns River Water Management District 7 miles from Spring Hammock. Wekiwa Springs State Park is approximately 15 miles away.

Acquisition History

In 1927, the area of the preserve known as Big Tree Park was donated to Seminole County after the death of land owner and State Senator M.O. Overstreet. In 1970, a bond referendum was held in Seminole County for purchasing future parklands. This resulted in the purchase of a 312-acre parcel known as Soldier's Creek Park within the Spring Hammock acquisition area by the County in 1974. In 1980, responding to continued community interest and county efforts, Spring Hammock Preserve was designated as a priority acquisition project of the Department of Natural Resources and the Recreational Lands Program (CARL). This program, under the direction of the Board of Trustees of the Internal Improvement Trust Fund was established to preserve significant environmental lands through cooperation between private property owners, local jurisdictions, and the State of Florida. There are no leases or encumbrances on the land owned by the State.

In 1990 and again in 2000 the residents of Seminole County passed voter referendums establishing the County's Natural Lands and Trails Programs. This provided approximately 45 million dollars in funding to purchase environmentally significant lands and the design, acquisition and development of a countywide trail system.

Subsequent to designation as a priority project for acquisition, approximately 752 acres of the hammock were acquired by the state and leased to Seminole County for management purposes (Figure 2).

Today most of Spring Hammock Preserve's approximately 1,500 acres remain in a natural state. However, there has been some development (commercial, industrial, agricultural, residential, and recreational) along its fringe, both within and outside the site boundaries. Soldier's Creek Park has been developed as baseball and soccer fields. A paved trail has been established on the old CSX railway line located centrally through the property and an environmental studies center owned by the Seminole County School Board was erected on the property east of Soldier's Creek Park. As additional lands for Spring Hammock become available they may be

acquired using the remaining Seminole County Natural Lands Program funds specified for acquisition and capital improvement projects.

LAND USE

Land use for Spring Hammock Preserve is designated as Preserved Managed Lands on the Seminole County Future Land Use Map (Figure 3), which is consistent with the long-range intended preservation and passive use of the site.

Spring Hammock Preserve contains two existing county-owned parks: Big Tree Park and Soldier's Creek Park. These parks provide trails, boardwalks, picnicking facilities and fishing access for public use. Soldier's Creek Park consists of five acres of active-use recreational facilities, including: five baseball fields, two softball fields, and two soccer/multi-purpose fields. Approximately 2 miles of the paved Cross Seminole Trail, co-located with the Florida Trail, is located within Spring Hammock Preserve. Soldier's Creek Park also contains a one mile mountain bike trail (unpaved).

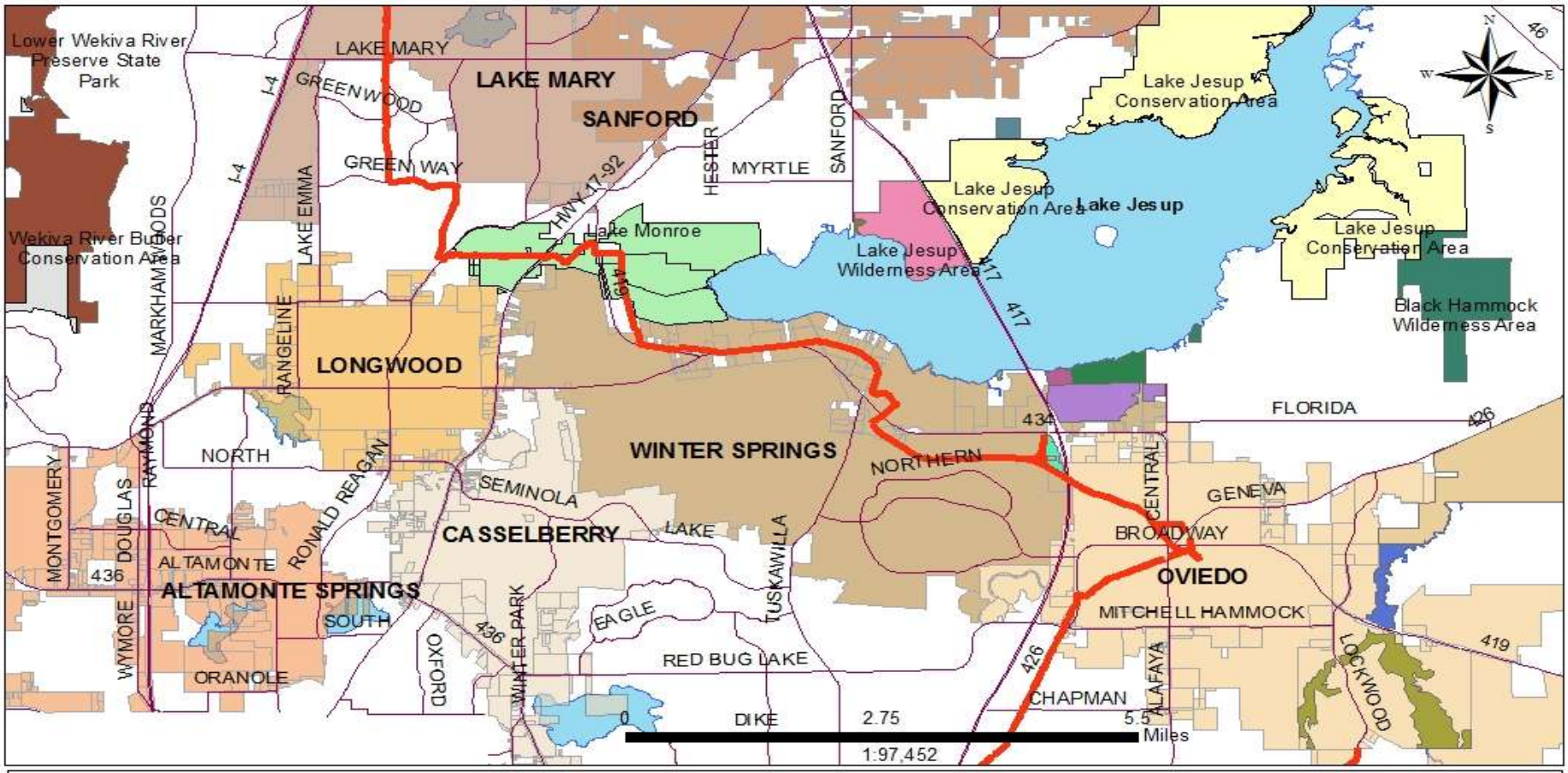
In 1976 the Environmental Studies Center was established in Soldier's Creek Park under joint sponsorship of the Seminole County School Board and Board of County Commissioners. This studies center provides multi-disciplinary environmental education to more than 10,000 students annually.

Spring Hammock Preserve is of vital environmental importance, serving as a natural filtering system for the Soldier's Creek drainage basin, as it drains into Lake Jesup. As a watershed and wetlands area, it provides natural habitat for numerous species of plants and animals, and provides storage for flood and stormwater.

Development on Spring Hammock Preserve is subject to the constraints of current Seminole County zoning regulations for the following zoning classifications: REC (Recreation), and PML (Preserved Managed Lands) (Figure 4). Development is further susceptible to flooding.

The environmental constraints to development are evident in the substantial amount of wetlands located on the site. SHP has a total of 25,594 linear feet of frontage along freshwater bodies, as follows: 2,314 feet along Gee Creek; 12,719 feet along Soldier's Creek; and 10,570 feet along Lake Jesup.

Appendix C contains copies of surveys for those parcels within the preserve that are currently included in the County's sublease agreement with the State. These surveys identify existing easements. It was determined at the time of acquisition that these easements would not adversely impact the site's management, but would be pursued for acquisition if they became available. The easements are mostly utility easements and not considered essential to the management of the property. The County will not be pursuing acquisition of these easements.



Spring Hammock Preserve
Figure 1: Location Map/Public Lands

Legend

Seminole County Owned Lands

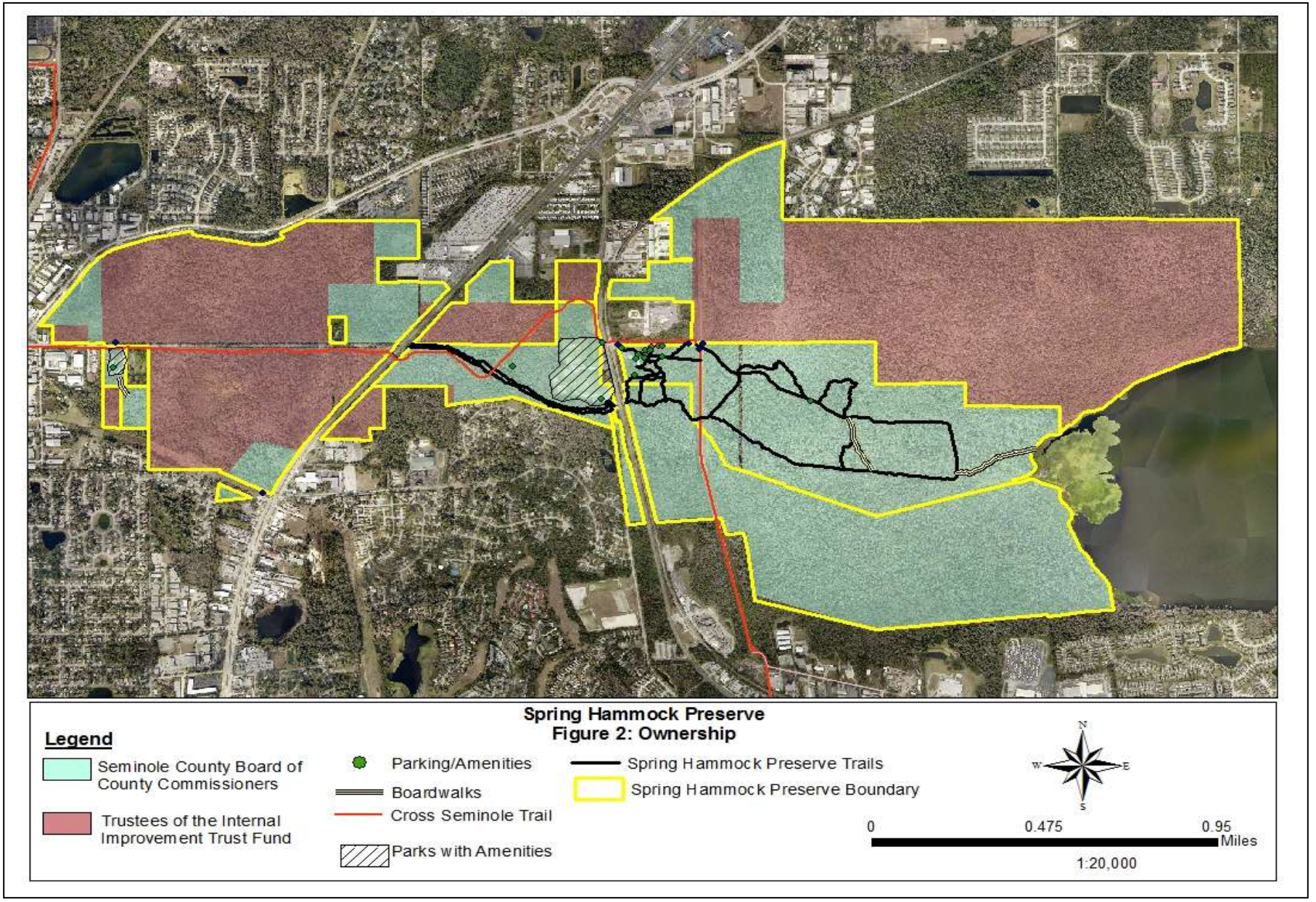
- Spring Hammock Preserve
- Sullivan Tract
- Black Hammock Wilderness Area
- Jetta Point Tract
- Lake Jesup Park
- Cross Seminole Trail
- Lake Jesup Wilderness Area

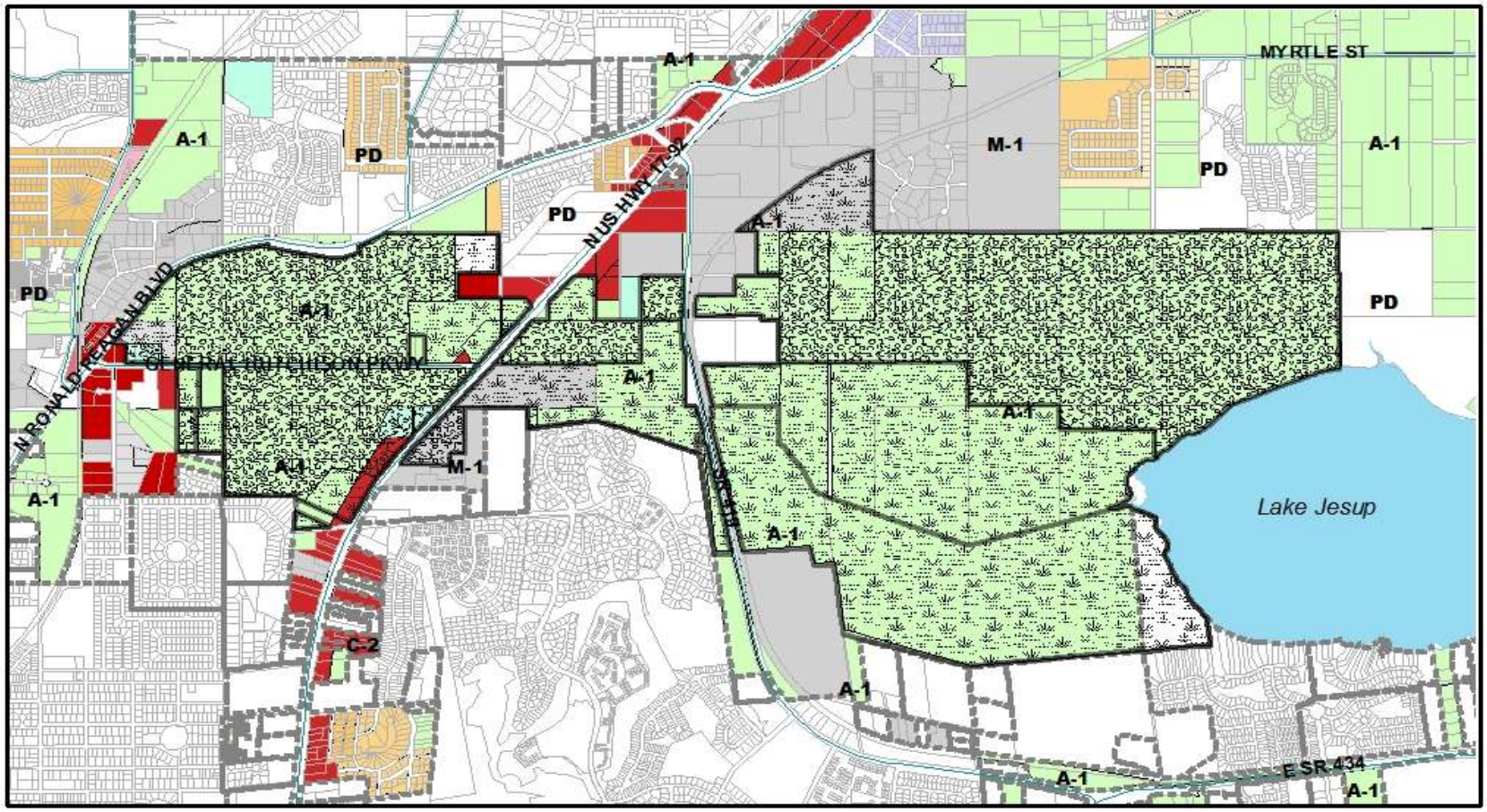
State Owned Lands

- Little Big Econ State Forest
- Lower Wekiva River Preserve State Park
- Wekiva River Buffer Conservation Area
- Markham Woods
- Lake Jesup Conservation Area

