DRAFT

Land Management Plan
for the
T. MABRY CARLTON, JR. MEMORIAL RESERVE

Prepared by
Sarasota County Natural Resources, Parks and Recreation, Utilities, Emergency Services, and History Center.

November 2009

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EXECUTIVE SUMMARY

The T. Mabry Carlton, Jr. Memorial Reserve (Carlton Reserve or Reserve) encompasses 24,565 acres (38 square miles) in the central portion of Sarasota County (Figure 1). The Reserve is located south of State Road 72, east and north of Interstate 75. Adjacent features include Myakka River State Park and Myakka Prairie on the north, the Myakka River on the west, a mix of public and private land and the City of North Port on the south, and the Southwest Florida Water Management District (SWFWMD)/Sarasota County jointly-owned Ranch Reserve parcel to the east. The Carlton Reserve forms an integral part of a matrix of conservation lands known as the "Myakka Island" which includes a number of other privately and publicly owned tracts, including Myakka River State Park, Myakka Prairie, Pinelands Reserve, Schewe Tract and the Deer Prairie Creek Preserve. In all, more than 101,000 acres of protected, contiguous parcels of environmental land make up the Myakka Island.

The Reserve itself is comprised of pine flatwoods and dry prairies, with numerous wetlands and hammocks interspersed. More than 20 listed plant species occur on site; 20 confirmed listed animal species also inhabit the Reserve. In addition, the Reserve includes several historical and archaeological sites including historic trails.

The objectives of the land management plan to be addressed both through short-term and long-term management goals include the following:

- Preservation of the Carlton Reserve's natural integrity and linkages with surrounding environmentally-significant lands, both public and private;

- To foster cooperation between Sarasota County staff responsible for managing the Reserve and other County and State agencies in management coordination, insuring that all activities on the Reserve are compatible with the principles of this plan;

- To provide for protection of all natural communities, especially those considered imperiled, and all plants and animals, especially those designated as threatened, endangered or species of special concern;

- To provide for increased protection of historical and archaeological resources and features present on site;

- To provide opportunities for restoration of altered native upland and wetland habitats; and

- To provide opportunities for scientific research and for ecologically benign, non-consumptive, resource-based recreational and educational use by the public.

Healthy natural systems are also necessary for the continued existence of the Reserve's threatened and endangered species. All future activities, including well field development and construction of the public facilities, will be planned in an environmentally-sensitive manner to minimize impacts to existing natural communities and associated flora and fauna and will follow Firewise principles (www.firewise.org). Restoring appropriate hydrological regimes and more natural fire frequency during appropriate seasons will be the primary methods used to revitalize the Reserve's plant communities.

Exotic species management will also be a priority. Exotics on the Reserve include melaleuca, Brazilian pepper, West Indian marsh grass, cogon grass, climbing fern, tropical soda apple, feral hogs, and exotic snakes and lizards. Controlling these species is necessary to minimize adverse impacts on native plants and animals.

The management strategies outlined herein are intended as guidelines to be used to address the complex management needs of the Reserve. Sarasota County Natural Resources will oversee management of the Reserve and assure coordination with other County Business Centers by meeting with representatives from each stakeholder Business Center (Carlton Coordinating Council) on a quarterly basis. This plan will be updated in 2019 to incorporate the most current methodologies and technological advances as they apply to the resource needs and management of the Reserve.

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INTRODUCTION

The T. Mabry Carlton, Jr. Memorial Reserve (Carlton Reserve or Reserve) is a 24,565-acre environmentally significant site located in central Sarasota County (Figure 1). The Carlton Reserve is also the location of Sarasota County's well field, supplying a substantial portion of the County's drinking water. The Reserve includes miles of hiking and equestrian trails and a public use area to accommodate a variety of recreational uses.

Site Significance

In 1982, Sarasota County voters approved a referendum authorizing general obligation bonds to purchase land for a potable water supply source and recreation and open space purposes. The County purchased 16,074 acres in central Sarasota County from the John D. and Catherine T. MacArthur Foundation for approximately $18,500,000.00. In 1987, an additional 8,238 acres were purchased for $4,900,000.00, bringing the total acreage up to 24,312 acres. In 1994, funds available through the Save Our Rivers program enabled the Southwest Florida Water Management District to purchase the remaining 8,249 acres owned by the MacArthur Foundation. As a condition of purchase, a land swap between the SWFWMD and Sarasota County Government resulted in the addition of 253 acres to the Carlton Reserve. At present, the Carlton Reserve encompasses 24,565 acres or 38 square miles. See legal description (Appendix A).

Located inland of highly populated coastal areas of west-central Florida, the Carlton Reserve, along with several other conservation lands known collectively as the "Myakka Island," comprises a regionally significant conservation/recreation area within the Myakka River watershed (Figure 2). Numerous wetlands present on the Reserve provide suitable habitat for a wide variety of wading bird species and a host of other species. Due to the mix of habitat types, a diverse array of plant and animal species inhabit the area.

In 1985, the Florida legislature designated the Myakka River, from County Road 780 south to the Sarasota/Charlotte County line, a Florida 'Wild and Scenic River'. The Myakka River Wild and Scenic Designation and Preservation Act (Section 258.501, Florida Statutes) provided for the permanent preservation, management and administration of this designated segment of then Myakka River. A management plan for the wild and scenic river was completed in 1990 with input from applicable state agencies, Southwest Florida Water Management District, Tampa Bay and Southwest Florida Regional Planning Councils, affected local governments, agricultural, environmental, and landowner interest groups, and the public (Florida Department of NaturalResources, 1990). The entire river portion flowing through the Carlton Reserve is included in this wild and scenic river designation.

Environmentally Sensitive Lands Program

Sarasota County's Comprehensive Plan provides for the protection and management of native habitats balanced with the need for resource-based, ecologically benign, and non-consumptive public recreation. Certain consumptive uses may be allowed if they support the overall objective of ecosystem management. Examples include recreational fishing and activities deemed necessary for resource management or research purposes, including, but not limited to, removal of exotic plants and animals and timber thinning.

The Environmentally Sensitive Lands Protection Program (ESLPP) acquires and protects natural lands. Priority sites within Sarasota County are selected using the following environmental criteria: connectivity, water resource benefits, habitat/species rarity, habitat quality, and manageability. The Carlton Reserve is managed consistent with the ESLPP; however it is not managed with funds from the program.

Purpose and Scope of the Plan

The Carlton Reserve is managed in a manner consistent with the Land Management Master Plan (LMMP) of Sarasota County (Appendix B). The intent of the LMMP is to provide focus and direction for proactive rather than reactive land management activities at the community and landscape levels**.** Consequently, each environmental land is assigned appropriate management level(s) and actions are planned accordingly.

At this time, Level II – IV management guidelines are the appropriate management strategy for the Carlton Reserve. This approach will insure that the ecological integrity of the Reserve is protected while allowing for recreation and well field activities on the site.

Level II – Special Purpose Management applies to lands purchased for a specific purpose. The basic purposes for acquisition of the Reserve were to obtain water supply and to provide recreational, educational, and research opportunities in a manner that protects the ecology of the area.

Level III – Nature-Based Recreation Site and Restoration Property Management strategy emphasizes the development of resource-based recreational activities and potential restoration. This level of management cannot be undertaken without accurate, site-based information and a disciplined planning process.

Level IV – Critical Area Management applies to sensitive areas with natural and/or cultural features that require higher protective management. Certain cultural/historical areas on the Carlton Reserve would fall under this category and may require protection and/or restoration.

Management Authority and Responsibility

Land management authority is the responsibility of Sarasota County Natural Resources in cooperation with Sarasota County Utilities, Sarasota County Parks and Recreation, Sarasota County History Center and Sarasota County Emergency Services. Natural Resources will implement this plan and coordinate with appropriate staff and outside agencies as required, both

formally at quarterly stakeholder meetings (Carlton Coordinating Council) and informally, as appropriate. This management plan replaces the June 1994 Carlton Reserve Land Management Plan.

Management authority is given by the following County Codes and governing documents:

1. The Sarasota County Comprehensive Plan (APOXSEE)
2. Sarasota County Ordinance 82-94 (Appendix C)
3. Sarasota County Resolution 82-200 (Appendix C)
4. Applicable State and Federal Statutes and associated regulations

NATURAL RESOURCE COMPONENT

I. Resource Description and Assessment

LOCATION AND SETTING

The site is located in central Sarasota County, immediately east of the Myakka River in an area between State Road 72 and Interstate 75. Much of the surrounding land is publicly-owned conservation and preservation areas or privately-owned ranchland. A notable exception is the City of North Port, which adjoins the Carlton Reserve along a 3-mile stretch of the Reserve's southeastern boundary.

CLIMATE

The climate of Sarasota County is oceanic and subtropical. The temperature is influenced by latitude, low elevation, winds that sweep across the peninsula, and proximity to the Gulf of Mexico. Consequently, the climate is characterized by high relative humidity, short mild winters, long warm summers and rainfall that is abundant throughout the year, but is heaviest from June through September (Hyde *et al.*, 1991).

TOPOGRAPHY (Figure 4)

The Reserve lies within the physiographic region of the Gulf Coast Lowlands. The generally flat topography is characterized by isolated swamps and marshes which connect into sloughs and meandering streams. Depressions in the landscape seasonally fill with water and form intermittent ponds. Series of ponds often link together during heavy rains to create shallow and slow-moving waterways, while streams may form when flow, volume, and velocity increase. This topography results in a very slow rate of stormwater runoff. The land surface dips gently to the west-southwest, with elevations in the northeast corner of the Carlton Reserve approaching 32 feet above mean sea level and only 5 feet above mean sea level to the west, along the east bank of the Myakka River.

SOILS (Figure 5 & 5A)

Flatwoods: **Eaugallie-Myakka-Holopaw-Pineda**: Nearly level, poorly drained and very poorly drained soils that have a sandy surface layer and sandy and loamy subsoil, are sandy throughout, or have a sandy surface layer and loamy subsoil.

Hammocks: **Wabasso-Eaugallie-Felda**: Found on either side of the Myakka River in narrow strips, nearly level, poorly drained and very poorly drained soils, that have a sandy and loamy subsoil or loamy subsoil.