Other Public Lands

- Twin Rivers Conservation Area
- Audubon Society


Spring Hammock Preserve
Figure 2: Ownership
Legend
Seminole County Board of County Commissioners
Trustees of the Internal Improvement Trust Fund
Parking/Amenities
Boardwalks
Cross Seminole Trail
Parks with Amenities
Spring Hammock Preserve Trails
Spring Hammock Preserve Boundary
N
W
E
S
0
0.475
0.95
Miles
1:20,000


MYRTLE ST
A-1
PD
M-1
N US HWY 17-92
RONALD REAGAN BLVD
Lake Jesup
E SR 434
C-2
Spring Hammock Preseve
FIGURE 5: Seminole County Future Land Use
0
0.5
1
Miles
1:24,000
Legend
Seminole County Ownership
TIITF Ownership
Preserved Lands
Conserve
CityLimits
zoning
A-1 Agricultural-1Ac
R-1AAA Single Fam-13500
R-1A Single Fam-9000
R-1 Single Fam-8400
R-2 One and Two-Family-9000
RM-1 Single-fam Mobile Home-7000
RP Residential Professional
OP Office
CN Restricted Neighborhood Comm
C-2 Retail Commercial
C-3 Gen Commercial & Wholesale
M-1A Very Light Industry
M-1 Industrial
PUD Planned Unit Dev.
PCD Planned Commercial Dist.
PLI Public Land & Institutions
N
W
E
S

MANAGEMENT AUTHORITY AND CONSTRAINTS

The following local and state regulations provide guidelines and requirements for all development activity located within and adjacent to Spring Hammock Preserve.

FLORIDA STATUTES, CHAPTER 253.034

This chapter provides for development of a management plan which describes how the management agency should protect, preserve or otherwise use fragile on-site resources.

FLORIDA ADMINISTRATIVE CODE, CHAPTER 18-4

This chapter describes the responsibilities of the Land Management Advisory Committee in reviewing and determining how state lands should be operated and maintained. It also describes how management plans are written, and the criteria that must be adhered to in developing the plan.

OUTSTANDING FLORIDA WATERS (OFW) RULE 62-302.700(9)(F)54, FLORIDA ADMINISTRATIVE CODE (FAC)

The State owned lands have been designated as OFW.

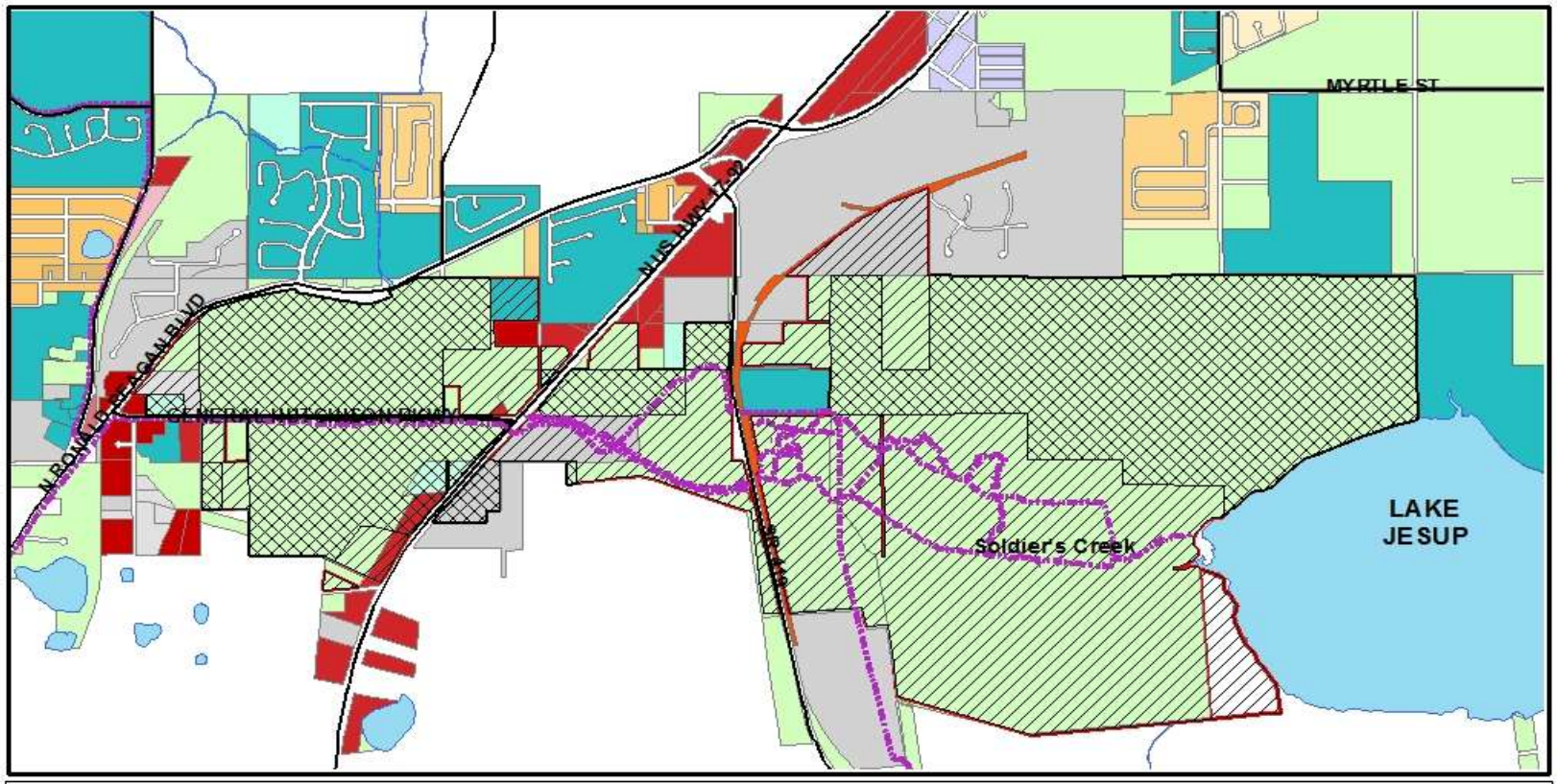
SEMINOLE COUNTY COMPREHENSIVE PLAN/LAND DEVELOPMENT CODE

As previously mentioned, the Future Land Use Map of the Comprehensive Plan designates Spring Hammock Preserve for Recreation and Preserved Managed Land Use (Figures 3 and 4). Recreational areas are designated to ensure their protection, proper development, and future public uses. Additionally, plan policies require that proposed development activity within the hammock be presented to the Board of County Commissioners for approval. All activity must comply with the County's Wetlands Management Program, Flood Plain Ordinances and Land Development Code.

SEMINOLE COUNTY CODE CHAPTER 190 PART 4

An ordinance relating to the use of natural lands owned by Seminole County was established March 10, 1998. The purpose of the ordinance is to establish regulations for the management and use of the properties purchased with the voter approved 1990 (and subsequently 2000) referendum funds.

No resolutions or other legislative and executive constraints have been established as management constraints for Spring Hammock Preserve.



Spring Hammock Preseve
Figure 4: Zoning

Legend

- CSX TRANSPORTATION INC
- Seminole County Ownership
- TIITF Ownership
- A-1 = Agricultural
- C-2 = Retail Commercial
- C-3 = General Commercial and Wholesale
- M-1 = Industrial
- M-1A = Very Light Industrial
- PCD = Planned Commercial District
- PLI = Public Land and Institutions
- Roads
- Trails

N W E S

0 0.5 1 Miles

1:24,000

NATURAL RESOURCES OVERVIEW

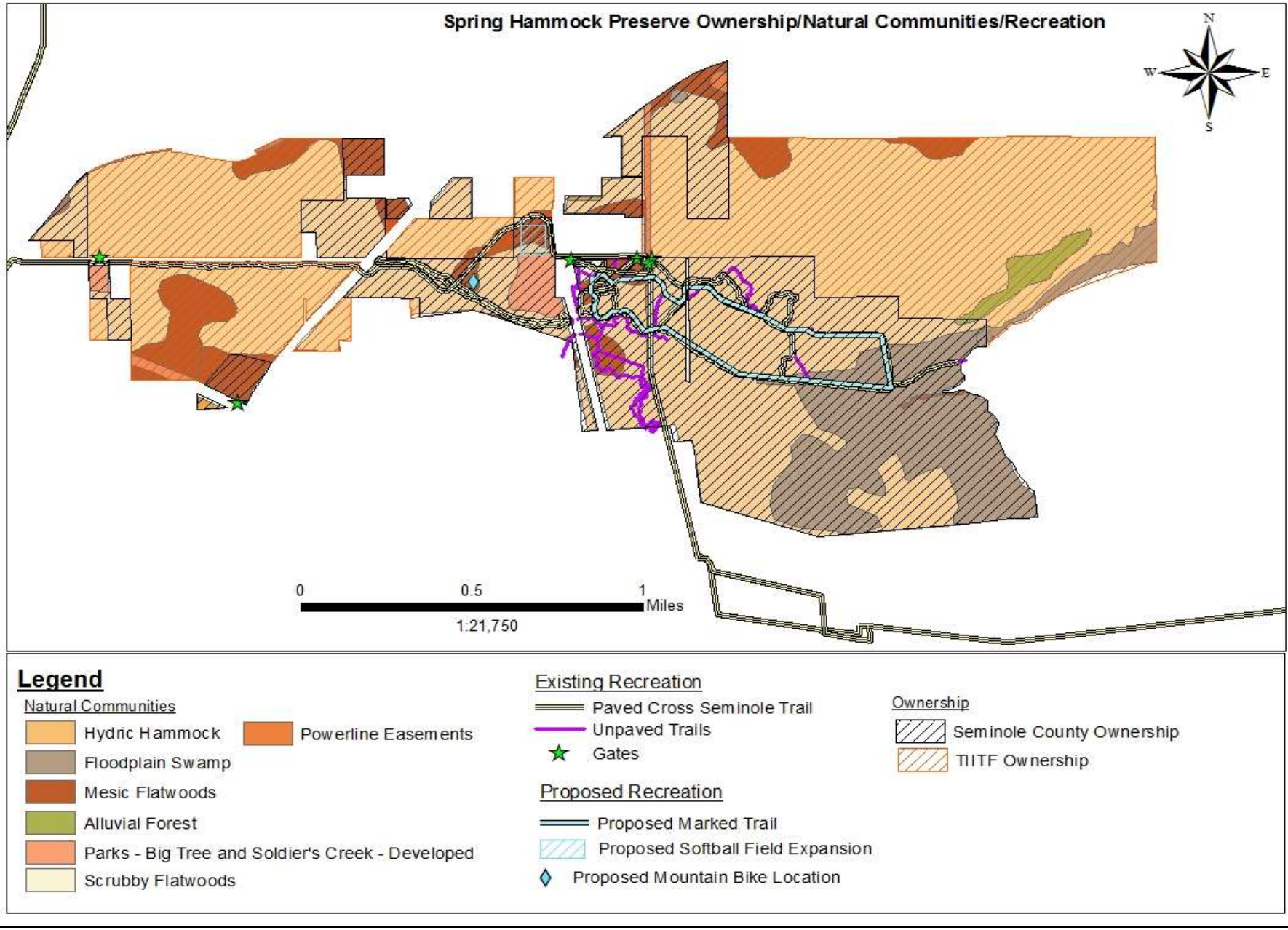
Natural Communities

The overall focus of the Natural Lands Program is to manage for species and habitat diversity. This plan identifies particular habitats or species as focus or targets of management to benefit overall diversity. Preservation of existing intact habitats shall be the priority with restoration activities conducted as resources or opportunities become available.

Located within Spring Hammock Preserve are several plant communities (Figure 5) including a very small amount of scrubby flatwoods, mesic flatwoods, floodplain swamp, and hydric hammock. Plant communities are taken from FNAI, 2010.

Mesic Flatwoods: Spring Hammock Preserve includes approximately 128.1 acres of this plant community. Soil types associated with the pine flatwoods are Basinger, Samsula, Hontoon, Myakka, and Eau Gallie. Longleaf pine (*Pinus palustris)* is the dominant pine within pine flatwoods areas; however, slash pine (*Pinus elliottii*) and loblolly pine (*Pinus taeda*) occur in wetter portions of flatwoods and along the wetland/upland interface. Saw palmetto (*Serenoa repens*) and gallberry (*Ilex glabra*) form the shrub layer, along with several other woody species. Groundcover in drier areas is dominated by wiregrass (*Aristida beyrichiana*), whereas wetter flatwoods support piney woods Dropseed (*Sporobolus junceus*) and Bottlebrush threeawn (*Aristida spiciformis*). This is a fire dependent community and according to Florida Natural Areas Inventory, has a fire regime of every 3 to 7 years.

Scrubby Flatwoods: There are two small areas (4.7 acres in total) of scrubby flatwoods near the Environmental Studies Center and on the west side of 419 near the Cross Seminole Trail. The area is overgrown and is mostly scrub oaks, palmetto and slash pine. There are a number of gopher tortoise (*Gopherus polyphemus*) burrows in this area. Although this is a fire dependent plant community, due to proximity to the urban interface and major thoroughfares, prescribed fire will not be used as a restoration tool. Staff will explore mechanical treatment as a way to mimic fire in this area. The fire interval for this plant community is 7 to 12 years (FNAI 2010).

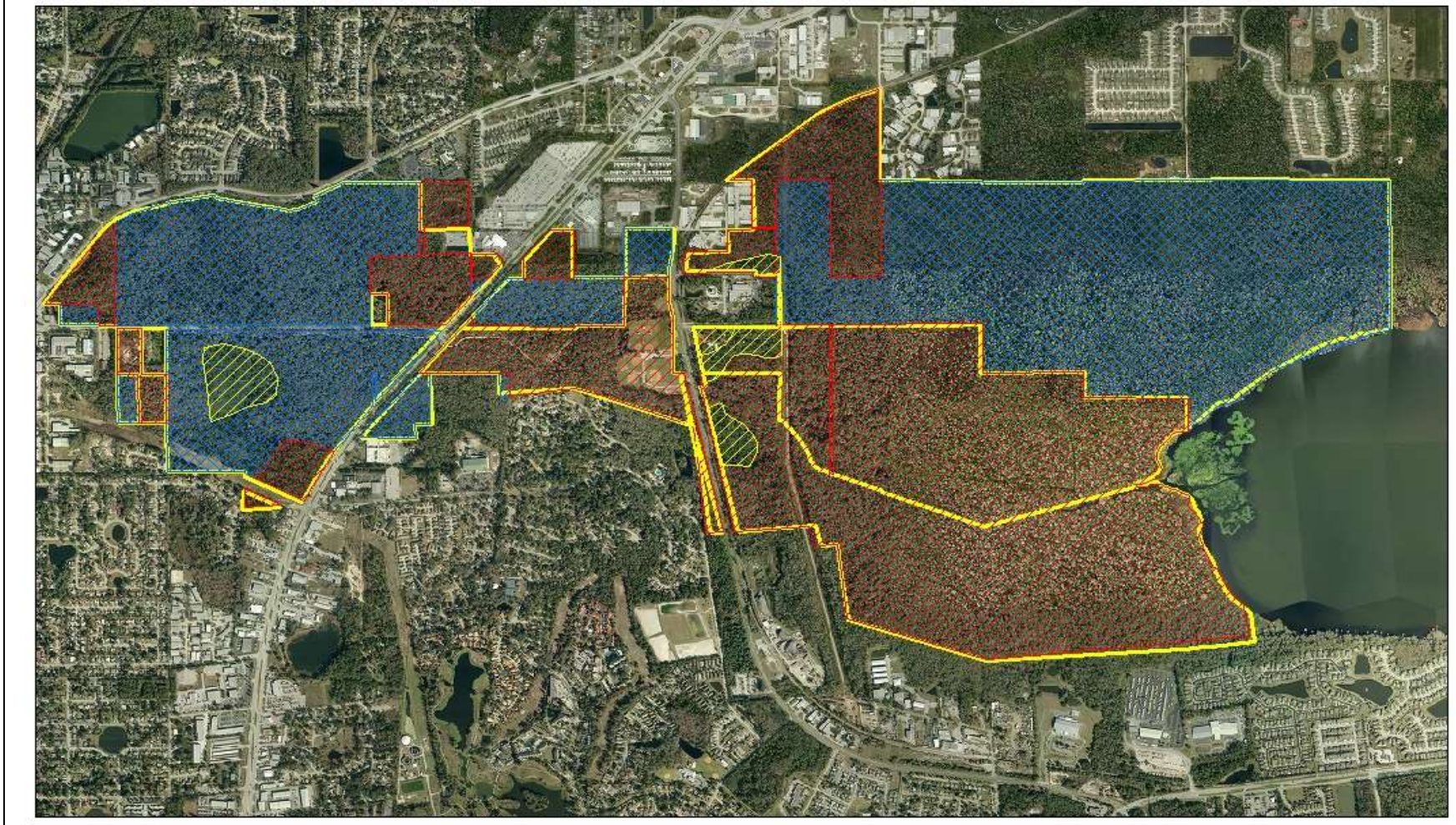

Spring Hammock Preserve Ownership/Natural Communities/Recreation
N
W
E
S
0
0.5
1
Miles
1:21,750
Legend
Natural Communities
Hydric Hammock
Floodplain Swamp
Mesic Flatwoods
Alluvial Forest
Parks - Big Tree and Soldier's Creek - Developed
Scrubby Flatwoods
Powerline Easements
Existing Recreation
Paved Cross Seminole Trail
Unpaved Trails
Gates
Proposed Recreation
Proposed Marked Trail
Proposed Softball Field Expansion
Proposed Mountain Bike Location
Ownership
Seminole County Ownership
TIITF Ownership

Floodplain Swamp: This community type forms a great arc around the western end of Lake Jesup (201.7 acres). A minor ridge limits the western extent of the community, which picks up again as the elevational gradient is reduced near the headwaters of Soldier's Creek. In terms of area, these swamps constitute 1,045.4 acres of the hammock. The soils include Basinger, Samsula, Hontoon, Smyrna, Nittaw Mucky, Nittaw and Okeelanta. A wide variety of trees comprise the swamp forest. Among these are Sweet gum (*Liquidambar styraciflua*), Red maple (*Acer rubrum*), Water oak (*Quercus nigra*), Sweet bay (*Magnolia virginiana*), Red bay (*Persea borbonia*), Black gum (*Nyssa biflora*), Water hickory (*Carya aquatica*), and Swamp bay (*Gordonia lasianthus*). Bald cypress (*Taxodium distichum*) appears as solitary individuals and in stands that reflect past land-use occurrences. Smaller trees and shrubs include Wax myrtle (*Myrica cerifera*), Fringe tree (*Chionanthus virginica*), Florida willow (*Salix floridana*), Buttonbush (*Cephalanthus occidentalis*), Hornbeam (*Carpinus caroliniana*), Swamp azalea (*Rhododendron viscosum*), Dwarf palmetto (*Sabal minor*), and Needle palm (*Rhapidophyllum hystrix*). These slightly higher or better-drained portions of bay swamp and stream and lake swamps support populations of Yellow poplar (*Liriodendron tulipifera*) and Basswood (*Tilia caroliniana*).

Hydric Hammock: This is the dominant plant community type, with 1104.4 acres. High-water elevation is up to 5 feet above normal high water, with slight relief. The soil is classified as Nittaw Mucky which is occasionally flooded. These soils experience long hydroperiods with reduced decomposition rates depending on water levels and soil saturation. Hardwoods and Bald cypress (*Taxodium distichum*) make up the forest. Typical trees include Sweet gum, Red maple, Water oak, Water hickory (*Carya aquatica*), Swamp bay (*Persea palustris*), Elm (*Ulmus americana*), and Hackberry (*Celtis laevigata*). Understory shrubs are seldom abundant but may contain Pop ash (*Fraxinus caroliana*), Grape (*Vitis sp.)* and Virginia willow (Itea virginica). Chain ferns (*Woodwardia areolata* and *W. virginica*), Royal fern (*Osmunda regalis*) and appear in scattered clumps along the forest floor.

Fire

Fire is an integral part of the Florida landscape. Before the influx of settlers, lightning fires would burn unimpeded through fire adaptive communities and landscapes until extinguished via changes in weather and/or fuel characteristics. Native Americans would also burn at various times of the year to attract wild game and to keep the landscape open for easy travel. Development and urbanization have led to the fragmentation of large systems and eliminated the ability for natural (lightning) fires to burn safely. Pine flatwoods, sandhill and scrub


Legend
Proposed Burn Units (burnable plant communities)
Seminole County Ownership
TIITF Ownership
Spring Hammock Preserve
Figure 6: Burn Zone Map
2011 Pictometry
0
0.5
1
Miles
1:20,264
N
W
E
S

communities are examples of native habitats that must have fire to maintain habitat structure and function. The natural lands program is committed to the reintroduction of this natural process and public education of both the ecological and public safety benefits this activity provides.

The Preserve contains two fire dependent plant communities, mesic and scrubby flatwoods. These habitats and much of the flora and fauna, have adapted to, and in some instances become dependent upon fire to maintain their physical structure and populations. In the absence of fire, hardwood species eventually dominate and shade the understory, hindering the germination of seeds and leading to a much less diverse community. Plants such as pine trees and wiregrass fail to reproduce and many species of wildlife dependent upon these understory plants must move elsewhere or perish. Staff will evaluate the use of mechanical treatment in lieu of fire due to the urban interface issues in this area (Figure 6).

Fish and Wildlife

Preliminary surveys and historical records acquired through the Environmental Studies Center have confirmed the presence of many species of wildlife including, Raccoon (*Procyon lotor*), River otter (*Lutra canadensis*), Bobcat (*Lynx rufus*), and Gray fox (*Urocyon cinereoargenteus*). Common species such as the gray squirrel (*Sciurus carolinensis*) and Virginia opossum (*Didelphis virginiana*) occur throughout the property. A species list is included in Appendix D.

The large expanse of forested wetlands present on SHP provide a vital source of food and shelter for migrating birds in fall and spring. Many resident nesting birds such as the White-eyed Vireos (*Viero griseus*), Northern Parula (*Compsothlypis americana*), and Carolina Wren (*Thryothorus ludovicianus*) can also be observed. Larger avian species recorded in SHP include the Red-shouldered (*Buteo lineatus*) and Red-tailed hawks (*Buteo jamaicensis*) , Bald Eagle (*Halietus leucocephalus*), Barred (*Strix variea*) and Great horned owl (*Bubo virginianus*), Great Blue heron (*Ardea Herodias*), Anhinga (*Anhinga anhinga*) and White Ibis (*Eudocimus albus*).

Numerous reptiles and amphibians are associated with the natural communities of Spring Hammock. Species confirmed on site include: gopher tortoise, green anole (*Anolis carolinensis*), ground skink (*Scincella lateralis*), and southeastern five-lined skink (*Eumeces inexpextatus*). Numerous snakes are found throughout the hammock, including red and yellow rat snakes (*Elaphe guttata* and *E. obsoleta*), and the ubiquitous southern black racer (*Coluber constrictor priapus*). In the streams and forested wetlands aquatic species such as the Florida water snake (*Nerodia fasciata pictiventris*), mud snake (*Farancia abacura*) and black swamp snake (*Seminatrix pygaea*) have been observed.

Initial fish and amphibian surveys in Soldier's Creek revealed species such as: Redfin pickerel (*Esox americanus*), Redbreast sunfish (*Lepomis auritus*), and smaller more diminutive species such as the Pirate perch (*Aphredoderus sayanus*) and Swamp darter (*Etheostoma fusiforme*). Amphibians observed included the Pig frog (*Rana grylio*), Amphiuma (*Amphiuma means*) and Peninsula newt (*Notopthalmus viridescens piaropicola*).

State and Federally Listed Species

Imperiled species are those that are (1) tracked by FNAI as critically imperiled (G1, S1) or imperiled (G2, S2); or (2) listed by the U.S. Fish and Wildlife Service (USFWS), Florida Fish and Wildlife Conservation Commission (FFWCC) or the Florida Department of Agriculture and Consumer Services (FDACS) as endangered, threatened or of special concern. See Appendix E.

Spring Hammock Preserve has 15 vertebrate species (6 amphibians and reptiles, 5 birds, and 4 mammals) and 9 plant species which are considered to be imperiled.

Several pairs of bald eagles (*Halietus leucocephalus*) exist south and east of Spring Hammock Preserve. Other listed bird species are the Limpkin (*Aramus guarauna*), Snowy egret (*Egretta thula*), and Wood stork (*Mycteria americana*). Also present at the site are several listed reptile species including the Gopher Tortoise (*Gopherus polyphemus*), Eastern Indigo Snake (*Drymarchon corais couperi*), and the American alligator (*Alligator mississippiensis*).

The Preserve also contains several listed plant species including the bipinnate cuplet fern (*Dennstaedtia bipinnata*), royal fern (*Osmunda regalis*), cinnamon fern (*Osmunda cinnamomea*), needle palm (*Rapidophyllum hystrix*), Florida willow (*Salix floridana*), and Okeechobee gourd (*Cucurbita okeechobeensis*).

Beaches and Dunes

There are no beaches and dunes on this property.

Swamps Marshes and Other Wetlands

Floodplain Swamp: This community type forms a great arc around the western end of Lake Jesup (201.7 acres). A minor ridge limits the western extent of the community, which picks up again as the elevational gradient is reduced near the headwaters of Soldier's Creek. In terms of area, these swamps constitute 1,045.4 acres of the hammock. The soils include Basinger, Samsula, Hontoon, Smyrna, Nittaw Mucky, Nittaw and Okeelanta. A wide variety of trees comprise the swamp forest. Among these are Sweet gum (*Liquidambar styraciflua*), Red maple (*Acer rubrum*), Water oak (*Quercus nigra*), Sweet bay (*Magnolia virginiana*), Red bay (*Persea borbonia*), Black gum (*Nyssa biflora*), Water hickory (*Carya aquatica*), and Swamp bay (*Gordonia lasianthus*). Bald cypress (*Taxodium distichum*) appears as solitary individuals and in stands that reflect past land-use occurrences. Smaller trees and shrubs include Wax myrtle (*Myrica cerifera*), Fringe tree (*Chionanthus virginica*), Florida willow (*Salix floridana*), Buttonbush (*Cephalanthus occidentalis*), Hornbeam (*Carpinus caroliniana*), Swamp azalea (*Rhododendron viscosum*), Dwarf palmetto (*Sabal minor*), and Needle palm (*Rhapidophyllum hystrix*). These slightly higher or better-drained portions of bay swamp and stream and lake swamps support populations of Yellow poplar (*Liriodendron tulipifera*) and Basswood (*Tilia caroliniana*).

Hydric Hammock: This is the dominant plant community type, with 1,104.4 acres. High-water elevation is up to 5 feet above normal high water, with slight relief. The soil is classified as

Nittaw Mucky which is occasionally flooded. These soils experience long hydroperiods with reduced decomposition rates depending on water levels and soil saturation. Hardwoods and Bald cypress (*Taxodium distichum*) make up the forest. Typical trees include Sweet gum, Red maple, Water oak, Water hickory (*Carya aquatica*), Swamp bay (*Persea palustris*), Elm (*Ulmus americana*), and Hackberry (*Celtis laevigata*). Understory shrubs are seldom abundant but may contain Pop ash (*Fraxinus caroliana*), Grape (*Vitis sp.)* and Virginia willow (Itea virginica). Chain ferns (*Woodwardia areolata* and *W. virginica*), Royal fern (*Osmunda regalis*) and appear in scattered clumps along the forest floor.