Depressions and Sloughs: **Felda-Holopaw-Delray**: Nearly level, very poorly drained, sandy soils that have loamy subsoil.

Floodplains: **Delray-Felda-Pompano**: Nearly level, very poorly drained and poorly drained, sandy soils that in most areas have loamy subsoil, but in some areas are sandy throughout.

HYDROLOGY

Rainfall

Rainfall in west-central Florida follows a pattern of wet and dry seasons. The dry season typically occurs from October through May and the wet season generally occurs between June and September. Based on the period of record at the Carlton Reserve, the wet season rainfall typically makes up 65% of the annual rainfall on this site and generally occurs in a pattern of localized, heavy thunderstorms that may lead to significant differences in rainfall between the measuring stations located on the Reserve. Dry season rainfall is typically a result of large frontal weather patterns and tends to be more broadly distributed than the summer thunderstorms. Telemetry data collected from 1994-2008 by Sarasota County Environmental Services reports an average annual rainfall total of 58.11 inches on the Reserve.

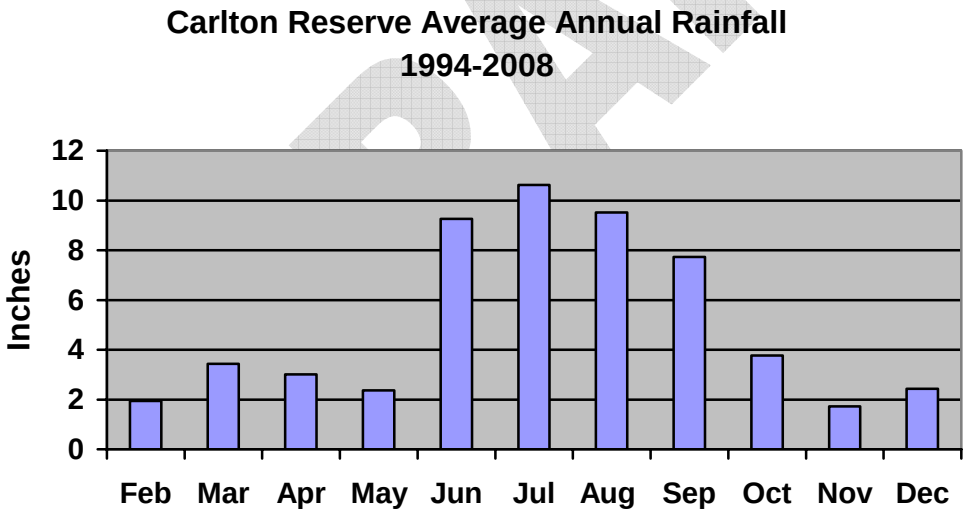


Table 1: Average Annual Rainfall

Surface Water

Surface water features are dominated by the Myakka River and its tributaries and a multitude of wetland and marsh features. The Myakka River is the western boundary of the Reserve. The channel is incised in a nearly flat, heavily vegetated floodplain. Its headwaters are in eastern Manatee County and the river flows in a southerly direction through Manatee, Sarasota, and Charlotte counties before emptying into Charlotte Harbor. Western areas of the Carlton Reserve lie in the 100-year floodplain associated with the Myakka River (Figure 6).

Deer Prairie Slough flows into the Myakka River approximately 10 miles upstream from the mouth of Charlotte Harbor. Deer Prairie Slough extends through the Carlton Reserve from the northeast corner and exits the property at a point approximately three miles from the southeast corner of the Reserve. The slough was channelized south of the north power line easement in the late 1940s and early 1950s to drain the area for agriculture, altering the natural hydrology and ecology of the slough system. A restoration project initiated in 2001 removed approximately 8.4 miles of ditches and enhanced approximately 1,370 acres of hydric/mesic hammock and 740 acres of herbaceous marsh.

Ground Water

The aquifer systems in the Carlton Reserve area are composed of hydrostratigraphic units of varying composition and induration. These units are divided into formations based on their lithostratigraphy. However, Florida's primary aquifers are referred to as aquifer systems due to the complexities of the zones that make up the systems. Hydrologically, there are three aquifer systems in the vicinity of the Reserve: the Surficial aquifer system (SAS), the intermediate aquifer system (IAS), and the Floridan aquifer system.

The SAS in the Carlton Reserve area consists of an unconfined aquifer composed of quartz sands approximately 25 to 35 feet in thickness with varying amounts of clay and shell that generally yield small volumes of water. The water table, which is the top of the SAS, is a subdued reflection of the topography. The presence of surface water bodies, stream flow, and wetland environments are closely tied to the depth of the water table. The source of recharge to the SAS is local precipitation in and around the Reserve.

The IAS is a confined aquifer that consists of those water-bearing units between the bottom of the SAS and the top of the Floridan aquifer. Three major permeable zones are recognized in the IAS (PZ1, PZ2, and PZ3). The majority of private domestic wells, as well as agricultural and irrigation wells, are located in PZ1 and PZ2. The IAS water that is pumped at the Carlton Reserve for potable supply comes from PZ3 and requires extensive treatment before it can be consumed. The IAS is approximately 425 feet thick within the Carlton Reserve area.

The Floridan aquifer system is subdivided into the upper Floridan aquifer system (UFAS) and the lower Floridan aquifer system. Water quality in the UFAS decreases with depth. In west-central Florida, the UFAS dips downward to the south, and as a result, water quality in the UFAS becomes progressively more mineralized in a southerly direction. The Carlton Reserve area is the southern limit of potable water from the UFAS.

CULTURAL/HISTORICAL SETTING AND RESOURCES (Figure 7)

The Carlton Reserve contains 11 recorded archaeological sites: five prehistoric, three historic, and three others which have both a prehistoric and a historic component.

Since the acquisition of the property, five archaeological surveys have been conducted and one historical report produced (Jones 1978, Austin 1987, Almy 1988a and 1988b, Burger 2004). Of the archaeological surveys, only a single survey was designed to cover the vast area of the Carlton Reserve (Austin 1987). The survey conducted by Piper Archaeology (Austin 1987) was

responsible for the identification of all currently known resources within the Reserve. The other four were limited in both scope and area; the survey conducted by Archaeological Consultants, Inc. will be of most use in the following discussions on the Carlton Management plan (Almy 1998b).

Prehistoric Communities

An enduring question in local archaeology is "Which prehistoric people lived here?" Early Spanish explorers recorded many historic names in use today. Their first official voyage to Florida occurred in 1513 under the direction of Juan Ponce de León, who likely landed south of Charlotte Harbor. Early explorers' records provide archaeologists with some tribal names. But given the fact that indigenous people have been living in Florida for the past 12,000 years, many tribal names have been lost. Most of the Native American groups that existed in the state did not have day-to-day contact with the Spanish. Tribes located in the south and the interior were largely ignored by the Spanish who concentrated building missions in north Florida and the panhandle.

Archaeologists call the first known populations within Florida 'Paleo-Indian.' Named after the Paleolithic period in the Old World, these are the nomadic hunters and gatherers believed to have entered the New World from East Asia. The earliest evidence of these people in Florida is over 12,000 years ago.

As time passed, the nomadic hunters that settled in the Florida region dramatically changed their lifestyle. The changes were such that archaeologists classify the descendants of the Paleo-Indian as the 'Archaic' peoples who lived from 7500 B.C. to 500 B.C.

After 500 B.C., the 'Formative' or 'Woodland' period began and regional cultures began to develop. The first culture in the Sarasota area identified by local archaeologist George Luer and Marion Almy was the 'Manasota.' The term is a combination of the two counties (Sarasota and Manatee) in which this culture was discovered. The Manasota were coastal dwellers that subsisted heavily on marine resources and lived in Sarasota from 500 B.C. to 800/1000 A.D. These people were responsible for many of the early shell middens located along our coasts and waterways.

The Manasota culture was replaced by what is called the 'Safety Harbor' culture around 1000 A.D. Named for Safety Harbor in Pinellas County where one of the earliest sites was excavated, the Safety Harbor culture existed until the arrival of the Spanish. Contact with the Spanish caused these tribes to be decimated by Old wWrld diseases; some tribes were completely wiped out or absorbed by other indigenous groups.

Finally, it is important to note that the Spanish never explored Sarasota County and therefore did not provide a written account of the names of the tribes that lived along our shores. However, they did provide the name of our closest neighboring tribe, the 'Uzita'. Therefore, it was the Uzita, not the Calusa, who once plied the waters of the Little Manatee River and lived their lives in what we now call Manatee County. Quite possibly, the Uzita plied the waters farther south, into the Sarasota area.

Historic periods

The historic uses of the Carlton Reserve consist of primarily of cattle ranching and turpentining.

Cattle

The earliest cattle to come to the area were Spanish cows that escaped from the region around St. Augustine in the 1600s. By the mid to late 1800s, these escaped cattle had created large, wild herds throughout Florida, providing food for early settlers in the area. The earliest known cattle were brought into the County in 1847 by William Harvey Whitaker, who brought ten cows and calves to start a herd. Cow herds grew through the region, often supplemented by wild cows caught to form a new herd. Early cattle loading areas included Tampa, Ft. Myers, El Jobean and Punta Rassa. Cattle were shipped south to Cuba. Total cattle head count in Florida increased to 653,000 in 1887 (Newman et al. 2002). By the 1900s, the Sarasota cattle industry was thriving with thousands of cattle roaming swampy and sawgrass areas. In 1914, the Palmers bought a large ranch on the Myakka River, bringing national attention to the area.

The most important change in the industry occurred in 1923 when all cattle were required by law to be dipped regularly for ticks (Newman et al. 2002). Prior to this, Florida cattle were referred to as "Tickey Cattle" due to the Texas Tick, which produced fever and prevented weight gain. It was no longer legal for wild cows to be rounded up; they were now to be shot on sight.

Cattle were dipped every 14 days in a mixture of "8 pounds arsenic, 24 pounds washing soda, and one gallon pine tar for every five hundred gallons of water" (Newman et al. 2002). This meant that Sarasota herds could no longer roam freely. This ultimately led to fencing and the creation of many small ranch stations throughout the region where round ups and dipping activities. Today, a single dipping vat is known to exist on the Reserve in the Windy Sawgrass Cow Camp.