There are no restoration plans for Soldier's Creek (it has been channelized and carries stormwater runoff from surrounding streets, neighborhoods and athletic fields) or any of the associated creeks within this property. There are also no restoration plans for any of the wetlands. All of these are in good shape.

Exotics

Florida's climate is not only attractive to humans, but also to invasive exotic species. An exotic species is defined as a species introduced to Florida, purposefully or accidentally, from a natural region outside of Florida.

Invasive exotic species are able to out-compete, displace or destroy native species and their habitats, often because they have been released from the natural controls of their native range, such as diseases, predatory insects, etc. If left unchecked, invasive exotic plants and animals alter the character, productivity and conservation values of the natural areas they invade.

SCNL has an ongoing treatment program to control exotic species using volunteers and grant assistance. The program as sponsored an "Air Potato Raid" at Spring Hammock Preserve every year since 2003. As a result, the number of pounds of air potato collected over the years has drastically decreased, and in conjunction with upland invasive species grants received from the Florida Fish and Wildlife Conservation Commission over the last 5 years, the coverage of air potato on the property has decreased significantly. The Natural lands program will be developing a restoration plan for those areas that were covered in air potato and are now devoid of vegetation. See Figure 7 for list and location of exotic invasive species on this property.

An exotic management plan for the Leisure Services Department (that includes the Natural Lands Program) has been developed (Appendix F), however due to budget restrictions; alternative funding methods will be sought.

Plants

Exotic plant species include air potato (*Dioscorea bulbifera*), sword fern, (*Nephrolepis* sp.), Japanese climbing fern (*Lygodium japonicum*), camphor (*Cinnamomum camphora*), Chinese balsam apple (*Momordica charantia*), small leaf spiderwort (*Tradescantia fluminensis*), Ceasar's

weed (*Urena lobata*), Brazilian pepper (*Schinus terbinthifolius*), Chinese tallow (*Sapium sebiferum*), and skunkvine (*Paederia foetida*).

Animals

Exotic animal species include the Brown anole (*Anolis sagrei*), Greenhouse frog (*Eleutherodactylus planirostris*), Cuban tree frog (*Osteopilus septentrionalis*), Wild Hog (*Sus scrofa*) and Mozambique tilapia (*Tilapia mozambica*).

Monitoring

Due to limited staff, currently the only monitoring is for exotic species. The county does have a monitoring plan that it developed in 2006 (Appendix G).

Topography

Spring Hammock Preserve is part of an elongated depression that extends west approximately five miles from Lake Jesup along the Soldier's Creek Drainage Basin. The hammock's elevation ranges from1.9 to 50 feet above mean sea level, with 53 percent lying within the 100-year flood plain. The 100 year flood plain elevations for Soldier's Creek are 25.1 feet above sea level at SR 427, and 9.6 feet above sea level at the confluence with Lake Jesup. Spring Hammock is the natural treatment area for surface water runoff from approximately 50 square miles of rapidly urbanizing uplands. Artesian springs and flowing wells are present within the area, due to high potentiometric surfaces.

Soils

The predominant soils in Spring Hammock are organic and poorly to very poorly drained, including: Basinger, Samsula, Hontoon, and Nittaw series (Figure 8). These soil types are characteristically wet and have limited recreational uses. Upland soil types, Pomello, Myakka, and Eau Gallie fine sands occur within the hammock's western boundary area. These soils are characterized as being nearly level and poorly drained.

Upland Soil Types

These are somewhat poorly drained soils formed by the deposition of approximately 32 inches of sandy materials over naturally occurring soils. They are in former low areas that have been filled for urban development. The water table is generally between 1.5 and 3.0 feet below the surface during the wet season. Recreational development is limited due to the sandy nature of upland soil types.

(A) Myakka/Eau Gallie Fine Sands (Type 20)

These are nearly level, poorly drained sandy soils in broad areas of the flatwoods, in depressions, and in areas between sand ridges and ponds and sloughs. The water table

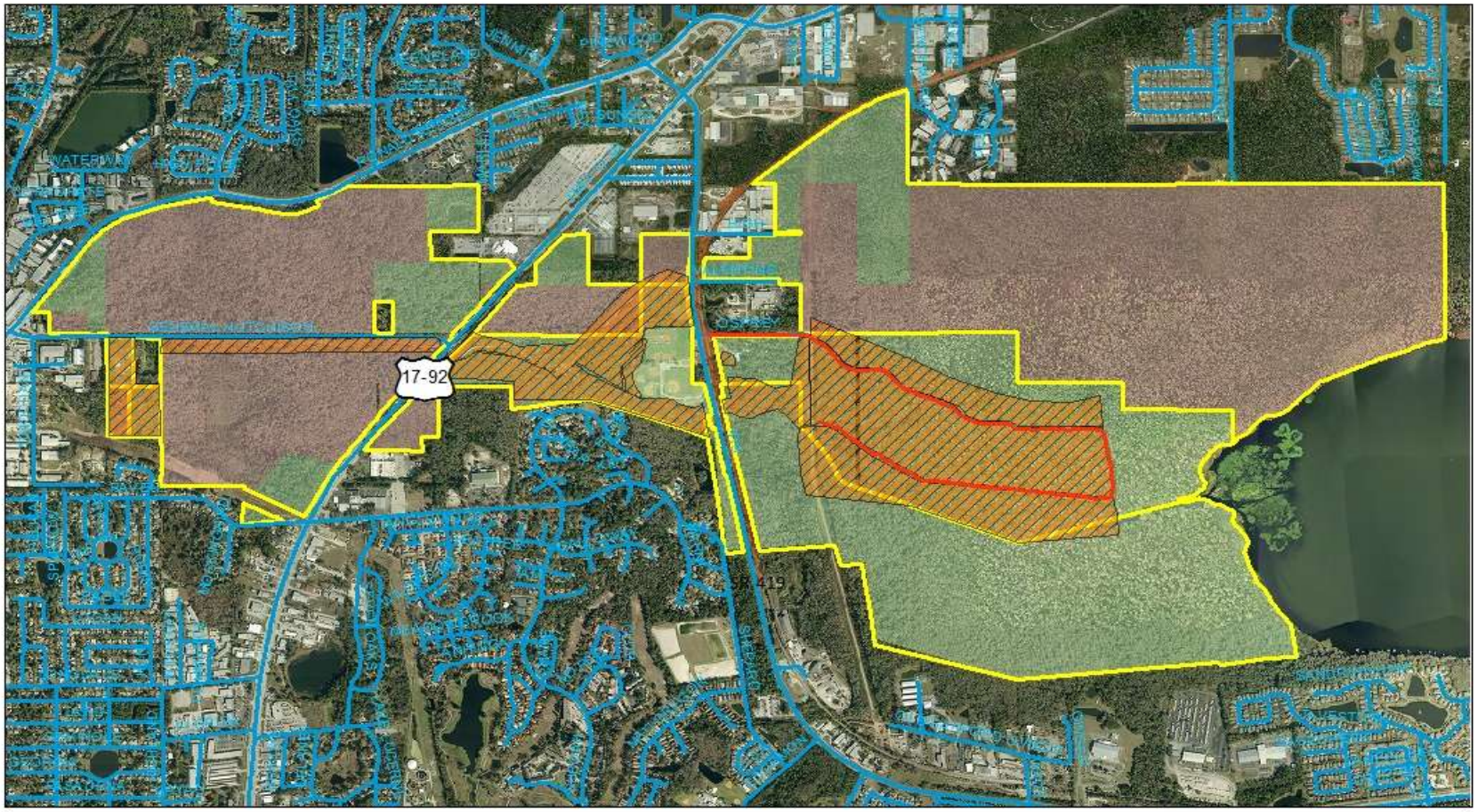
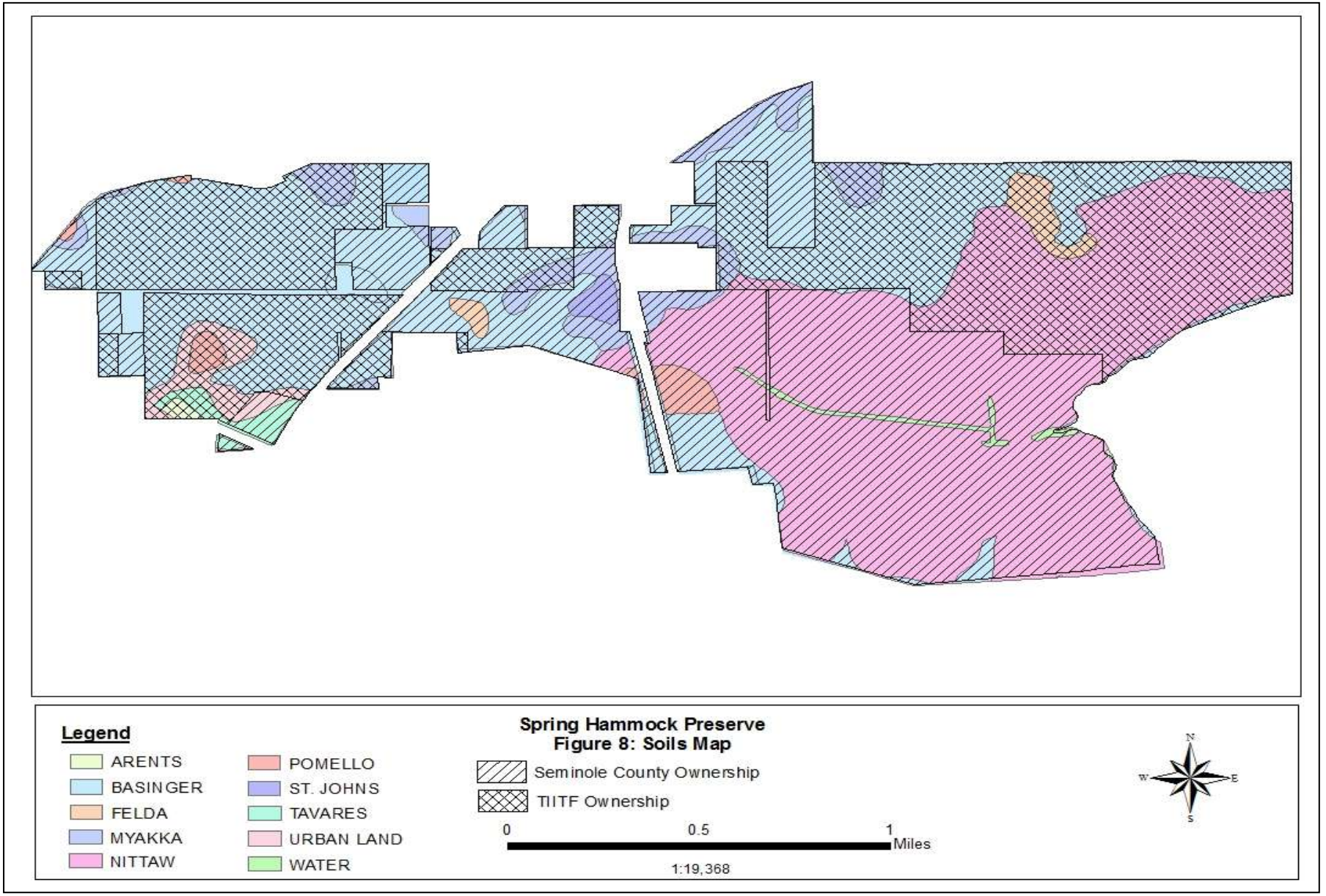


Figure 7: Exotic Invasive Plant Infestations
2011 Pictometry


Legend
ARENTS
BASINGER
FELDA
MYAKKA
NITTAW
POMELLO
ST. JOHNS
TAVARES
URBAN LAND
WATER
Spring Hammock Preserve
Figure 8: Soils Map
Seminole County Ownership
TIITF Ownership
0
0.5
1
Miles
1:19,368
N
W
E
S

is between 1.0 and 3.0 feet below grade during the wet season. The baseball fields, soccer/football fields, and Big Tree Park are all located on this soil type.

(B) Pomello (Type 27)

These are moderately well drained sandy soils on low ridges. The high water table elevation ranges from 2.0 to 3.5 feet below the surface. The Environmental Studies Center located between State Road 419 and the power line right-of-way is currently located on this soil type.

(C) Tavares-Millhopper Fine Sands (Type 31)

These are moderately well drained nearly level to sloping soils that have formed in the thick beds of sandy and loamy marine sediments. The wet season water table is generally 3.5 to 6.0 feet below grade.

Wetland Soil Types

(A) Basinger Depressional Soils (Types 9, 10, 11 & 23)

These are very poorly drained, deep sandy soils that occur in broad sloughs and depressions in central and south Florida. The normal high-water elevation occurs between June and February, and ranges from 2 feet above to 1 foot below the surface. Recreational use within this soil type is limited due to the characteristic ponding of water and sandy nature of the soil.

(B) Nittaw Series (Type 10)

These are nearly level, very poorly drained organic soils that occur in freshwater swamps and marshes. Normal high-water elevation occurs between June and February and ranges from 2 feet above to 1 foot below the surface. Recreational uses are limited by ponding and excessive muck levels.

(C) Felda Soils (Type 11)

These are very poorly drained sandy soils in depressions. Normal high-water elevation occurs from June through February, and ranges from two feet above to one foot below the surface. Recreational use is limited due to severe ponding and excessive humus.

(D) Eau Gallie Series (Type 13)

These are nearly level, poorly drained soils on low ridges in flatwoods areas. Normal high-water elevation occurs from June through October, and ranges from the surface to one foot below. Recreational use is limited due to severe wetness and the sandy nature of the soil.

(E) Felda and Manatee Mucky Fine Sands, Depressional (Type 15)

These are very poorly drained soils occurring in depressions. Normal high-water elevation occurs from June through December and ranges from two feet above to one foot below the surface. Recreational development is limited due to severe ponding and the sandy nature of the soil.

(F) Arents (Type 29)

These are nearly level, poorly drained soils occurring in broad, low flatwood areas of the coastal plain. Normal high-water elevation ranges from the surface to one foot below during the wet season. Recreational use is limited, due to severe wetness and sandy nature of the soil. The baseball and soccer fields in Soldier's Creek Park occupy an area of this soil type, although some filling has been done to raise the grade to facilitate construction of these facilities.

Water Resources

Spring Hammock Preserve lies predominantly within the Soldier's Creek Drainage Basin, along with a small area in the Gee Creek Drainage Basin. Soldier's Creek, with its headwaters in Lake Searcy, flows northeastward to a confluence with a north branch of Lake Mary, then southeast to Lake Jesup. Soldiers Creek was historically canalized for flood control purposes. The subsequent development of the surrounding basin and potential impacts to residential and commercial properties, as well as roadways, makes restoration unlikely.

Gee Creek, with its headwaters in Prairie Lake, flows through a chain of small lakes in the Casselberry including, Lake Fairy, Lake Kathryn and Crystal Lake on its way to Lake Jesup.

The waters of Soldier's Creek, Gee Creek and Lake Jesup are Class III recreational waters, as classified by the Florida Department of Environmental Protection. Surface water in the area is clear and moderately high in nutrients. Overall, surface water quality is good, considering the urban and agricultural activities within the Soldier's Creek and Gee Creek basins. The Seminole County Storm Water Division continues to monitor water quality flowing through these systems to identify key sources of pollution and develop plans for improvement.

According to the rule that lists all the OFWs (62-302.700, FAC), Spring Hammock was first designated as OFW 4-19-88. Additional parcels were acquired and these became OFW 10-4-90.

Forest, Agricultural and Mineral Resources

There are no significant agricultural or mineral resources on-site. Staff will evaluate any future potential timber harvest in the mesic and scrubby flatwoods as a restoration tool.

Unique Natural Features

Water is a primary natural resource for Central Florida. Spring Hammock Preserve's eastern-most boundary is adjacent to the water's edge of Lake Jesup. Gee Creek and Soldier's Creek traverse the hammock and flow toward Lake Jesup. The large expanse of forested habitat extends like a peninsula into a rapidly urbanizing area, providing a corridor for the movement of plants and animals. Another natural feature, which increases the hammock's uniqueness, is the presence of flowing artesian wells. The wells, creeks, and Lake Jesup create Spring

Hammock Preserve's aesthetic value, visual interests, and opportunities for positive experiences.

The large bald cypress trees that exist on the Spring Hammock site, especially those in Big Tree Park, are unique in the region due to past lumbering activities. However, the most unique feature is Spring Hammock itself, because of its large expanse of relatively undeveloped, heavily wooded land area. Large tracts of forested wetlands like the Preserve are extremely important for resting and feeding of small, migratory birds in the spring and fall.

Outstanding Native Landscapes

There are no outstanding native landscapes on this property. The entire property was logged during the 1st part of the 20th century for both longleaf pine and bald cypress. There are old tram roads, an old railroad track (now a paved trail), sports fields and a park that has been developed with restrooms, trailhead, pavilion, playground and boardwalk.

Archeological/Cultural/Historical Resources

NLP staff will consult with the Division of Historical Resources before taking actions that may adversely affect archaeological resources. Procedures for both archaeology and historical resources can be found in Appendix H. Four archaeological sites have been recorded in the Florida Master Site File for Spring Hammock Preserve: Spring Hammock 1, 8SE70, Soldier's Creek 2, 8SE71, SE2138. The Spring Hammock 1 site is a small, prehistoric shell midden mound dating from the Orange through the St. Johns II culture periods (approximately 2000 BC to 800 AD). This is considered to be a potentially significant cultural resource.

The Soldier's Creek 2 site is not considered to be archaeologically significant. A single Suwanee projectile point, dating from 8000 to 9000 BC, was recovered from dredge spoil along Soldier's Creek. This isolated find is not considered substantial enough to warrant a site number designation, but does indicate the potential for Spring Hammock to contain sites dating from the Paleo-Indian culture period.

According to the Florida Master Site File, Spring Hammock Preserve does not contain any known historical sites or structures. The County does not plan on doing any additional surveys on this property.

Mineral/Oil/Gas/Phosphate

None have been located on this property.

FNAI Inventory

There are 4 species listed in the FNAI database; bald eagle, Florida black bear, hay scented fern and Florida willow. More data needs to be provided to FNAI about listed species located on the property. Please see Appendix I.

IMPLEMENTATION

Integral to the goals and objectives for managing acquired lands in an acceptable manner are protection and restoration of those lands where feasible. An important element in protecting the natural and recreational resources is to prevent dumping, poaching, and other illegal activities. Appropriate land management activities, such as prescribed burning, forest management, and removal of exotics, should be continued to protect the viability of the site.

Rules and Regulations

Seminole County Code Chapter 190 Section 4 establishes the provisions relating to management and use of the properties acquired or managed by Seminole County Natural Lands Program.

RESOURCE PROTECTION AND MANAGEMENT

The primary objectives in the management of Spring Hammock Preserve are: resource management, including preservation of wildlife, supporting habitat, and potential historic and archaeological resources, and recreational and educational uses that are compatible with the preservation of Spring Hammock. All management practices are compatible with Ch. 253.034(10).

Restoration

Natural Lands staff is evaluating the need for restoration where large infestations of exotic plant species have occurred and have been treated, mainly on county owned property. A restoration (re-planting) plan will be developed for the property in the event that natural regeneration does not occur. There are no plans for any other type of restoration on the property.

Restoration Goals:

1. Restore and maintain the natural communities if needed.

Restoration Objectives

- Develop restoration (re-planting) plan.
- Explore external funding opportunities

Forest Management

Florida Statutes require public agencies to evaluate lands they manage for timber production. Timber was removed after a pine beetle outbreak in 2002. There are no plans to harvest any additional timber from this property unless there is another catastrophic event.

Forest Management Goals

- At this time there are no plans to conduct any forestry related activity within Spring Hammock Preserve, but staff will evaluate for the future.

Fire Management

Taking into consideration the extremely urbanized surroundings and the presence of several very busy roadways the Nature Conservancy staff recommended the use of fire be restricted to

the section of the preserve east of CR 419 and only conducted with a west wind. County staffed concurred that the possible side effects of fire in this location and the subsequent public perception of prescribed burning, may outweigh the ecological benefit to these relatively small areas.

Fire Management Goals

1. To select areas at Spring Hammock Preserve that would be feasible to burn.

Fire Management Objectives

- Identify areas to place firelines
- Prepare prescriptions for burn zone(s).

Table 1: Natural Community and Fire Return Interval

Plant Community	Fire Frequency for Restoration	Fire Frequency for Maintenance
Mesic Flatwoods	2 to 4 years	3 to 5 years
Scrubby Flatwoods	4 to 7 years	7 to 12 years

Fire frequencies based on FNAI.

Wildlife

The majority of this property is wetland communities with only 13% (172.6 acres) uplands. Therefore, the only management for wildlife would include improving habitat degraded by exotic invasive plants (removing invasives and restoration where necessary) and prescribed fire (for habitat improvement). Wildlife observations are on-going and updates will be added to the Natural Lands database.

Monitoring natural resources is an important tool in gauging the overall health of an ecosystem. Over the years there have been numerous monitoring studies at Spring Hammock Preserve to determine the overall scope of plant, amphibian, reptile, and mammal species, including exotics located within the property.

In 2006, SCNL developed a new monitoring plan. In accordance with that plan, monitoring at SHP now includes a volunteer based gopher tortoise mark and release program coordinated by Natural Lands staff. An arthropod control plan was developed (Appendix K).

Wildlife Goals

Maintain and /or improve habitat in the preserve.

Wildlife Objectives

- Recruit volunteers to assist with bird surveys.
- Update inventory for avian species.

Listed Species

Surveys are conducted annually to verify the existence of listed plant and animal species. A volunteer program was established by Natural Land's staff to mark and record information on gopher tortoises. Volunteers complete at least four hours of training before they are certified to participate in the mark-recapture monitoring effort.

Plants

Known listed plant species within the Preserve include the Pygmy Fringe Tree (*Chionanthus pygmaeus*), Royal Fern (*Osmunda regalis*), Cinnamon fern (*Osmunda cinnamomea*), Needle palm (*Rapidophyllum hystrix*), Florida willow (*Salix floridana*), and Okeechobee gourd (*Cucurbita okeechobeensis*) and Cuplet fern (*Dennstaedtia bipinnata*).

Animals

There are several listed animal species occurring within the Preserve's boundaries including: Bald eagles (*Halietus leucocephalus*), Limpkin (*Aramus guarauna*), Snowy egret (*Egretta thula*), and Wood stork (*Mycteria americana*).

Listed reptile species include the Gopher Tortoise (*Gopherus polyphemus*), Eastern Indigo Snake (*Drymarchon corais couperi*), and the American alligator (*Alligator mississippiensis*).

Listed Plant and Animal Goals

1. Survey listed species.

Listed Plant and Animal Objectives

- Recruit volunteers to assist with marking gopher tortoises
- GPS gopher tortoise burrows
- Develop map for cuplet fern locations.

Exotic Species

There are several exotic plant and animal species within SHP. These invasive species often out compete and displace native flora and fauna. The preserve has been holding an air potato raid annually for 10 years helping to educate the public about exotic invasive species and removing thousands of pounds of air potato bulbils from the site. The entire property has approximately 329 acres of exotic plant infestation (all of which has been treated in the past 4 years with funding from the Florida Fish and Wildlife Conservation Commission's Invasive Plant Management section). The county is following up with the assistance of volunteers. Infestation on state lands is approximately

Plants

Known exotic plant species include Air potato (*Dioscorea bulbifera*), Japanese climbing fern (*Lygodium japonicum*), Camphor (*Cinnamomum camphora*) and Chinese Balsam Apple (Momordica charantia).

Animal

Exotic animal species include the Brown anole (*Anolis sagrei*), greenhouse frog (*Eleutherodactylus planirostris*) and Mozambique tilapia (*Tilapia mozambica*), feral hogs (*Sus scrofa*). The SCNLP has established a volunteer hog trapper program.

Exotic Plant and Animal Goals

1. Remove exotic and invasive plants and animals from the preserve and conduct needed maintenance control.

Exotic Plant and Animal Objectives

- Seek external funding to assist with exotic invasive plant control.
- Seek assistance from volunteers to remove exotic invasive plants.
- Annually treat/remove 5 acres of invasive exotics if funding/assistance are available.
- Continue volunteer hog trapper program to assist with hog removal.
- Continue to monitor and record invasive species on the property.

LAND USE MANAGEMENT

Current and planned uses planned for this property are in compliance with the Conceptual State Lands Management Plan and its requirement for "balanced public utilization," of course the planned and current uses all occur on county owned land. There are no plans for recreational development on the state owned lands.

Access

There are three access points into Spring Hammock. One on the east side of State Road (SR) 419 at the Seminole County School Board's Environmental Studies Center; on the west side of SR 419 at Soldier's Creek Park and the final access point is at Big Tree Park on the western boundary of the preserve.

Access Goals

1. Provide public access

Access Objectives

- Continue regular maintenance of public access areas
- Develop an entrance sign for the property.
- Develop a kiosk for the property.

Recreation

The following passive and active recreation both existing and proposed occur on County owned land only. Currently there are no plans to expand any recreation component onto state owned land. The passive recreation components located on county owned land complies with the 1981 State Lands Management Plan.

Spring Hammock Preserve is presently the site of two county-owned parks – Big Tree Park and Soldier's Creek Park (Figure 9). Recreational uses and facilities at Big Tree Park include picnicking, nature walk/boardwalk, interpretive signage, restrooms, two pavilions and parking. Soldier's Creek Park is the site of five acres of active-use recreation (five baseball fields, two soccer/multi-purpose fields, and two softball fields) and the Seminole County School Board's Environmental Studies Center. Recreational uses and facilities include parking, restrooms, pavilions, picnicking, nature trails, boardwalks, and other passive and educational uses. The Florida National Scenic Trail (FNST), a nature trail for hiking, traverses the site as well as the paved County trail known as the Cross Seminole Trail which runs east from Big Tree Park and then south on the east side of State Road 419 along the powerline in the preserve. SCNL provides approximately 2-4 guided hikes on the preserve each year, including swamp walks and night hikes. The County has a designated mountain bike trail west of State Road 419 and south of the active ball fields at Soldier's Creek Park. This trail is approximately 1.5 miles long. A recreation plan for the entire preserve has been developed and included in Appendix B.

The FNST is maintained by Florida Trail volunteers and not county staff. The trails on the east side of SR 419 are maintained by both Leisure Services and the Seminole County School Board. Erosion issues are ongoing along Soldier's Creek (due to the nature of the creek and annual flooding events). When issues arrive, either volunteers assist with stabilizing the shoreline or the trail is moved further away from the creek.

The guided hikes generate revenue for the SCNLP program. There are no other revenue generating proposals for this property at this time (with the exception of the softball fields which generate revenue for the recreation and parks division).