Turpentine

Over time, the extensive production of turpentine in the Carolinas and Georgia led to the destruction of pine forests throughout the South. Seeking new virgin timber, the industry turned to Florida with its vast pine forests in the 1900s. During this time, the demand for labor led Florida to lease prisoners to the turpentine companies. Convicts supplied approximately 10% of the Florida turpentine workers.

In the 1900s, the average worker in turpentine camps relied on the company for his goods and services. The company provided small shacks or shanties for workers and their families. In addition to housing, workers were paid monthly, with their average wage based on the amount of trees worked. Workers could earn $15-25 a month; however, in many camps the pay was often in the form of scrip or tokens usable only in the company stores.

In 1910, there were five working turpentine camps in Manatee County (becoming Sarasota County in 1921). The Hall & Cheney camp was near Fruitville; R.T. Hall & Company Prison Camp was near Sandy, in southeastern Manatee County; Williams camp was near Venice; Hall and Harrison camp was west of Cow Pen Slough; and an unnamed camp operated in the present Carlton Reserve area. Three of these camps used convict labor in addition to their paid workforce to harvest gum.

By the 1920s, trees had been in production for ten years and many of the turpentine camps were closing or converting into timber mills. In 1923, the state prohibited leasing convict labor to private companies. This had a direct negative impact on turpentine camps in Sarasota County, due to the increasing the production costs.

In the 1930s, two new camps were created at Sidell and Bee Ridge. Both camps provided housing and a commissary for the workers and their families. By the 1940s, production significantly declined; by 1951 both camps closed.

Cultural Resources

Currently the following cultural resources exist within the Reserve:

- 8SO422 Vicker's Head #1 Site
- 8SO423 Vicker's Head #2 Site
- 8SO424 Hot Shot Site
- 8SO425 South Power Line Site
- 8SO426 Turpentine Camp #2 Site
- 8SO427 Venice Arcadia #1 Site
- 8SO428 Venice Arcadia #2 Site
- 8SO429 Honey Bee Site
- 8SO612 Resin Collection Site
- 8SO613 Windy Sawgrass Camp
- 8SO614 Farmstead Site

Available information suggests that nine sites are not eligible for listing in the National Register of Historic Places (*NRHP*). However, two sites, Vicker's Head #2 (8SO423) and Turpentine Camp #2 (8SO426) appear to be eligible for the *NRHP* and the Sarasota County Local Register of Historic Places (*SCLRHP*).

All 11 archaeological resource sites contribute important information to the County's archaeological record. Further, the location of these sites in a Reserve acquired by the County because of its habitat diversity provides an ideal opportunity for the interpretation of prehistoric subsistence.

In addition to identified archaeological sites, there are still undocumented cultural resources. Since the completion of the Piper survey, the importance of additional cultural resources has been acknowlwedged. Resources like historic canals, drainage systems, roads, and trails that exist within the Reserve need to be documented. Furthermore, since the original survey there have been significant improvements in archaeological site detection. Probable archaeological sites exist that were not evaluated in the past. Finally, a single burial is indicated on an early survey plat of the area. Attempts have been made to relocate this burial mound but have not been successful due to the heavy vegetation.

PLANT COMMUNITIES **(**Figure 8)

Vegetative communities are classified using the Florida Natural Areas Inventory (FNAI) system (FNAI, 2009 Draft). This classification system categorizes all natural habitats that occur in Florida. There are some drawbacks to using the FNAI system. First, the Carlton Reserve, as well as most preserves in west central Florida have been altered to some degree due to past land uses (e.g., silviculture, grazing), hydrologic alterations (e.g., ditching, draining), and fire suppression. Secondly, the FNAI system provides a general approach to habitat classification for the entire

state of Florida. The uniqueness of the west Florida region coupled with past land disturbances have resulted in some difficult classification decisions—many on-site vegetative communities do not fit well within any of the FNAI classifications. Consequently, when these classification decisions were difficult, rationale and explanation are provided within the text.

A habitat trend analysis has been conducted to compare habitats from the 2006 aerial map with the 1948 aerial map and 1847 state surveyor field notes (Appendix D). In general, the Reserve is dominated by upland communities in various stages of fire suppression and hydric communities consisting of isolated wetlands and wetlands associated with drainage ways, creeks, and the river. The 1948 aerial overlaid with 1847 drawings is illustrated in Figure 9.

Natural Communities, Frequency and Acreages

FNAI	AREAS	ACRES
Basin Marsh	54	2502
Basin Swamp	13	80
Depression Marsh	823	3839
Disturbed	13	145
Dry Prairie	52	2195
Floodplain Marsh	26	79
Floodplain Swamp	7	95
Hydric Hammock	111	3161
Mesic Flatwoods	57	10765
Mesic Hammock	60	544
Open Water	12	40
Scrubby Flatwoods	9	220
Slough	1	860
Wet Prairie	13	49

Table 2: Natural Communities Acreage

Basin Marsh – 2502 acres

Basin marshes are regularly inundated freshwater herbaceous wetlands that may occur in a variety of situations. In contrast to depression marshes, they are not small or shallow inclusions within a fire-maintained community. Species composition is heterogeneous both within and between marshes, but can generally be divided into submersed, floating-leaved, emergent, and grassy zones, from deepest to shallowest portions. Shrub patches may be present within any of these zones.

Common species found in the floating-leaved zone of basin marshes include white waterlily (*Nymphaea odorata*), American lotus (*Nelumbo lutea*), and yellow pondlily (*Nuphar advena*); the emergent zone may have pickerelweed (*Pontederia cordata*), bulltongue arrowhead (*Sagittaria lancifolia*), southern cattail (*Typha domingensis*), sawgrass (*Cladium jamaicense*), and softstem bulrush (*Scirpus tabernaemontani*). The grassy zone is typically characterized by maidencane (*Panicum hemitomon),* smooth beggarticks (*Bidens laevis*), dotted smartweed (*Polygonum punctatum*), and sand cordgrass (*Spartina bakeri*), accompanied by a diverse mixture of less common forbs such as sweetscent (*Pluchea odorata*), spadeleaf (*Centella asiatica*), and lemon bacopa (*Bacopa caroliniana*; FNAI 2004). Coastalplain willow (*Salix caroliniana*), common buttonbush

(*Cephalanthus occidentalis*), elderberry (*Sambucus nigra* ssp. *canadensis*), and wax myrtle (*Myrica cerifera*) are common shrubby components (FNAI, 2009 Draft).

Basin marshes occur in a variety of isolated or mostly isolated depressions. Some of the basin marshes at the Carlton Reserve (such as Tiger Marsh) are large, deep inclusions within fire-adapted upland communities; they may be part of non-fire adapted communities such as hardwood forests or basin swamps. They are regularly inundated with water originating from localized rainfall.

Basin Swamp – 80 acres

Basin swamp is a basin wetland vegetated with hydrophytic trees and shrubs that can withstand an extended hydroperiod. Basin swamps are highly variable in size, shape, and species composition. While mixed species canopies are common, the dominant trees in basin swamps on the Carlton Reserve are swamp laurel oak (*Quercus laurifolia*), common buttonbush (*Cephalanthus occidentalis*), and popash (*Fraxinus caroliniana*). Other typical canopy and subcanopy trees include slash pine (*Pinus elliottii*), red maple (*Acer rubrum*), dahoon (*Ilex cassine*), swamp bay (*Persea palustris*), and American elm (*Ulmus americana*).

Depending on the hydrology and fire history, shrubs may be found throughout a basin swamp or they may be concentrated around the perimeter. Common species include Carolina willow (*Salix caroliniana*), swamp dogwood (*Cornus foemina*), fetterbush (*Lyonia lucida*), wax myrtle (*Myrica cerifera).* The herbaceous layer is also variable and includes a wide array of species including maidencane (*Panicum hemitomon*), Virginia chain fern (*Woodwardia virginica*), arrowheads (*Sagittaria* spp.), lizard's tail (*Saururus cernuus*), false nettle (*Boehmeria cylindrica*), beaksedges (*Rhynchospora* spp.), bladderworts (*Utricularia* spp.), and royal fern (*Osmunda regalis* var. *spectabilis*), (FNAI, 2009 Draft)

Mesic Flatwoods – 10,765 acres

Mesic flatwoods is the most extensive habitat type present on site, covering more than 50% of the Reserve. Soil conditions vary seasonally in mesic flatwoods, alternating between wet and dry. In general, areas of mesic flatwoods are dominated by scattered to numerous South Florida slash pines (*Pinus elliottii* var. *densa*) with an understory of saw palmetto (*Serenoa repens*), fetterbush (*Lyonia lucida*), gallberry (*Ilex glabra*), wax myrtle (*Myrica cerifera*), winged sumac (*Rhus copallina*), wiregrass (*Aristida stricta*), and a variety of other grasses and herbaceous species. Mesic flatwoods are often inundated during the summer rainy season and typically become very dry during the winter months.

Frequent fires naturally occur in areas of mesic flatwoods. These fires help encourage pine regeneration and minimize invasion by woody species such as oaks (*Quercus* spp.) and wax myrtle (*Myrica cerifera*). Many flatwoods species depend on periodic fire for their continued existence and will disappear from these areas in the absence of fire. When maintained under proper conditions, either naturally or through management, mesic flatwoods communities contain one of the highest species diversities of any habitat type in Florida.

Scrubby Flatwoods -220 acres

Only a very small amount of scrubby flatwoods is present on the Reserve (less than 10 acres). Though small, this natural community is very important and provides suitable habitat for the threatened Florida scrub jay and many other scrub-dependent species. Small patches of scrubby

flatwoods occur near the southern entrance and also on the higher sandy ridges along the Myakka River's eastern bank. Fire is an important natural process in maintaining the shrublike hardwood layer. Numerous open sandy patches are also common.

Species composition in scrubby flatwoods is a diverse mixture of species found in both scrub and pine flatwoods habitats. Understory species are generally more typical of scrub habitats, such as nodding pinweed (*Lechea cernua*) and prickly pear cactus (*Opuntia humifusa*), among others. Often a scattering of scrub oak species and shrubs, including Chapman's oak (*Quercus chapmanii*), sand live oak (*Quercus geminata*), myrtle oak (*Quercus myrtifolia*), and staggerbush (*Lyonia fruticosa*) comprise the midstory layer. The deep, porous sandy soils and elevations slightly higher than the surrounding areas generally do not permit inundation, even during the wettest periods.