Recreation Goals

- To provide recreational opportunities
- Improve boardwalks with interpretive materials

Recreation Objectives

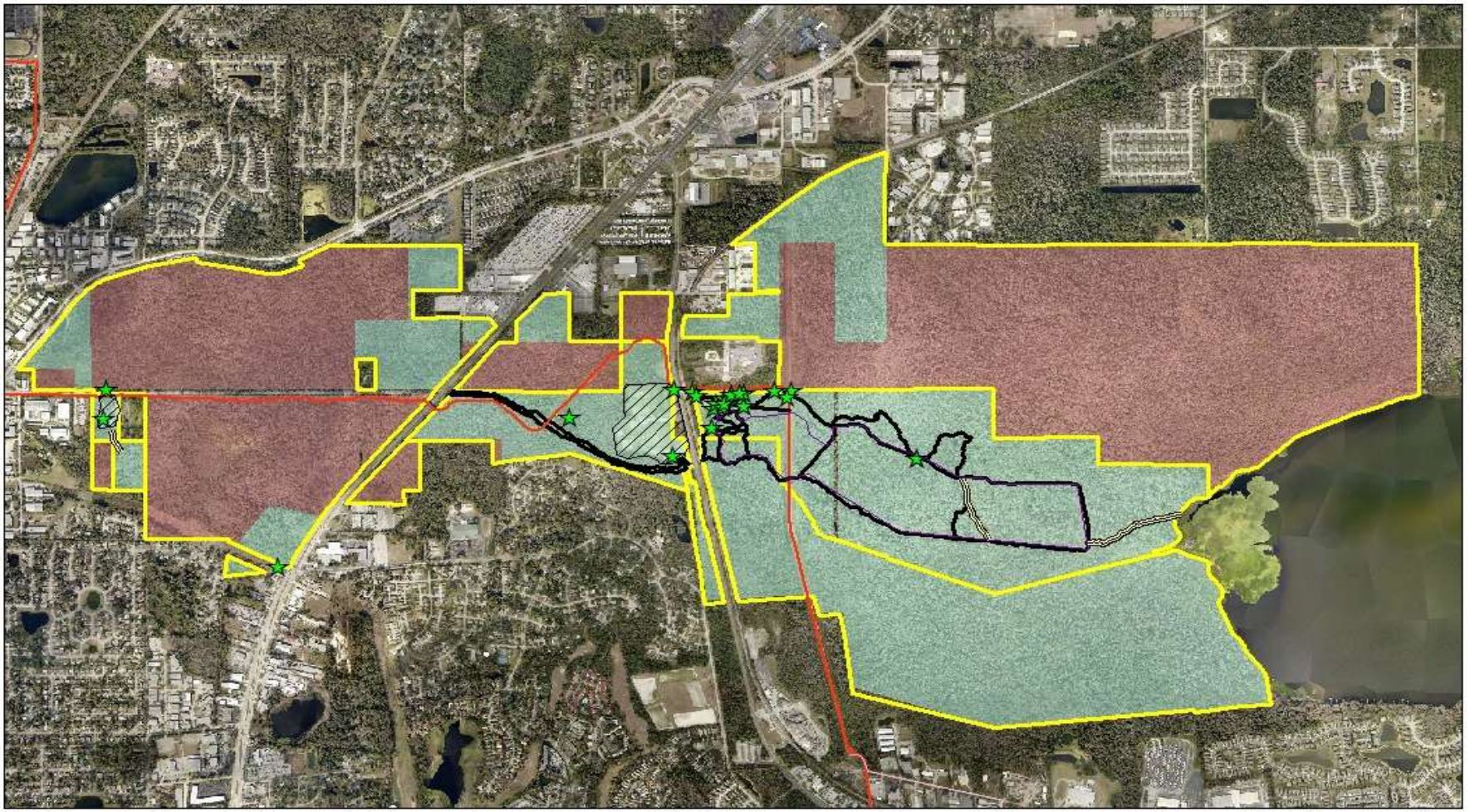
- Continue to develop the interpretive hike program for this property.
- Investigate potential for holding multi-disciplinary running events.
- Apply for grants to assist with funding of boardwalk improvements and interpretive material.

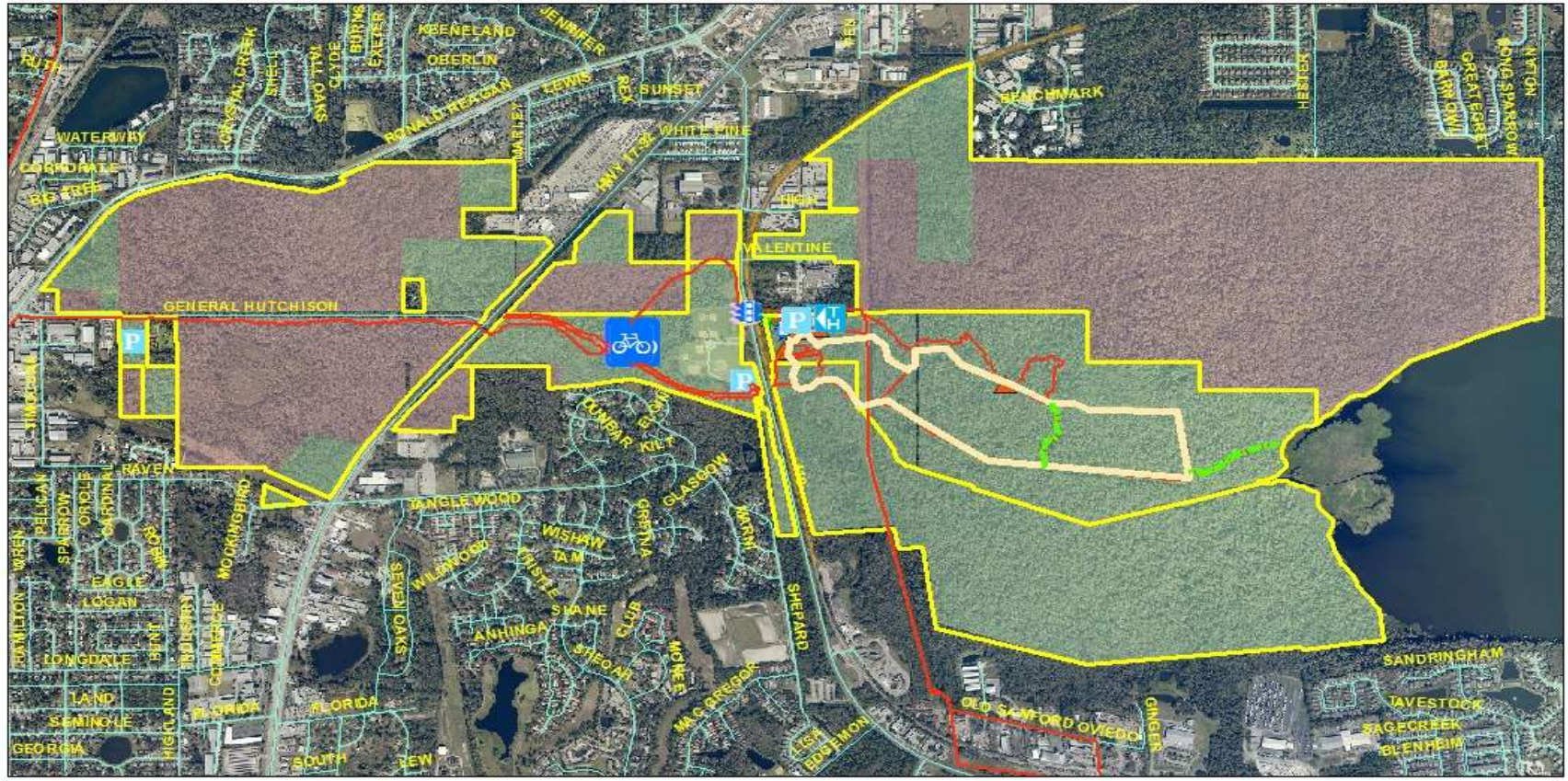
Environmental Education

The Environmental Studies Center (ESC) operates under a cooperative agreement between the Seminole County Board of County Commissioners and the Seminole County School Board. This center has served for 30 plus years to introduce many students to the natural and historic qualities Seminole County has to offer. The ESC is funded through the school board and private donations and annually serves approximately 10,000 students.

In 2011, the Seminole County School Board and Seminole County Board of County Commissioners entered into a one-year agreement to allow the Natural Lands Program to hold

interpretive programs and environmental education camps at the ESC. The agreement resulted in two programs and eight weeks of environmental education camp (Eco Camp). Both parties are in the process of re-negotiating an agreement for the same purpose. The interpretive hikes offered by the NLP also fall under environmental education as they provide information on the


Spring Hammock Preserve
Figure 9: Recreation Map (Existing Opportunities)
Legend
Seminole County Board of County Commissioners
Trustees of the Internal Improvement Trust Fund
Parking/Gates/Amenities
Boardwalks
Cross Seminole Trail
Parks with Amenities
Spring Hammock Preserve Trails
Spring Hammock Preserve Boundary
N
W
E
S
0
0.475
0.95
Miles
1:20,000



Spring Hammock Preserve
Figure 10: Proposed/Remodeled Amenities

plants and animals that occur on the property. The programs offered included a snake program highlighting the native snakes of Central Florida and an owl program.

Environmental Education Goals

1. To provide educational opportunities for the public.

Environmental Education Objectives

- Continue to develop the interpretive hike program for this property
- Continue to develop partnership with ESC to provide additional educational opportunities.
- Continue partnership with ESC for Eco Camp program

Security

The security of Spring Hammock Preserve will continue to be addressed through the existing partnerships with the ESC and the Seminole County sheriff's office(SCSO). The SCNLP meets monthly with the SCSO to discuss any issues on County properties.

Security Goals

1. Provide a safe recreational opportunity for the public.

Security Objectives

- Continue monthly meetings with the SCSO

ADMINISTRATION AND IMPLEMENTATION

Acquisition

There is approximately 3 million dollars remaining in the bond for acquisition and capital improvement projects. Approximately 1.3 million is being used for capital improvement projects and the remainder is available for acquisition. If an adjacent property becomes available, the property will be evaluated by the Natural Lands Subcommittee using criteria developed for the program.

Public Involvement

This management plan has gone through its 30 day review process (it was available on-line at our website www.seminolecountyfl.gov/natland). A copy of the public meeting notice is included in Appendix J. No one attended the public meeting and there were no comments made via the presentation with the Parks and Preservation Advisory Committee (PPAC) or resulting from the presentation to the local chapter of the Florida Native Plant Society (Cuplet Fern Chapter in Seminole County). The minutes and letters from the meetings are included in Appendix J.

A pared down version of this management plan was approved by our Leisure Services Department Director in 2010.

An advisory group was formed in February 2015 and a public meeting held on April 1.

Land Management Review Team (LMR)
A land management review was recently conducted on February 25, 2015, using the approved management plan from 1999 for their evaluation.

The Letter of compliance for the property is in Appendix L.

Spring Hammock Preserve

Management Activity Implementation Chart

TASK	Measure	DUE DATE	Estimated Cost
RESTORATION			
Goal: Restore and maintain the natural communities.			
Objectives			
Develop restoration plan	plan completed	2017	$2,000
Explore external funding opportunities	Receive external funding	2022	
FIRE MANAGEMENT			
Goal: To select areas at Spring Hammock Preserve that would be feasible to burn			
Objectives			
Identify areas to place firelines	Firelines installed.	2022	$18,000
Prepare prescriptions for burn zone(s)	Prescriptions prepared.	2022	$1,200
WILDLIFE			
Goal: Maintain and /or improve habitat in the preserve			
Recruit volunteers to assist with bird surveys	bird surveys started	2017	$2,400
Update inventory for avian species	Database updated	2022	$600
LISTED SPECIES			
Goal: Survey listed species.			
Recruit volunteers to assist with marking gopher tortoises	volunteer program established	2017	$4,000
GPS gopher tortoise burrows	Map produced.	2019	$2,000
Develop map for cuplet fern locations	Map produced	2017	$3,800
EXOTIC SPECIES			
Goal: Remove exotic and invasive plants and animals from the preserve and conduct needed maintenance control.			
Seek external funding to assist with exotic invasive plant control.	project funded	annually	$100,000
Seek assistance from volunteers to remove exotic	volunteers	annually	$10,000

TASK	Measure	DUE DATE	Estimated Cost
invasive plants	recruited and project completed		
Annually treat/remove 5 acres of invasive exotics if funding/assistance is available	5 acres treated	annually	$1,750
Continue volunteer hog trapper program to assist with hog removal	Hogs removed from property	annually	
Continue to monitor and record invasive species on the property	annual survey	annually	$600
ACCESS			
Goal: Provide public access			
Continue regular maintenance of public access area	annually		$13,000
Develop an entrance sign for the property	Sign installed	2017	$800
Develop a kiosk for the property	Kiosk installed	2017	$12,000
RECREATION			
Goal: To provide recreational opportunities			
Continue to develop the interpretive hike program for this property	2 hikes conducted/year	2017	$90
Investigate potential for holding multi-disciplinary events	1 event established	2017	$400
ENVIRONMENTAL EDUCATION			
Goal: To provide educational opportunities for the public.			
Continue to develop the interpretive hike program for this property	2 hikes/year	2017	$90
Continue to develop partnership with ESC to provide additional educational opportunities	provide educational hikes and programs	2017	$270
SECURITY			
Goal: To provide a safe recreational opportunity for the public.			
Continue meeting with SCSO	Monthly meetings	2022	$600

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APPENDIX A

LEASE AGREEMENT WITH SEMINOLE COUNTY SCHOOL BOARD

APPENDIX B

VISITOR SERVICES PLAN

APPENDIX C

LEASE AGREEMENTS WITH TIITF

APPENDIX D

Species Lists

PLANTS

COMMON NAME	SCIENTIFIC NAME	FDACS	FNAI	FWC	USFWS
Box Elder	*Acer negundo*				
Red Maple	*Acer rubrum*				
Walter's Viburnum	*Viburnum obovatum*				
Sweetgum	*Liquidambar styraciflua*				
Winged Sumac	*Rhus copallina*				
Dahoon Holly	*Ilex cassine*				
Yaupon Holly	*Ilex vomitoria*				
American Hornbeam	*Carpinus caroliniana*				
Sugarberry	*Celtis laevigata*				
Buttonwood	*Conocarpus erectus*				
Swamp Dogwood	*Cornus foemina*				
Blackgum	*Nyssa sylvatica*				
Swamp Tupelo	*Nyssa sylvatica* var. *sylvatica*				
Red Cedar	*Juniperus virginiana*				
Bald Cypress	*Taxodium distichum*				
Persimmon	*Diospyros virginiana*				
Rusty Lyonia	*Lyonia ferruginea*				
Staggerbush	*Lyonia fruticosa*				
Earpod Tree *	*Enterolobium contortisiliquum*				
Water Locust	*Gleditsia aquatica*				
Chapman's Oak	*Quercus chapmanii*				
Sand Live Oak	*Quercus geminata*				
Turkey Oak	*Quercus laevis*				
Laurel Oak	*Quercus laurifolia*				
Myrtle Oak	*Quercus myrtifolia*				
Water Oak	*Quercus nigra*				
Live Oak	*Quercus virginiana*				
Red Buckeye	*Aesculus pavia*				
Water Hickory	*Carya aquatica*				
Pignut Hickory	*Carya glabra*				
Camphor Tree*	*Cinnamonum camphora*				
Red Bay	*Persea borbonia*				
Swamp Bay	*Persea palustris*				
Tulip Tree	*Liriodendron tulipifera*				
Southern Magnolia	*Magnolia grandiflora*				
Sweetbay	*Magnolia virginiana*				
Chinaberry Tree*	*Melia azedarach*				
White Mulberry*	*Morus alba*				
Red Mulberry	*Morus rubra*				

COMMON NAME	SCIENTIFIC NAME	FDACS	FNAI	FWC	USFWS
Wax Myrtle	*Myrica cerifera*				
Tallow Wood	*Ximenia americana*				
White Fringetree	*Chionanthus virginicus*				
Pop Ash	*Fraxinus caroliniana*				
Pumpkin Ash	*Fraxinus pennsylvanica*				
Slash Pine	*Pinus elliottii*				
Longleaf Pine	*Pinus palustris*				
Pond Pine	*Pinus serotina*				
Loblolly Pine	*Pinus taeda*				
Carolina Laurelcherry	*Prunus caroliniana*				
Black Cherry	*Prunus serotina*				
Buttonbush	*Cephalanthus occidentalis*				
Sour Orange**	*Citrus x aurantium*				
Carolina Willow	*Salix caroliniana*				
Buckthorn Bully	*Sideroxylon lycioides*	E	G5S2		
Florida Bully	*Sideroxylon recllinatum*				
Loblolly Bay	*Gordonia lasianthus*				
Carolina Basswood	*Tilia americana* var. *caroliniana*				
American Elm	*Ulmus americana*				
Needlepalm	*Rhapidophyllum hystrix*				
Dwarf Palmetto	*Sabal minor*				
Cabbage Palm	*Sabal palmetto*				
Saw Palmetto	*Serenoa repens*				
Eastern Poison Ivy	*Toxicodendron radicans*				
Climbing Hempvine	*Mikania scandens*				
Crossvine	*Bignonia capreolata*				
Trumpet Creeper	*Campsis radicans*				
Cape Honeysuckle*	*Tecoma capensis*				
Coral Honeysuckle	*Lonicera sempervirens*				
Moonflower	*Ipomoea alba*				
Tievine	*Ipomoea cordatotriloba*				
Okeechobee Gourd	*Cucurbita okeechobeensis*	E	G1S1		E
Balsampear*	*Momordica charantia*				
Air Potato*	*Dioscorea bulbifera*				
Groundnut	*Apios americana*				
Carolina Jessamine	*Gelsemium sempervirens*				
Climbing Hydrangea	*Decumaria barbara*				
Swamp Leather-flower	*Clematis crispa*				
Rattan Vine	*Berchemia scandens*				

COMMON NAME	SCIENTIFIC NAME	FDACS	FNAI	FWC	USFWS
Sawtooth Blackberry	*Rubus argutus*				
Sand Blackberry	*Rubus cuneifolius*				
Southern Dewberry	*Rubus trivialis*				
Earleaf Greenbrier	*Smilax auriculata*				
Saw Greenbrier	*Smilax bona-nox*				
Cat Greenbrier	*Smilax glauca*				
Laurel Greenbrier	*Smilax laurifolia*				
Sarsaparilla Vine	*Smilax pumila*				
Lanceleaf Greenbrier	*Smilax smallii*				
Bristly Greenbrier	*Smilax tamniodes*				
Coral Greenbrier	*Smilax walteri*				
Peppervine	*Ampelopsis arborea*				
Virginia Creeper	*Parthenocissus quinquefolia*				
Summer Grape	*Vitis aestivalis*				
Muscadine Grape	*Vitis rotundifolia*				
Elderberry	*Sambucus nigra subsp. canadensis*				
Smallflower Pawpaw	*Asimina parviflora*				
Netted Pawpaw	*Asimina reticulata*				
Sweet Gallberry	*Ilex coriacea*				
Gallberry	*Ilex glabra*				
Silverling	*Baccharis glomeruliflora*				
Groundsel Tree	*Baccharis halimifolia*				
Strawberry Bush	*Euonymus americanus*				
Roundpod St. Johns Wort	*Hypericum cistifolium*				
St. Andrews Cross	*Hypericum hypericoides*				
Atlantic St. John's Wort	*Hypericum reductum*				
Fourpetal St. John's Wort	*Hypericum tetrapetalum*				
Pipestem	*Agarista populifolia*				
Tarflower	*Bejaria racemosa*				
Blue Huckleberry	*Gaylussacia frondosa var. tomentosa*				
Rusty Lyonia	*Lyonia ferruginea*				
Coastalplain Staggerbush	*Lyonia fruticosa*				
Maleberry	*Lyonia ligustrina var foliosiflora*				
Shiny Lyonia	*Lyonia lucida*				
Swamp Azalea	*Rhododendron viscosum*				
Highbush Blueberry	*Vaccinium corymbosum*				

COMMON NAME	SCIENTIFIC NAME	FDACS	FNAI	FWC	USFWS
Shiny Blueberry	*Vaccinium myrsinites*				
Deerberry	*Vaccinium stamineum*				
Lead Plant	*Amorpha herbacea*				
Virginia Willow	*Itea virginica*				
American Beautyberry	*Callicarpa americana*				
Upland Swamp Privet	*Forestiera ligustrina*				
Florida Swamp Privit	*Forestiera segregata*				
Peruvian Primrose Willow	*Ludwigia peruviana*				
Red Chokeberry	*Photinia pyrifolia*				
Wild Coffee	*Psychotria nervosa*				
Florida Willow	*Salix floridana*				
Carolina Wild Petunia	*Ruellia caroliniensis*				
Alligatorweed	*Alternanthera philoxeroides*				
Mexican Tea	*Chenopodium ambrosioides*				
Cottonweed	*Froelichia floridana*				
Juba's Bush	*Iresine diffusa*				
Spotted Water Hemlock	*Cicuta maculata*				
Mock Bishopsweed	*Ptilimnium capillaceum*				
Canadian Blacksnakeroot	*Sanicula canadensis*				
Greendragon	*Arisaema dracontium*				
Jack-in-the-Pulpit	*Arisaema triphyllum*				
Wild Taro	*Colocasia esculenta*				
Duckweed	*Lemna sp.*				
Goldenclub	*Orontium aquaticum*				
Green Arrow Arum	*Peltandra virginica*				
Water Lettuce	*Pistia stratiotes*				
Arrowleaf elephantear	*Xanthosoma sagittifolium*				
Floating Marshpennywort	*Hydrocotyle ranunculoides*				
Manyflower Marshpennywort	*Hydrocotyle umbellata*				
Savannah Milkweed	*Asclepias pedicillata*				
Swamp Milkweed	*Asclepias perennis*				
Butterfly Milkweed	*Asclepias tuberosa*				
Common Ragweed	*Ambrosia*				

COMMON NAME	SCIENTIFIC NAME	FDACS	FNAI	FWC	USFWS
Beggerticks	*Bidens alba var. radiata*				
Vanillleaf	*Caphephorus odoratissimus*				
Blue Mistflower	*Conoclinium coelestinum*				
Dwarf Canadian Horseweed	*Conyza Canadensis var. pusilla*				
Carolina Elephantsfoot	*Elaphantopus carolinianus*				
Tall Elephantsfoot	*Elanphantopus elatus*				
Fireweed	*Erechtites hieraciifolius*				
Oakleaf Fleabane	*Erigeron quercifolius*				
Dogfennel	*Eupatorium capillifolium*				
Joepyeweed	*Eupatorium fistulosum*				
Roundleaf Thoroughwort	*Eupatorium rotundifolium*				
Slender Flattop Goldenrod	*Euthamia caroliniana*				
Pennsylvania Everlasting	*Gamochaeta pensylvanica*				
Camphorweed	*Heterotheca subaxillaris*				
Queendevil	*Hieracium gronovii*				
Woodland Lettuce	*Lactuca graminifolia*				
Snow Squarestem	*Melanthera nivea*				
Pinebarren Whitetop	*Oclemena reticulata*				
Butterweed	*Packera glabella*				
Longleaf Camphorweed	*Pluchea longifolia*				
Sweetscent	*Pluchea odorata*				
Blackroot	*Pterocaulon pycnostachyum*				
Pinebarren Goldenrod	*Solidago fistulosa*				
Goldenrod	*Solidago odora*				
Wand Goldenrod	*Solidago stricta*				
Spiny Sowthistle*	*Sonchus asper*				
Climbing Aster	*Symphyotrichum carolinianum*				
Rice Button aster	*Symphyotrichum dumosum*				
Elliott's aster	*Symphyotrichum elliottii*				
Frostweed	*Verbesina virginica*				
Oriental False Hawksbeard**	*Youngia japonica*				
Wax Begonia*	*Begonia cucullata*				

COMMON NAME	SCIENTIFIC NAME	FDACS	FNAI	FWC	USFWS
Bulbous Bittercress	*Cardamine bulbosa*				
Pennsylvania Bittercress	*Cardamine pensylvanica*				
Virginia Pepperweed	*Lepidium virginicum*				
Cardinal Airplant	*Tllandsia fasciculatum var. densispica*				
Ballmoss	*Tillandsia recurvata*				
Southern Needleleaf	*Tillandsia setacea*				
Broad Needleleaf	*Tillansdsia simulata*				
Spanish Moss	*Tillandsia usneoides*				
Downy Lobelia	*Lobelia puberula*				
Golden Canna	*Canna flaccida*				
Mouse-ear Chickweed	*Cerastium glomeratum*				
Drymary	*Drymaria cordata*				
Grassleaf Roseling	*Callisia graminea*				
Dayflower *	*Commelina diffusa*				
Whitemouth Dayflower	*Commelina erecta*				
Nakedstem Dewflower	*Murdannia nudiflora*				
Small-leaf Spiderwort *	*Tradescantia fluminensis*				
Ohio Spiderwort	*Tradescantia ohiensis*				
Fiddler's Spurge	*Poinsettia herophylla*				
Rabbitbells	*Crotalaria rotundifolia*				
Ticktrefoil	*Desmodium sp.*				
Elliott's Milkpea	*Galactia elliottii*				
Hairy Indigo *	*Indigofera hirsuta*				
Wild Bushbean **	*Macroptilium lathyroides*				
White Sweet Clover **	*Melilotus albus*				
Sensitive Briar	*Mimosa quadrivalvis*				
Bladderpod	*Sesbania vesicaria*				
Fourleaf Vetch	*Vicia acutifolia*				
Hairypod Cowpea	*Vigna luteola*				
Drug Fumitory	*Fumaria officinalis*				
Shortleaf Rosegentian	*Sabatia brevifolia*				
Carolina Cranesbill	*Geranium carolinianum*				
Carlonia Redroot	*Lachnanthes caroliana*				

COMMON NAME	SCIENTIFIC NAME	FDACS	FNAI	FWC	USFWS
Parrotfeather Watermilfoil **	*Myriophyllum aquaticum*				
Common Yellow Stargrass	*Hypoxis curtissii*				
Fringed Yellow Stargrass	*Hypoxis juncea*				
Dixie Iris	*Iris hexagona*				
Musky Mint	*Hyptis alata*				
Spotted Beebalm	*Monarda punctata*				
Wild Pennyroyal	*Piloblephis ridida*				
Lyreleaf Sage	*Salvia lyrata*				
Rough Scullcap	*Scutellaria integrifolia*				
Florida Hedgenettle	*Stachys floridana*				
Forked Bluecurls	*Trichostema dichtomum*				
Small Butterwort	*Pinguicula pumila*				
Indian Hemp	*Sida rhombifolia*				
Caesarweed *	*Urena lobata*				
Fringed Meadowbeauty	*Rhexia petiolata*				
Yellow Pondlily	*Nuphar advena*				
Cutleaf Evening Primrose	*Oenothera laciniata*				
Green-fly Orchid	*Epidendrum conopseum*				
Toothpetal False Reinorchid	*Habenaria floribunda*				
Ladiestresses	*Spiranthes sp.*				
False Foxglove	*Agalinis sp.*				
Common Yellow Woodsorrel	*Oxalis corniculata*				
Rougeplant	*Rivina humilis*				
American Pokeweed	*Phytolacca americana*				
Common Plantain **	*Plantago major*				
Orange Milkwort	*Polygala lutea*				
Candyroot	*Polygala nana*				
Yellow Milkword	*Polygala rugelii*				
Swamp Smartweed	*Polygonum hydropiperoides*				
Dotted Smartweed	*Polygonum punctatum*				
Jumpseed	*Polygonum virginianum*				
Hastateleaf Dock	*Rumex hastatulus*				
Bitter Dock	*Rumex obtusifolius*				
Swamp Dock	*Rumex verticillatus*				

COMMON NAME	SCIENTIFIC NAME	FDACS	FNAI	FWC	USFWS
Common Water-hyacinth *	*Eichhornia crassipes*				
Pickerelweed	*Pontederia cordata*				
Water Pimpernel	*Samolus ebracteatus*				
Rough Buttonweed	*Diodia teres*				
Virginia Buttonweed	*Diodia virginiana*				
Coastal Bedstraw	*Galium hispidulum*				
Stiff Marsh Bedstraw	*Galium tinctorium*				
Partridgeberry	*Michella repens*				
Rough Mexican Clover **	*Richardia scabra*				
Lizard's Tail	*Saururus cernuus*				
Walter's Groundcherry	*Physalis walteri*				
American Black Nightshade	*Solanum americanum*				
Soda Apple	*Solanum capsicoides*				
Tropical Soda Apple *	*Solanum viarum*				
Carolina Horsenettle	*Solanum carolinense*				
Rustweed	*Polypremum procumbens*				
Cattail	*Typha sp.*				
False Nettle	*Boehmeria cylindrica*				
Florida Pellitory	*Parietaria floridana*				
Frogfruit	*Phyla nodiflora*				
Canada Toadflax	*Linaria canadensis*				
Early Blue Violet	*Viola palmata*				
Primroseleaf Violtet	*Viola primulifolia*				
Common Blue Violet	*Viola sororia*				
Waterspider False Reinorchid	*Habenaria repens*				
Broomsedge Bluestem	*Andropogon virginicus*				
Wiregrass	*Aristida stricta var. beyrichiana*				
Switchcane	*Arundinaria gigantea*				
Common Bamboo **	*Bambusa vulgaris*				
Crowfootgrass *	*Dactyloctenium aegyptium*				
Tapered Witchgrass	*Dichanthelium acuminatum*				
Basketgrass	*Oplismenus hirtellus*				
Maidencane	*Panicum hemitomon*				
Bull crowngrass	Paspalum boscianum				
Bahiagrass **	*Paspalum notatum*				