Dry Prairies – 2,195 acres

Areas similar to pine flatwoods, but containing virtually no pine trees, are also present on the Reserve. These areas, known as 'dry prairies,' are a globally imperiled habitat (FNAI and FDNR, 1990). Though habitats resembling Florida's dry prairies occur elsewhere in the world, similar plant associations are not found outside of the State. Characteristically, Florida's dry prairies appear as vast prairie-like expanse of saw palmettos (*Serenoa repens*), various grasses, herbaceous plants and low shrubs such as dwarf live oak (*Quercus minima*), dwarf huckleberry (*Gaylussacia dumosa*), gallberry (*Ilex glabra*) and fetterbush (*Lyonia lucida*). Trees are conspicuously absent, but do occur at very low densities in some areas of dry prairie. Where they do occur, trees are generally scattered South Florida slash pines (*Pinus elliotti* var. *densa*) and cabbage palms (*Sabal palmetto*).

Periodic fires are also important in these areas and help to prevent invasion by trees. Other factors may limit tree densities, though the reasons for this are not yet fully understood. Some authorities believe dry prairies have increased in coverage over the years as an artifact of human activity and are not a natural biological community. Other authorities disagree and suggest that dry prairies were once more widespread than they are today, but have dwindled during recent years in response to fire suppression.

Although dry prairies are not fully understood, they are significant and require special management to insure the continued survival of rare species that live there. Both the Florida burrowing owl (*Athene cunicularia floridana*) and Audubon's crested caracara (*Polyborus plancus audubonii*), two species found nowhere else east of the Mississippi River except Florida, require healthy dry prairie habitat to survive. Caracara has been observed periodically on the Carlton Reserve.

Wet Prairie – 49 acres

Wet prairies are often found in slightly lower areas within dry prairies and are distinguished from them by the dominance of wiregrass or blue maidencane (*Amphicarpum muhlenbergianum*), the absence of shrubs, and the presence of wetland herbs such as pineland rayless goldenrod (*Bigelowia nudata*), water cowbane (*Oxypolis filiformis*), and slenderfruit nutrush (*Scleria georgiana*) (FNAI, 2009 Draft).

Blackwater Stream (The Myakka River) – 15 acres

The Myakka River forms the Reserve's western boundary. Vegetation associated with the Myakka River include marsh pennywort (*Hydrocotyle umbellata*), duckweed (*Lemna* sp.), water spangles

(*Salvinia minima*), cattails (*Typha* spp.), frog's-bit (*Limnobium spongia*), water hyacinth (*Eichhornia crassipes*), various bulrushes (*Scirpus* spp.) and sedges (*Cyperus* spp.).

Because of the Myakka's dark, tannin-stained water and sandy bottom, it is classified as a "blackwater stream" (FNAI and FDNR, 1990). This river system is especially significant because it drains much of the western half of the Reserve and is Sarasota County's only river. A substantial portion has been designated a State 'Wild and Scenic River' by the Florida Department of Environmental Protection (FDEP).

Sloughs – 860 acres

Sloughs are seasonal creeks with a broad, ill-defined channel that may dry up completely during extended droughts. Deer Prairie Slough, the largest slough system on the Reserve, drains an area of approximately 33.2 square miles, comprising much of the eastern half of the property (United States Geological Survey (USGS), 1986). Extensive channelization of the southern two-thirds of Deer Prairie Slough, during the 1940s and 1950s has significantly altered hydrological regimes and associated plant communities. In 2001, work began to restore the original hydrologic flow to the system by backfilling the channel to the original grade. By 2003, most of the Slough within the Reserve had been successfully restored. Several smaller more pristine slough systems are also present. Vegetation associated with the Reserve's various sloughs includes pickerelweed (*Pontederia cordata*), sagittarias (*Sagittaria* spp.), sawgrass (*Cladium jamaicense*), maidencane (*Panicum hemitomon*), spatterdock (*Nuphar luteum* var. *macrophyllum*), water lilies (*Nymphaea* sp.), St. John's-worts (*Hypericum fasciculatum*, other (*Hypericum* spp.), coinwort (*Centella asiatica*) and beak rush (*Rhynchospora tracyi*).

Depression marshes – 3,839 acres

Depression marshes are seasonally wet depressions within pine flatwoods and dry prairie areas. These areas are very conspicuous in aerial photos of Reserve property; they comprise approximately 20% of the total acreage within the Reserve. Because of their abundance and relatively pristine condition, the Carlton Reserve's depression marshes are some of the finest examples of this ecological community type in Florida. Typically, several distinct zones of vegetation are present in these wetlands, forming concentric circular bands. Near the center of the deeper marshes, the most common plants include pickerelweed (*Pontederia cordata*), sagittarias (*Sagittaria* spp.), spatterdock (*Nuphar luteum* subsp. *macrophyllum*) fireflag (*Thalia geniculata*) and water lilies (*Nymphaea* spp.). Hydroperiods in these areas are the longest and generally decrease in duration as one moves outward toward the fringes of the wetland.

Dominant plants in shallower areas include a mixture of St. John's-worts (*Hypericum fasciculatum* and other *Hypericum* spp.), maidencane (*Panicum hemitomon*), sawgrass (*Cladium jamaicense*), spikerushes (*Eleocharis* spp.), yellow-eyed grasses (*Xyris* spp.), water-horn fern (*Ceratopteris* spp.), bladderworts (*Utricularia* spp.) and various sedges and rushes. Some woody species such as Coastal Plain willow (*Salix caroliniana*), buttonbush (*Cephalanthus occidentalis*), wax myrtle (*Myrica cerifera*) and primrose willows (*Ludwigia* spp.) may also be present. Periodic fires, especially during drier periods, help to maintain these areas in an open state and inhibit invasion by trees and shrubs. Hydroperiods can vary widely, depending upon seasonal rainfall, alteration of the local hydrology, and a number of other factors.

Floodplain Marsh – 80 acres

Floodplain marsh is a wetland community occurring in river floodplains and dominated by herbaceous vegetation and/or shrubs (FNAI, 2009 Draft). Old oxbows along the Myakka River are frequently flooded sites where sand cordgrass (*Spartina bakeri*), sawgrass (*Cladium jamaicense*), and maidencane (*Panicum hemitomon*) are common plants. Areas of deeper water may have bulltongue arrowhead (*Sagittaria lancifolia*), bladderworts (*Utricularia* spp.), and pickerelweed (*Pontederia cordata*).

In wetter sites, Carolina willow (*Salix caroliniana*) or common buttonbush (*Cephalanthus occidentalis*) may form shrub thickets. Flood tolerant trees like the cabbage palm (*Sabal palmetto*) are widely scattered especially at the edge of the hydric hammocks.

Floodplain Swamps – 95 acres

Floodplain swamps occur primarily in the southwestern portion of the Reserve in association with slough systems that drain into the Myakka River. Vegetation in these areas consists largely of pop ash (*Fraxinus caroliniana*), laurel oak (*Quercus laurifolia*), red maple (*Acer rubrum*), buttonbush (*Cephalanthus occidentalis*) and coastal plain willow (*Salix caroliniana*), along with climbing aster (*Aster carolinianus*), hemp vine (*Mikania scandens*), pepper vine (*Ampelopsis arborea*), Virginia creeper (*Parthenocissus quinquefolia*), swamp mallow (*Hibiscus grandiflorus*), dog fennel (*Eupatorium* sp.), camphorweed (*Pluchea rosea*) and fireweed (*Erechtites hieracifolia*). Protection from fire for extended periods and maintenance of natural hydrological patterns are necessary for these areas to persist.

Hydric Hammocks – 3,161 acres

Hydric hammocks occur in a relatively narrow, semi-continuous band along the banks of the Myakka River. Typically, hammocks associated with the river contain an overstory of cabbage palms (*Sabal palmetto*), laurel oaks (*Quercus laurifolia*), pop ash (*Fraxinus caroliniana*) and water locust (*Gleditsia aquatica*). Understory plants in these areas include saw palmetto (*Serenoa repens*), buttonbush (*Cephalanthus occidentalis*), groundsel tree (*Baccharis* spp.), and occasional small viburnum (*Viburnum obovatum*), buckthorn (*Bumelia* sp.), wild coffee (*Psychotria* sp.) and South Florida slash pine seedlings and saplings (*Pinus elliottii* var. *densa*). A number of epiphytic species ("air plants") are also common, including Spanish moss (*Tillandsia usneoides*), ball moss (*Tillandsia utriculata*), grass-leaved air plant (*Tillandsia setacea*), common wild pine (*Tillandsia fasciculata*), giant wild pine (*Tillandsia utriculata*), butterfly orchid (*Encyclia tampensis*), golden polypody (*Phlebodium aureum*), shoestring fern (*Vittaria lineata*) and resurrection fern (*Polypodium polypodioides* var. *michauxianum*).

Fires rarely occur in the Reserve's hammock areas, permitting dense tangles of wild grape vines (*Vitis* spp.) and catbrier vines (*Smilax* spp.) to ascend the trees. Sometimes hammock areas along the river are referred to as hydric hammocks due to their proximity to the river and their susceptibility to extended flooding during the rainy season. These hammocks are especially picturesque because many of the cabbage palms gracefully lean out over the river.

Mesic Hammocks – 544 acres

Mesic hammock is a well-developed evergreen hardwood and/or palm forest on soils that are rarely inundated. The canopy is typically closed and dominated by live oak (*Quercus virginiana*), with cabbage palm (*Sabal palmetto*) generally common in the canopy and

subcanopy. Water oak (*Q. nigra*) and laurel oak (*Q. hemisphaerica*) may also be frequent in this community. Pine trees, particularly slash pine (*Pinus elliottii*), may form a sparse emergent layer. Mesic hammock may occur as "islands" on high ground within basin or floodplain wetlands, as patches of oak/palm forest in dry prairie or flatwoods communities or in ecotones between wetlands and upland communities.