COMMON NAME	SCIENTIFIC NAME	FDACS	FNAI	FWC	USFWS
Water Paspalum	*Paspalum repens*				
Thin Paspalum	*Paspalum setaceum*				
Vaseygrass **	*Paspalum urvillei*				
Common Reed	*Phragmites australis*				
Golden Bamboo *	*Phyllostachys aurea*				
Giant Bristlegrass	*Setaria magna*				
Tall Redtop	*Tridens flavus*				
Eastern Gamagrass	*Tripsacum dactyloides*				
Paragrass *	*Urochloa mutica*				
Leathery Rush	*Juncus coriaceus*				
Forked Rush	*Juncus dichotomus*				
Soft Rush	*Juncus effuses subsp. solutus*				
Manyhead Rush	*Juncus polycephalos*				
Needlepod Rush	*Juncus scirpoides*				
Hop Sedge	*Carex lupulina*				
Tropical Flatsedge	*Cyperus surnamensis*				
Starrush Whitetop	*Rhynchospora colorata*				
Shortbristle Horned Beaksedge	*Rhynchospora corniculata*				
Narrowfriut Horned Beaksedge	*Rhynchospora inundata*				
Giant Whitetop	*Rhynchospora latifolia*				
Millet Beaksedge	*Rhynchospora miliacea*				
Tall nutgrass	*Scleria triglomerata*				
Mosquito Fern	*Azolla caroliniana*				
Swamp Fern	*Blechnum serrulatum*				
Netted Chain Fern	*Woodwardia areolata*				
Virginia Chain Fern	*Woodwardia virginica*				
Bipinnate Cuplet Fern	*Dennstaedtia bipinnata*	E	G4S1		
Bracken Fern	*Pteridium aquilinum*				
Southern Wood Fern	*Dryopteris ludoviciana*				
Tuberous Sword Fern *	*Nephrolepis cordifolia*				
Swordfern **	*Nephrolepis exaltata*				
Cinnamon Fern	*Osmunda cinnamomea*				
Royal Fern	*Osmunda regalis var. spectabilis*				

COMMON NAME	SCIENTIFIC NAME	FDACS	FNAI	FWC	USFWS
Long Strap Fern	*Campyloneurum phyllitidis*				
Plume Polypody	*Pecluma plumula*	E	G5S2		
Comb Polypody	*Pecluma ptilodon var bourgeauana*	E	G5?S2		
Goldfoot Fern	*Phlebodium aureum*				
Resurrection Fern	*Pleopeltis polypodiioides var. michauxiana*				
Whisk-Fern	*Psilotum nudum*				
Water Horn Fern	*Ceratopteris pteridoides*				
Water Spangles *	*Salvinia minima*				
Japanese Climbing Fern *	*Lygodium japonicum*				
Meadow Spike-moss	*Selaginella apoda*				
Mariana Maiden Fern **	*Macrothelypteris torresiana*				
Downy Maiden Fern **	*Thelypteris dentata*				
Hairy Maiden Fern	*Thelypteris hispidula var. versicolor*				
Willdenow's Fern	*Thelypteris interrupta*				
Widespread Maiden Fern	*Thelypteris kunthii*				
Marsh Fern	*Thelypteris palustris var. pubescens*				
Shoestring Fern	*Vittaria lineata*				
Brazilian Pepper*	*Schinus terebinthifolius*				
Chinese Tallow*	*Sapium sebiferum*				
Skunkvine*	*Paederia foetida*				

* Non-native – listed on the Florida Exotic Pest Plant Council (FLEPPC) 2011 List of Invasive Plant Species

** Non-native – NOT listed on the FLEPPC 2011 List of Invasive Plant Species

ANIMALS

COMMON NAME	SCIENTIFIC NAME	FDACS	FNAI	FWC	USFWS
BUTTERFLIES					
Pipevine Swallowtail	*Battus philenor*				
Polydamas Swallowtail	*Battus polydamas*				
Zebra Swallowtail	*Eurytides marcellus*				
Black Swallowtail	*Papilio polyxenes*				
Giant Swallowtail	*Papilio cresphontes*				
Eastern Tiger Swallowtail	*Papilio glaucus*				
Spicebush Swallowtail	*Papilio troilus*				
Palamedes Swallotail	*Papilio palamedes*				
Checkered White	*Pontia protodice*				
Cabbage White	*Pieris rapae*				
Great Southern White	*Ascia monuste*				
Orange Sulphur	*Colias eurytheme*				
Southern Dogface	*Colias cesonia*				
Cloudless Sulphur	*Phoebis sennae*				
Orange-barred Sulphur	*Phoebis philea*				
Large Orange Sulphur	*Phoebis agarithe*				
Barred Yellow	*Eurema daira*				
Little yellow	*Eurema lisa*				
Sleepy Orange	*Eurema nicippe*				
Dainty Sulphur	*Nathalis iole*				
Great Purple Hairstreak	*Atlides halesus*				
Southern Hairstreak	*Satyrium favonius*				
Red-banded Hairstreak	*Calycopis cecrops*				
Juniper Hairstreak	*Callophrys gryneus*				
White M Hairstreak	*Parrhasius m-album*				
Gray Hairstreak	*Strymon melinus*				
Banded Hairstreak	*Satyrium calanus*				
Striped Hairstreak	*Satyrium liparops*				
Henry's elfin	*Callophyrs henrici*				
Eastern Pine Elfin	*Callophyrs niphon*				
Juniper Hairstreak	*Callophyrs gryneus*				
Harvester	*Feniseca tarquinius*				
Eastern Pygmy-Blue	*Brephidium isophthalma*				

COMMON NAME	SCIENTIFIC NAME	FDACS	FNAI	FWC	USFWS
Ceraunus Blue	*Hemiargus ceraunus*				
Little Metalmark	*Calephelis virginiensis*				
American Snout	*Libytheana carinenta*				
Gulf Fritillary	*Agraulis vanillae*				
Zebra Longwing	*Heliconius charitonius*				
Question Mark	*Polygonia interrogationis*				
American Painted Lady	*Vanessa virginiensis*				
Painted Lady	*Vanessa cardui*				
Red Admiral	*Vanessa atalanta*				
Common Buckeye	*Junonia coenia*				
White Peacock	*Anartia jatrophae*				
Red-Spotted Purple	*Limenitis arthemis astyanax*				
Viceroy	*Limenitis archippus*				
Hackberry Emperor	*Asterocampa celtis*				
Tawny Emperor	*Asterocampa clyton*				
Southern Pearly-eye	*Enodia portlandia*				
Carolina Satyr	*Hermeuptychia sosybius*				
Little Wood Satyr	*Megisto cymela*				
Common Wood Nymph	*Cercyonis pegala*				
Monarch	*Danaus plexippus*				
Queen	*Danaus gilippus*				
Soldier	*Danaus eresimus*				
Silver-Spotted Skipper	*Epargyreus clarus*				
Long-tailed Skipper	*Urbanus proteus*				
Southern Cloudywing	*Thorybes bathyllus*				
Sleepy Duskywing	*Erynnis brizo*				
Common Checkered Skipper	*Pyrgus communis*				
Tropical Checkered Skipper	*Pyrgus oileus*				
Common Sootywing	*Pholisora catullus*				
FISH					
Redfin Pickerel	*Esox americanus*				
Redbreast Sunfish	*Leopomis auritus*				
Pirate Perch	*Aphredoderus sayanus*				
Swamp Darter	*Etheostoma fusiforme*				
Mozambique	*Tilapia mozambique*				

Tilapia***					
AMPHIBIANS					
Barking Treefrog	*Hyla gratiosa*				
Bronze Frog	*Rana clamitans clamitans*				
Bullfrog	*Rana catesbeiana*				
Green Treefrog	*Hyla cinerea*				
Cuban Treefrog	Osteopilus septentrionalis				
COMMON NAME	**SCIENTIFIC NAME**	**FDACS**	**FNAI**	**FWC**	**USFWS**
Greenhouse Frog***	*Eleutherodactylus planirostris planirostris*				
Narrowmouth Toad	*Gastrophryne carolinensis*				
Pig Frog	*Rana grylio*				
Pine Woods Treefrog	*Hyla femoralis*				
Southern Leopard Frog	*Rana utricularia*				
Squirrel Treefrog	*Hyla squirella*				
Southern Toad	*Bufo terrestris*				
Spadefoot Toad	*Scaphiopus holbrookii holbrookii*				
Two-toed Amphiuma	*Amphiuma means*				
Peninsula Newt	*Notophthalmus viridescens piaropicola*				
Dwarf Salamander	*Eurycea quadridigitata*				
Greater Siren	*Siren lacertina*				
REPTILES					
Cuban Anole ***	*Anolis sagrei*				
Green Anole	*Anolis carolinensis*				
Southeastern Five-lined Skink	*Eumeces inexpectatus*				
Broad-headed Skink	*Eumeces laticeps*				
Yellow Rat Snake	*Elaphe obsoleta quadrivittata*				
Southern Black Racer	*Coluber constrictor priapus*				
Florida Water Snake	*Nerodia fasciata pictiventris*				
Gopher Tortoise	*Gopherus polyphemus*				
American Alligator	*Alligator mississippiensis*				
Red-eared Slider ***	*Trachemys scripta elegans*				
Florida Red-belly Turtle	*Pseudemys nelsoni*				
Florida Box Turtle	*Terrapene carolina bauri*				
Striped Mud Turtle	*Kinosternon bauri*				
Florida Softshell	*Apalone ferox*				

Turtle					
Brown Water Snake	*Nerodia taxispilota*				
Southern Ringneck Snake	*Diadophis punctatus punctatus*				
Central Florida Crowned Snake	*Tantilla relicta neilli*				
COMMON NAME	**SCIENTIFIC NAME**	**FDACS**	**FNAI**	**FWC**	**USFWS**
BIRDS					
American White Pelican	*Pelecanus erythrorhynchos*				
Double-crested Cormorant	*Phalacrocorax auritus*				
Anhinga	*Anhinga anhinga*				
American Bittern	*Botaurus lentiginosus*				
Great Blue Heron	*Ardea herodias*				
Great Egret	*Ardea alba*				
Snowy Egret	*Egretta thula*			SSC	
Little Blue Heron	*Egretta caerulea*			SSC	
Green Heron	*Butorides virescens*				
White Ibis	Endocimus albus			SSC	
Glossy Ibis	*Plegadis falcinellus*				
Wood Duck	*Aix sponsa*				
Turkey Vulture	*Cathartes aura*				
Black Vulture	*Coragyps atratus*				
Northern Harrier	*Circus cyaneus*				
Swallow-tailed Kite	*Elanoides forticatus*				
Red-shouldered Hawk	*Buteo lineatus*				
Red-tailed Hawk	*Buteo jamaicensis*				
Bald Eagle	*Haliaeetus leucocephalus*				
Osprey	*Pandion haliaetus*				
Purple Gallinule	*Porphyrula martinica*				
Common Moorhen	*Gallinula choropus*				
American Coot	*Fulica americana*				
Limpkin	*Aramus guarauna*			SSC	
Florida Sandhill Crane	*Grus canadensis*			T	
Least Tern	*Sterna antillarum*			T	
Mourning Dove	*Zenaida macroura*				
Great Horned Owl	*Bubo virginianus*				

Barred Owl	*Strix varia*				
Eastern Screech Owl	*Otus asio*				
Chimney Swift	*Chaetura pelagica*				
Ruby-throated Hummingbird	*Archilochus colubris*				
Red-bellied Woodpecker	*Melanerpes carolinus*				
Downy Woodpecker	*Picoides pubescens*				
COMMON NAME	**SCIENTIFIC NAME**	**FDACS**	**FNAI**	**FWC**	**USFWS**
Pileated Woodpecker	*Dryocopus pileatus*				
Eastern Phoebe	*Sayornis phoebe*				
Great Crested Flycatcher	*Myiarchus crinitus*				
Red-eyed Vireo	*Vireo olivaceus*				
White-eyed Vireo	*Vireo griseus*				
Blue-headed Vireo	*Vireo solitarius*				
Blue Jay	*Cyanocitta cristata*				
American Crow	*Corvus vrachyrhynchos*				
Fish Crow	*Corvus ossifragus*				
Purple Martin	*Progne subis*				
Tree Swallow	*Tachycineta bicolor*				
Tufted Titmouse	*Baeolophus bicolor*				
Carolina Chickadee	*Poecile carolinensis*				
Carolina Wren	*Thryothorus ludovicianus*				
Ruby-crowned Kinglet	*Regulus calendula*				
Blue-gray Gnatcatcher	*Polioptila caerulea*				
American Robin	*Turdus migratorius*				
Veery	*Catharus fuscescens*				
Gray Catbird	*Dumetella carolinensis*				
Northern Mockingbird	*Mimus polyglottos*				
Brown Thrasher	*Toxostoma rufum*				
Cedar Waxwing	*Bombycilla cedrorum*				
Northern Parula	*Parula americana*				
Black-throated Blue Warbler	*Dendroica caerulescens*				
Yellow-rumped Warblers	*Dendroica coronata*				
Palm Warbler	*Dendroica palmarum*				
Pine Warbler	*Dendroica pinus*				
Yellow-throated	*Dendroica dominica*				

Warbler					
Prothonotary Warbler	*Protonotaria citrea*				
Black-and-white Warbler	*Mniotilta varia*				
American Redstart	*Setophaga ruticilla*				
Ovenbird	*Seiurus aurocapillus*				
COMMON NAME	**SCIENTIFIC NAME**	**FDACS**	**FNAI**	**FWC**	**USFWS**
Northern Waterthrush	*Seiurus noveboracensis*				
Common Yellowthroat	*Geothlypis trichas*				
Northern Cardinal	*Cardinalis cardinalis*				
Eastern Towhee	*Pipilo erythrophthalmus*				
Chipping Sparrow	Spizella passerina				
Red-winged blackbird	*Agelaius phoeniceus*				
Common Grackle	*Quiscalus quiscula*				
Boat-tailed Grackle	*Quiscalus major*				
American Goldfinch	*Carduelis tristis*				
House Sparrow	*Passer domesticus*				
MAMMALS					
Golden Mouse	*Ochrotomys nuttallis*				
Cotton Mouse	*Peromyscus gossypinus*				
Cotton Rat	*Sigmodon hispidus*				
Eastern Woodrat	*Neotoma Floridana*				
Southern Short-tailed Shrew	*Blarina carolinensis*				
Least Shrew	*Cryptotis parva*				
Gray Squirrel	*Sciurus caroliniensis*				
Raccoon	*Procyon lotor*				
Virginia Opossum	*Didelphis virginiana*				
Armadillo	*Dasypus novemcinctus*				
River Otter	*Lutra canadensis*				
Eastern Cottontail	*Sylvilagus floridanus*				
Bobcat	*Lynx rufus*				
Wild Hog ***	*Sus scrofa*				

*** Exotic Invasive Species

APPENDIX E

FWC LISTS

APPENDIX F

EXOTIC MANAGEMENT PLAN

APPENDIX G

MONITORING PLAN

APPENDIX H

MASTER SITE FILE INFORMATION

APPENDIX I

FNAI

APPENDIX J

PUBLIC MEETINGS/ADVISORY COMMITTEES

APPENDIX K

Arthropod Control Plan

APPENDIX L

Letter of Compliance

APPENDIX M

Cross Seminole Trail Management Plan