The shrubby understory may be dense or open, tall or short, and is typically composed of a mix of saw palmetto (*Serenoa repens*), American beautyberry (*Callicarpa americana*), American holly (*Ilex opaca*), gallberry (*I. glabra*), sparkleberry (*Vaccinium arboreum*), hog plum (*Ximenia americana*), common persimmon (*Diospyros virginiana*), highbush blueberry (*Vaccinium corymbosum*), Carolina laurelcherry (*Prunus caroliniana*), yaupon (*I. vomitoria*), wild olive (*Osmanthus americanus*), and/or wax myrtle (*Myrica cerifera*). The herb layer is often sparse or patchy and consists of various grasses, including low panic grasses (*Panicum* spp.), witchgrasses (*Dichanthelium* spp.), sedges (Cyperaceae), and whip nutrush (*Scleria triglomerata*), as well as various ferns and forbs such as bracken fern (*Pteridium aquilinum*) and partridgeberry (*Mitchella repens*). Toothpetal false rein orchid (*Habenaria floribunda*) and other ground orchids are occasional.

Abundant epiphytes on live oaks and cabbage palms are a characteristic feature. In addition to the ubiquitous Spanish moss (*Tillandsia usneoides*) and other air-plants (*Tillandsia* spp.), epiphytic ferns such as resurrection fern (*Pleopeltis polypodioides* var. *michauxiana*), golden polypody (*Phlebodium aureum*), and shoestring fern (*Vittaria lineata*) are common in undisturbed stands. Vines are common and often abundant, occasionally creating a solid groundcover in disturbed hammocks. Species include muscadine (*Vitis rotundifolia*), sarsaparilla vine (*Smilax pumila*), greenbriers (*Smilax* spp.), eastern poison ivy (*Toxicodendron radicans*) and Virginia creeper (*Parthenocissus quinquefolia*).

Disturbed Areas – 145 acres

Disturbed and ruderal areas, such as pipeline and power line right-of-ways, roads and jeep trails, make up the final habitat type found on the Reserve. All of these areas are altered natural habitats. Species common in these areas include dog fennel (*Eupatorium* sp.), frog-fruit (*Lippia nodiflora*), horrid thistle (*Cirsium horridulum*), wood sorrel (*Oxalis* sp.), rabbit tobacco (*Gnaphalium* sp.) and a variety of grasses, sedges and other herbaceous weedy species. Areas of cogon grass (*Imperata cylindrica*), an aggressive non-native species, occur along several jeep trails within the Reserve and appear to be spread by vehicular travel. Removal of exotic species will be a top priority in these areas. Other disturbed areas include maintenance areas, the public park area, as well as the water plant and wellfield infrastructure.

FLORA AND FAUNA

To date, more than 500 species of plants (Appendix G) and about 100 species of animals (Appendix H) are known to occur at the Carlton Reserve. Species that are potentially present are also listed. The Reserve will be managed to promote species diversity as well as populations of certain key and indicator species. This will be accomplished through the use of prescribed burning and/or mechanical vegetation reduction and any other viable management actions to maintain healthy vegetation communities and ecosystems.

SPECIAL ELEMENTS

Special elements are defined as spatial and/or temporal site characteristics that warrant particular management attention and potential action. Special elements identified on the preserve are as follows:

Peace River/Manasota Regional Water Management Authority Pipelines(Figure

Coordination with PR/MRWMA on long-term management of pipeline right-of-ways is crucial in managing exotic plant species and other disturbances caused by pipeline installation.

Florida Department of Environmental Regulation Conservation Easement

This conservation easement was established in 1990 to offset impacts to wetlands during construction of the Mabry Carlton Parkway. The easement protects all wetlands within Section 28, Township 30S, Range 20E. No construction, excavation, dumping, or removal of trees and vegetation is allowed. Also prohibited are any activities detrimental to drainage, flood control, water conservation, erosion control, soil conservation, or fish and wildlife habitat preservation.

Mitigation Sites

Current permitted mitigation sites on the Reserve include the Center Road mitigation wetland. This site was created due to impacts from improvements to Center Road in Venice. It is located east of Deer Prairie Slough near trailmarker #37. Annual reports are due to SWFWMD and the Army Corps of Engineers. The site will most likely be monitored for another year before it is considered successful and released from further monitoring.

All other permitted mitigation sites (from either the wellfield construction or other road projects) on the Reserve have been released from further monitoring and will be managed under the same management guidelines as other wetlands on the Reserve.

Private Inholdings (Way of Necessity)

As a courtesy, private landowners who are landlocked between the Reserve and the Myakka River are provided access to their property through the Reserve.

Myakka River State Park Land Management Agreement

A letter of understanding with the Park provided coordination regarding prescribed burning and other land management activities. (Appendix F)

INVASIVE/EXOTIC SPECIES

Plants

To date, as many as 27 species of non-native plants have been identified at the Reserve (see Appendix G). Of these, 14 species are classified as Category I species[1] by the Florida Exotic Pest Plant Council (FLEPPC) and 4 species are classified as Category II species[2] (FLEPPC, 2009).

[1] Invasive exotics that are altering native plant communities by displacing native species, changing community structures or ecological functions, or hybridizing with natives.

[2] Invasive exotics that have increased in abundance or frequency but have not yet altered Florida plant communities to the extent shown by Category I species.

As these species' infestations or new expanding populations are identified, prompt treatments or manual removal efforts will begin. Use of GIS to map infestations, continuous monitoring, and follow-up treatments are all tools utilized to help control the spread of invasive/exotic species. Efforts will also be made to obtain grants to help subsidize control costs.

Animals

At least 5 non-native animal species are known to occur or are likely to occur on Reserve property (Appendix H). The most serious threat appears to be feral hogs, which are capable of widespread plant community disturbance. Rooting damage is most evident along roads and trails, but is also common in many of the Reserve's natural areas. Rooted areas exhibit considerable soil disturbance that typically results in vegetative cover desiccation and death. A control program needs to remove a large enough proportion of the hog population so that further environmental degradation becomes insignificant.

A program involving live trapping and hog removal on a continuous basis, by a certified contractor, has been ongoing for several years. A monitoring program to assess effectiveness of the trapping program would help management determine whether modifications to the current hog control program are needed.

Because hogs prefer areas with dense understory vegetation (Frankenberger and Belden, 1976), an aggressive prescribed burning program, in conjunction with continuous live trapping efforts, will continue to be used to help achieve the greatest level of control. With regular burning, understory vegetation will be maintained at a more natural density, creating conditions less hospitable for hogs.

Presently, there are no plans to control other exotic animal species known to occur at the Reserve. If future research demonstrates the need for control of these species, or other species introduced in the future, appropriate control measures will be instituted at that time. Future monitoring needs will most likely include Burmese pythons (*Python molurus*), African Rock Pythons (*Python sebae*), Nile monitors (*Varanus niloticus*), Black spiny-tailed iguanas (*Ctenosaura similes*), and green iguanas (*Iquana iquana*). All are known to now occur in Sarasota County.

LISTED SPECIES

Plants

Currently, 17 species of plants (Appendix G) occurring on the Reserve are listed as threatened, endangered or as commercially exploited (Coile and Garland, 2004). Of these, six are classified as endangered, seven as threatened and four as commercially exploited.

Animals

In all, as many as 20 wildlife species (Appendix H) present or potentially present on the Reserve are imperiled (FFWCC, 2004). Of these, ten species are classified as either threatened or endangered by State or federal agencies. Due to past confirmed sightings either on the Reserve or in the region, Florida panther and Florida black bear information is also included. An uncollared male Florida panther roamed the Reserve and surrounding areas from 1999 until the spring of 2005. His presence was documented by both the United States Fish and Wildlife Service (USFWS) and the (FFWCC).

The photograph on the front cover of the management plan was taken on the Reserve using a FFWCC trail camera in December 2001.

INVENTORY NEEDS

Baseline inventory data is lacking for certain key species. The gopher frog is suspected to inhabit the Reserve, but no surveys have been done and no sightings have been recorded. This species will be inventoried by sound during the breeding season and via a gopher tortoise burrow scope. The scope will also be used to inventory other gopher tortoise commensals.

A general species inventory is also needed for the site and would include surveys for species diversity and populations within major groups, such as birds, reptiles/amphibians (herps), small mammals, and large mammals. Bird surveys will continue to identify species that utilize the Reserve at different times of the year. A variety of methods may be used, including track plots and live traps to inventory herps and small mammals. Track plots and remote cameras are also recommended to inventory large mammals. Currently, volunteers (Friends of the Carlton Reserve) are using trail cameras to monitor wildlife on the Reserve and provide bird survey information from nature walks and birding excursions. Trail cameras, purchased by the group, are regularly monitored and photo data is entered into a spreadsheet to provide a photo record of resident wildlife.

Coarse filter surveys are recommended to occur at a minimum of once every five years for preserves managed at Level III. The survey methods are designed to efficiently provide managers with site-specific floral and faunal inventories, characterizing species richness and not abundance. Through time, the data collected can be tracked by repeating the surveys with the development of every management plan update. In the event that these coarse filter surveys document listed species' use of the preserve, said species may be targeted for more intensive surveys. Habitat-specific species richness trends (or the lack thereof) can be identified by comparison of findings on any five-year coarse filter survey.

Timbering surveys are also recommended for preserves managed at Level III. Selective timber thinning has occurred several times on the Reserve in the last 10 years. An extensive timber survey, for the purpose of timber management and habitat restoration, has not yet been implemented.

Identification of critical natural and/or cultural features or species is recommended for Level IV Management. Some historical surveys have occurred and critical areas have been included in the GIS database. Critical natural resources and listed species will be identified in the coarse filter surveys mentioned above. Fine filter surveys will be applied to these critical natural resources and any areas subject to restoration on the property. Fine filter surveys are designed to enable statistical tracking of the effectiveness of management strategies and are recommended for Management Levels III and IV.

II. Resource Management Action Plan

OVERALL APPROACH & SPECIAL CONSIDERATIONS

Application of the basic concepts of the Land Management Master Plan (LMMP) have resulted in the conclusion that Level II - IV management is required to manage the complexities associated with balancing protection and preservation of the site's natural and cultural resources with a variety of multiple uses at the Carlton Reserve. As prescribed in the LMMP, the "basic elements of an effective management plan" are being employed. More specifically:

1. Critical natural and/or cultural features or species are identified, GPS located, marked, photographed, mapped and documented in GIS as thoroughly as possible (quantitatively and qualitatively) with restricted public access to such records.
2. Protective measures are in place to meet the needs of the critical resource (fire breaks, fences, water flow, seed sources and other necessary measures).
3. Appropriate experts and authorities are consulted as soon as possible to determine if there are any immediate actions that should be taken to safeguard against loss in the short term. These actions are implemented and documented under expert supervision.
4. Solicit research from universities and other qualified groups to increase knowledge and appropriate management for identified species, native communities, and cultural features.
5. Nuisance invasive vegetation management activities are immediately initiated utilizing contractual or in-house staff to control exotic vegetation throughout the site. Ongoing, continuous assessment is required to assure comprehensive control of exotics. Utilize GPS/GIS tracking and mapping of exotics, to guarantee long-term management control.
6. The management plan is modified or completed addressing approved uses of site, access to site; monitoring plan to assess status, impacts and carrying capacity; restoration plan for site or feature; recovery plan for species; outreach plan to educate user groups and neighbors about size and its significance; management action timeline; staff and funding requirements and sources.
7. Measures of critical habitat success are developed with professional oversight.
8. An annual work plan is developed to prioritize actions with funding based on public agency support.
9. An annual report is completed to describe what was done with what resources, and what needs to be done better.

Application of these basic elements has led land managers to the conclusion that Level II - IV management is most appropriate for the Carlton Reserve at this time. This management plan has been developed to address land management actions needed, security issues, protection of natural and cultural features, provisions for recreational use, provisions for wellfield operation and the development of an annual work plan and annual review.

MANAGEMENT GOALS, OBJECTIVES AND ACTIONS

The following are the major goals, objectives and actions required:

1) Continue wildfire mitigation, prescribed burning and steadily increase acreage of ecological burning until target of at least 8,000 acres of ecological burns are completed each year. Use of mechanical vegetation reduction may be necessary to help further this goal. See Management Zone Map (Figure 8)

2) Maintain or reduce acres of Category I and II (FLEPPC) exotic infestations.
3) Continue feral hog removal program and monitor effectiveness so that control methods can be adapted to maximize efficiency.
4) Continue to monitor wellfield impacts to natural systems and provide guidance to Utilities if operational changes are needed.
5) Monitor visitor use impacts to natural systems and provide guidance to Parks and Recreation if use pattern changes are needed.
6) Identify critical habitat (such as dry prairie) needs and create a restoration plan to restore and manage it properly.
7) Maintain a network of trails that allow both emergency access and exploration of the Reserve by hiking, biking, and horseback riding.
8) Identify future potential public access from North Port.

MONITORING PROGRAM FOR ADAPTIVE MANAGEMENT AND RESTORATION

In order to practice adaptive management - a process that promotes flexible decision making that can be adjusted in the face of uncertainties as outcomes from management actions can become better understood - vegetation communities and wildlife species need to be monitored for changes in diversity, total populations, and demographics. Vegetation communities and wildlife can be tied together through animal habitats, which may be comprised of single or multiple vegetation communities. Monitoring wildlife use of these communities lets managers know if they are providing the environmental necessities that each community should provide when in a natural, healthy state.

Monitoring targets are designated species and communities that are important for natural resource managers to watch. These typically include key plants and animals such as endangered/threatened species and indicator species. Target species often also include game species, invasive exotic species and any other species that may have some importance to the site. Target communities are usually those that are native to the site and need to be restored or maintained, or are necessary to obtain another management goal.

Monitoring for Target Communities at Deer Prairie Slough

Restoration work within the Deer Prairie Slough system, which was initiated in 2001, was supplemented by a monitoring plan designed to quantify changes in plant community composition following restoration efforts. It was expected that rehydration of the primarily freshwater herbaceous marsh areas by restoring the hydroperiod would shift the plant community towards a more wetland-dependent assemblage. Monitoring transects and quadrats were designed to capture representative plant community data across the varying soil types and inundation depths of the restored slough.

This data set integrates with historic data collected as part of the Water Use Permit (WUP) monitoring efforts. While analysis reveals a distinct shift towards a more wetland-dependent plant community based on density-frequency importance values, these community changes could be monitored at least annually to further document the changes in community as well as to provide an indicator for adaptive management decisions regarding nuisance and exotic plant control. Specifically, the existing herbaceous communities within the Slough should be inspected

for (in descending order of importance) Melaleuca, West Indian marsh grass, cattails, water lettuce, water hyacinth, primrose willow, and torpedo grass. Treatment plans should be formulated annually, based on inspection data.

A secondary community change resulting from the Deer Prairie Slough restoration project is the reversal of hammock encroachment from transitional areas surrounding the Slough. Aerial photography may be used to assess the extent of hammock mortality and canopy reduction in areas adjacent to the Slough, and these areas should be inspected during the wet season for the presence of exotic/nuisance species. The canopy gaps in the newly hydrated hammock areas may provide opportunities for Brazilian pepper, West Indian marsh grass, and primrose willow to become established and form extensive monocultures if left unchecked.

Restoration:

Deer Prairie Slough:

Further restoration of the Deer Prairie Slough system on the Carlton Reserve should concentrate on maintaining current surface water flow regimes, limiting the reproduction and spread of exotics, and reducing the effects of shallow plow-lines, trail ruts, and historic ditching in areas within the contributing basin. Grant opportunities may exist to help achieve these goals.

Plowline removal:

Plowlines for suppression of wildfires have been restored on the Carlton Reserve with great success, often leaving wetland hydroperiods intact, preventing channelized flows across uplands, and eliminating thousands of acres of potential niche for exotic plant species invasions. Recent land management efforts to restore plowlines to original grade and slope as soon as possible following emergency suppression events should be continued. Old plowlines that have revegetated naturally will be evaluated as discovered and reviewed on a case-by-case basis to determine whether restoration is prudent.

Venice-Arcadia Grade/Deer Prairie Slough crossing:

The elevation of the Venice-Arcadia grade likely furthered the hydrologic impacts to the combined Doe Hammock/Deer Prairie Slough systems, channelizing and increasing surface water contributions to the West Branch of Deer Prairie Slough and further limiting surface water flows eastward from the Doe Hammock system. Opportunities for improved transportation along the Venice-Arcadia grade often coincide with opportunities for improved sheet flow, via multiple shallow culverts, bottomless culvert spans, and minor regrading.

These opportunities should be evaluated and implemented, where practical, in accordance with other on-site management and recreational needs. The Venice-Arcadia Grade is an important all-weather road and a primary north-south access road within the Reserve. Since the Grade is also a historically significant resource, any future modifications should maintain the historical character and integrity (ex. rural, unpaved tramway of correct height and width) of the Grade.

RESEARCH NEEDS AND OPPORTUNITIES

Research needs include issues surrounding two listed species, the Least tern (*Sternula antillarum*) and the Florida panther (*Puma concolor coryi*) and one exotic species, the feral hog.

Least Terns are considered a Threatened Species in Florida (Wood 1991) based on previous population declines and threats to their coastal habitat. Except for areas with extensive salt marsh or mangrove habitat, Least Terns nest along nearly all of Florida's coast. Because of their use of gravel-covered roofs, Least Terns are found even along intensively developed portions of the coast, and populations are believed to be stable or increasing. At the Carlton Reserve, terns utilize the water treatment plant roof for nesting. Protective fencing has been placed around the active nesting areas to prevent chicks from falling off the roof. Continued monitoring of roof-nesting terns will provide important information for other roof top bird populations in the county.

Recognizing that the panther population is at or near carrying capacity for the area where they are now concentrated, the Florida Panther Recovery Plan has identified as one of it's goals "to expand the known occurrence of Florida panthers north of the Caloosahatchee River." Individual panthers have been observed ranging to other parts of the state. Sarasota County has verified the presence of one panther on this site and County lands could be important in the population expansion of this species. In "How Much Is Enough? Landscape-scale Conservation for the Florida Panther," (Kautz et. al. 2003) three lines of movement for population expansion are shown (Figure 10). One line leads panthers directly to the Carlton Reserve as a final destination with its surrounding public lands.

The importance of understanding the movements and habitat use of the Florida panther would benefit not only the County's land management efforts, but also the recovery efforts of this species. The Florida Panther Recovery Team and researchers from various universities could provide assistance with monitoring. Other research could also be implemented concerning the panther's response to prescribed burning and how burning affects prey availability.

Other proposals for research on the Reserve are welcomed and will be reviewed to determine whether the research would benefit land management goals. All outside research proposals must be submitted for approval and receive a research permit through Sarasota County Resource Managament. Research opportunities that would enhance the county's ability to manage this and other natural areas include the following:

- What are the hydrologic effects of the existing trail and firebreak network and of fire plowlines?
- What are the impacts on species richness of management activities such as timbering or cattle grazing should they occur on the site?
- Identification of ditches and other hydrological impacts on the site and an assessment of restoration options.
- Auditory exotic vs. native frog and toad species surveys would be valuable in understanding the extent to which exotic species intrude into natural areas. The Frog Listening Network has conducted studies of this type in the area and the local chapter presents a possible volunteer source for such a project.
- Other monitoring programs that track the effectiveness of any future mitigation or management efforts.

PUBLIC AND INTERAGENCY COORDINATION
Land management activities at the Reserve have routinely involved inter-agency and public coordination. Prescribed burning is an activity that will continue to require a great deal of coordination. Historically, burns have been conducted using staff from various County units, local fire departments and the State Division of Forestry. E-mail notifications of upcoming burns are sent to interested citizens living near the Reserve, County staff, including the Sheriff's Department, Utilities, Parks and Recreation, high-level administrative staff, and volunteers that work on the Reserve.

Prescribed burns, exotic plant control and other major projects will continue to require careful coordination with adjoining public and private landowners including the Florida Park Service, the Southwest Florida Water Management District, the City of North Port, and the Mabry Carlton Ranch to insure efficiency and, on occasion, to request assistance.

Cooperative public-private partnerships should also be explored with adjacent landowners for cost sharing on mutually beneficial projects. Coordination with adjacent private landowners in the City of North Port and ongoing public education will continue to be imperative for years to come in order to further land management goals on the Reserve.

LAND USE COMPONENT

I. Land Use History & Adjacent Land Uses

Primary historical uses include turpentine collection, cattle ranching and hunting. Adjacent land uses are conservation/preservation (Myakka River State Park and Myakka Prairie to the north, Schewe Property to the south), cattle ranching (Carlton Ranch to the East) as well as the newly acquired 4640-acre Carlton Ranch parcel, and residential/suburban (City of North Port) to the southeast.

II. Existing Uses and Facilities

NATURAL RESOURCES
Natural Resources operates a 5-acre maintenance area that includes a small storage shed, an outdoor storage area for materials and equipment and a large indoor shop with garage bays for other equipment and vehicle storage.

PARKS AND RECREATION

Public Use

Sarasota County is required by County Ordinance 82-94, Resolution 82-200 and APOXSEE, The Sarasota County Comprehensive Plan, to provide for public use of the T. Mabry Carlton, Jr. Memorial Reserve (Carlton Reserve) in an ecologically benign manner. John J. Whelan developed a public use plan in 1986, revised by County Natural Resources staff in 1992. (Appendix I)

A phased development approach was proposed under the previous plans. Currently, approximately 20 acres are developed with a small visitor/ reception building (an historic reconstructed log cabin), a restroom with composting facilities, a potable water facility, a large picnic pavilion, maintenance shed and pole barn, and designated parking areas for both cars and horse trailers. There are picnic tables located throughout this area as well as short interpretive loop trails.

There currently exists a network of approximately 80 miles of trails and roads throughout the Reserve. All of the trails and roads are available for use by hikers and bicyclists. Of the 80 miles of trails, 22 miles are designated for equestrian use (10 miles along the South Powerline Trail and 12 miles along part the Myakka Island Trail). In a joint effort between the State and the

County, the 24-mile Myakka Island Trail was established from Myakka River State Park through the Reserve. This trail is encompassed within the 80 miles of trails listed above. Some sections are multi-use and others separate hikers and bicyclists from equestrian users.

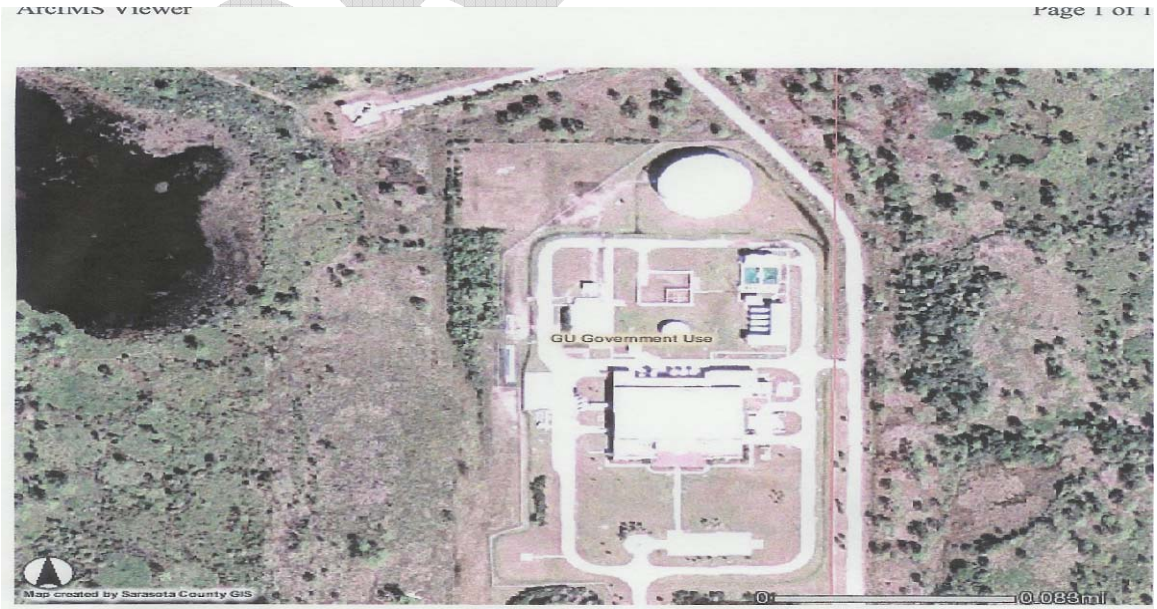
Currently there is a canoe/kayak access point on the Myakka River at Border Road. There are also two specific areas for primitive camping used by youth groups on a restricted basis. Historically, unauthorized camping has occurred at certain sites along the river. In the future, these sites may be included as designated campsites for protection of the resource.

A limited number of nature-based, special recreational events have been held at the Carlton Reserve. In some cases, the Reserve served as a starting point, in others, an event crossed the Reserve (e.g., adventure races).

UTILITIES

Carlton Water Treatment Facility

The 75,625 square foot Carlton Water Treatment Facility is situated on approximately 30 acres of land. It is located two miles due north of the Border Road entrance. The facility site is comprised of several components including the main process building, pre & post treatment, brine disposal and a five million gallon ground storage tank. High security fencing surrounds the perimeter of the facility and the site is under constant video surveillance as well as controlled ingress and egress for security purposes.



Aerial view of water treatment plant and associated infrastructure

Typical production well site at Carlton Reserve

Carlton Water Treatment Facility Well Field

The Carlton well field (Figure11) is accessed on a 5-mile shell roadway that is maintained in partnership between the Utilities and Natural Resources Departments of Sarasota County.
Currently, there are 14 production wells on the Carlton Reserve. Each well site includes the well, a stand-by generator, fuel tank, and a 120-square foot building containing the motor control equipment. Each well site is approximately 4,200 square feet and is enclosed by an 8' fence. There is one entrance gate that is locked at all times. Each enclosure has a 15' cleared buffer area surrounding it for fire protection.

Underground Pipe Lines and Easements

The Carlton Water Treatment Facility provides potable water to the distribution system through a 42-inch diameter water transmission pipeline. It extends from the west side of the facility and along a small portion of the main roadway before turning west toward the water distribution system. The 18-inch diameter pipeline for brine disposal runs parallel to the water line and both lines extend approximately 1-½ miles through the reserve. Sarasota County Utilities has a 30-foot easement and there is a 100-foot cleared path for these pipelines that is used as a firebreak. The dual pipelines cross the river trail and pass under the Myakka River. There are current plans to install a new pipeline to add additional capacity for Sarasota County and eventually provide a link to Manatee County (Figure 10).

The 42-inch diameter pipeline from the Peace River Water Treatment Facility delivers potable water to the Carlton Facility. This pipeline is 23 miles in length and approximately 10 miles of this total length exists within the reserve entering from the eastern section of the Carlton Reserve boundary. This pipeline follows the Florida Power & Light access road up to the T. Mabry Carlton Parkway where it turns north and runs parallel to the Parkway and into the treatment

facility. There is a 50-foot easement along this pipeline that is also utilized as a firebreak. The Peace River Manasota Regional Water Supply Authority owns and maintains this pipeline up to the above ground meter assembly (pictured below) located within the treatment facility's perimeter. (Figure 11)

The Peace River Manasota Regional Water Supply Authority (PRMRWSA) partnered with Sarasota County on an additional five million gallon above-ground storage tank currently under construction. Future plans call for a third five or ten million gallon tank and an additional pump station.

The 24-inch diameter raw water collection pipeline delivers raw groundwater from the 14 production wells to the water facility for treatment. It follows the well field access road approximately 5 miles and enters the treatment facility on the northeast corner of the site.

SURFACE WATER TREATMENT FACILITY

The Dona Bay project is in the five-year planning stage. This would capture water from Cow Pen Slough in the rainy season when run off is abundant and store this water in ground reservoirs off site (Pinelands Reserve and/or Venice Minerals sites). A pilot study is planned to determine whether the current Carlton water treatment facility can be refurbished to blend and treat both the surface water and ground water. The timeline for this project is between 5 -10 years.

OPERATIONS COMPONENT

Natural Resources

Sarasota County Natural Resources employs one land manager who is responsible for the management and operation of all areas outside of the Public Park and the Water Treatment Facility. The land manager shall visit the site at least weekly and write an annual report that assesses:

- Actions that have occurred on-site
- Consistency of site management with the land management plan
- Results of floral and faunal monitoring
- Listed species element occurrence records
- Updates to the GIS-based land management data base for the site
- All operational findings from monthly site visits

Staff shall visit the site weekly to assure that the site is properly secured and that only authorized land uses are occurring.

Additional staffing needs exist for on-site security and maintenance, in-house exotic plant species control, contractor oversight and site inspections. As visitor usage of the Reserve increases, more staff would be needed to help manage the impacts.

Utilities

Treatment Facility Expansion

The Carlton Water Treatment Facility currently utilizes a 30-acre site and is comprised of multiple treatment structures within its perimeter. As the demand for potable water continues to increase due to new development and other regional users, the potential for expanding the facility exists. This may include utilizing space outside the current boundaries of the site for treatment structures such as storage reservoirs and additional buildings and basins. Depending on the needs, the immediate area to the north would be a potential site for locating new facilities for additional treatment capacity. (Figure #12)

If expansion were to occur, a new perimeter would be established for the facility in order to properly secure all the structures within a single compound. The targeted areas consist mainly of mesic flatwoods and depression marshes and any impacts would be evaluated and mitigated if necessary.

Water Production Wells

The Carlton Facility wellfield is scheduled for expansion in order to increase the capacity and enhance the ability to rotate groundwater wells to minimize impacts to water quality and levels. Modeling has been completed to measure additional drawdown potential and suggests that up to five new production wells may be added to the existing 14 wells currently in production. The additional production wells may necessitate having additional monitoring wells and stations depending on special conditions in the water use permit (WUP). At present, two potential

locations have been identified. The northwest and north central quadrants of the Reserve were identified as having the preferred water quality and lowest impact to the existing production wells.

Specifically, the Stockade Trail would potentially be utilized as the raw water collection pipeline route in the northwestern quadrant of the Reserve and the proposed wells would be located along both the Stockade Trail and the Rocky Ford Trail. This new pipeline would interconnect with the existing 24" raw water collection pipeline that extends along the wellfield service road. There are two of these wells currently under construction.

Security and Maintenance

Ensuring the integrity of our water supplies is the single most important action in the Water Use Plan. Water is integral to our health, our industry, our sanitary systems, our agriculture, our emergency systems, and indeed all aspects of our lives. Water is the most personal of resources as we drink it, bathe and cook with it. A loss of public confidence in the water supply, even absent a true health hazard, would be a disaster for Sarasota County Utilities in terms of public perception and relations. It would also undoubtedly result in severe monetary losses to the County.

Sarasota County Utilities proposes the following plan for asset protection:

- The Utility will continue to operate, maintain, and replace, when required, the electric security gate that is approximately one half mile north of the Border Road entrance to the Reserve. Motorized vehicular travel will continue to be banned, with the exception of Sarasota County staff or their representatives, within the Reserve.
- The security fencing around the perimeter of the Carlton Water Treatment Facility will be expanded to secure the existing infrastructure and any future expansions.
- Because the production wells are unmanned and farther from the facility, upgraded security will use of remote monitoring devices. These will include, but not be limited to, cameras, intrusion alarms, and motion detectors. Increased staffing or a contract with the private sector will accomplish monitoring of these devices.

All present and future public use activities must have staffing in place to support the planned activity and emergency response.

Parks and Recreation

Parks and Recreation employs one Park Naturalist to operate the Public Park and coordinate public use and recreation.

Visitor Use Management Recommendations

The 1992 public use plan included recreational, educational and research facilities in the southwest portion of the Carlton Reserve . Additionally, an entrance center complex was planned that would include the following: visitor reception building (registration, interpretative displays, management offices); divisible classroom (capacity 100); retreat center; research support facility; camping; picnic tables; manager's residence; maintenance and equipment storage building; sewer package plant; and, potable water facilities. Currently, there are no plans to implement the remaining portions of the phased development plan.

Trails
A trail plan shall be developed for the Reserve that evaluates existing trails and travelways and identifies those trails for restoration, upgrading, rerouting, use restrictions, or closing. Many of the existing trails were constructed through wetlands. Whenever possible, new trails should be created to avoid impacting wetlands; existing trails through wetlands should be diverted around the wetlands. In addition, locations shall be identified for the possible development of future hiking trail segments specifically designed for foot traffic only.

The Windy Sawgrass/Venice-Arcadia Grade needs to be maintained so that it is usable year-round as an all weather road. It is a main road through the Reserve for staff and contractors' vehicles and also serves to provide access to the interior of the Reserve for hikers, bicyclists, and equestrians. Coordination with Myakka River State Park is crucial as the northern section of the Grade is located on the Myakka Prairie.

Certain trails, such as Vicker's Head Trail, Stockade Trail, Rocky Ford Trail and Turpentine Trail are important historic resources and should be protected. These trails shall be identified by their correct names with signage and also on any reference maps for the site.

Camping
There are two existing youth campsites in place at the Homestead and Powerline sites. Additional primitive campsites may be established in the Reserve to offer controlled camping opportunities. Camping in the Reserve along the Myakka River has occurred in an uncontrolled manner resulting in trash and potential fire hazards. Establishment of one or two campsites along the river with road access for County staff would allow for control, maintenance and improved fire safety. Permits could be issued through the County's electronic reservation system and a small fee could be charged to recover the cost of supervision. There could also be 3 or 4 sites along the major hiking trails for primitive camping. These sites could be rotated to control overuse of any one site, with no individual site rented more than 12 times per year and all sites restricted to a maximum of 6 people. All campsites would be seasonal and closed during projected burns or other land management projects where public safety is a concern. Development of these or other campsites would be dependent on additional staffing and available budget.

Public Interpretation of Cultural Resources
Historical resources are an important part of the interpretation of the Carlton Reserve and resources such as the Windy Sawgrass Camp and the Turpentine Camp, should be protected and maintained. Protection of these resources should include those steps necessary to protect them from timbering activities, fire, or other potential activities that could damage or destroy them.

Restoration of the Windy Sawgrass Camp will continue with reconstruction of a stable, bunkhouse, cookhouse and interpretation of the dip tank area. The Turpentine Camp will be restored as directed by the History Center with interpretive signage and picnic tables to make this area a hiking destination.

Tramway
Due to the increasing age of the population, a large portion may not be able to enjoy the benefits of the Reserve. An upgraded road (possibly the Wellfield Road and South Powerline Trail) could be used as a tramway that would provide access for more park users and further improve ADA compliance. A private concessionaire should run this under agreement to the County.

Boardwalks
Wetland areas could be identified for educational opportunities and boardwalks could be constructed providing for ADA access, bird viewing, and nature study. Boardwalks should have areas for seating and possibly a covered area or "blind" for personal protection from the sun and to reduce impact on the wildlife.

Cattle
Identify areas for cattle leases with one area near the historic Windy Sawgrass Camp to allow cattle to be reintroduced for land management and educational purposes.

Special Recreational Events
To increase awareness of the Reserve and develop "name recognition" for this site, annual nature-based recreational events may be established. These could include events such as triathlon, 5K, and 10K races, adventure races, equestrian time trials, and a mock cattle drive.

History Center

Mapping
Because many different people with various needs will be involved in the planning, management, interpretation and day-to-day use of the Carlton Reserve, it is strongly recommended that a single detailed map of the property be prepared. Such a map should include the boundaries of all known archaeological and historical sites as well as information on the topography and ecology of the tract. County land-managers may also include other data as well. A single map and database will facilitate cooperation and collaboration among all of the planners, managers, contractors, etc., who are involved in the Carlton Reserve. Although new archaeological, historical and other data for the tract will surely be generated over time, it is recommended that the single map system be retained.

Site Protection: Threats and Responses
Avoiding large-scale ground disturbing activities, such as building construction, near known sites can protect the archaeological and historical sites on the Carlton Reserve. While construction is a potential threat to most archaeological sites, it is not the only one. Often damage is caused unintentionally. Some potential unintentional damages are as follows:

- Natural erosion: Sites located adjacent to water can suffer from natural erosion.
- Off-road vehicle activity: Any vehicle traversing a known site can cause damage.
- Land management activities
- Animal burrowing: Often sites are located in prime habitat for burrowing animals.
- Tree falls: Large trees often send roots through archaeological sites.

While many threats are not entirely preventable, managers should note any damage occurring on sites. In addition, simple awareness and collection of artifacts that are exposed from daily activities can add greatly to the understanding of the tract. When materials are brought to the surface during activities such as creation of trails, they can be collected by trained staff and added to any materials already collected.

Protection Strategies

Some common protection strategies involve the use of signage, fencing, camouflage, site burial, and active monitoring. Site signage involves the open identification of the area as an archaeological site and should clearly state State and local ordinances that govern the protection of the site. This option is encouraged only after significant sites have been evaluated and sufficient personnel are available to actively patrol the site areas. Fencing can be incorporated with signage to enhance site protection and layout and define boundaries for patron visitation. Fencing can also be used to control access to specific areas within the park. Camouflaging a site involves the use of foliage to hide or hinder access to an archaeological site. A site burial is when clean fill is applied at sufficient depth over an archaeological site to serve as a buffer zone from both the natural environment and visitor use. The final protection strategy is site monitoring. Staff would regularly check archaeological sites and note of the site's condition.

Staff Training & Education

All staff associated with the Carlton Reserve should undergo in-house training in the care and protection of archaeological resource recognition and care of artifacts.

No-Collection Policy

A strict no-collections policy should be instituted throughout the entire area. Signs indicating policy should be placed through the managed lands and visitors should be made aware prior to any area use. Collection of artifacts should only be made by trained management personnel and only when artifacts are in danger of being destroyed. Currently, under Section 90-35(b)1 of the Sarasota County Code, the collection of artifacts or digging is not permitted within County Parks, beaches, recreations areas or other public lands.

Planned Use Analysis

The archaeological and historical sites on the Carlton Reserve offer many opportunities for education, recreation and conservation. The prehistoric archaeological resources provide a diverse range of potential interpretation, such as early Florida settlements, cultures and site functions. These resources and structural ruins lend themselves to interpretation related to Florida's heritage, including "Cracker" history, early pioneer life, the timber and turpentine industries and African-American studies.

Whatever operational uses are implemented on the Carlton Reserve, it is important to remember that it is an environmentally sensitive site and its significance is based partially on its archaeological and historical resources. Therefore certain overall objectives should be met and adhered to at all times:

- Maintain the integrity of the historic resources
- Maintain the integrity of the archaeological resources

Identified Management Concerns

This section is divided into two main parts. The first covers specific recommendations for each of the archaeological sites identified during the archaeological reconnaissance survey. The second covers specific recommendations for the various proposed amenities and management operations of the Carlton Reserve.

> Complete avoidance of known sites is currently recommended, particularly Vicker's Head (8SO422) and Turpentine Camp #2 (8SO426) which are considered regionally significant cultural resources. Ground-disturbing activities such as grading, borrowing, filling, tree removal or ground vegetation removal should be avoided in all high probability areas until an updated survey can be completed.
>
> Turpentine Camp #2 (8SO426) and the Windy Sawgrass Camp (8SO434) are particularly amenable to public display and interpretation of Sarasota County's history and economic development. The Vicker's Head Site (8SO422) is also amenable to public display, particularly if excavations are undertaken there. Tours of the site while excavations are ongoing could serve to educate the public regarding archaeological field methods. The resulting artifacts could be used in an educational display about the area's history and cultural development. The incorporation of these three sites into a program of this type is strongly encouraged (Piper 1987:120-121).

Future Uses

The Carlton Reserve offers a multitude of resources ready for interpretation. Archaeological resources include prehistoric and historic sites where artifacts such as nails, horseshoes, glassware, automobile parts, bricks and pottery have been identified and/or collected. Therefore, there are many ways to utilize the existing resources of the Carlton Reserve. The uses presented in this section will be long-term plans and will most likely need to be implemented in phases.

Heritage Preservation/ Educational Use

The archaeological and historical resources of the Carlton Reserve can be utilized and interpreted on-site and/or in a nearby facility. On-site interpretation can be in the form of guided or self-guided tours, or some combination of the two. Guided tours have been described earlier in this document.

Collections Management Plan

Historical resources are defined as any prehistoric or historic district, site, building, object, or real or personal property of historical, architectural, or archaeological value. These properties or resources may include, but are not limited to, monuments, memorials, Indian habitations, ceremonial sites, abandoned settlements, sunken or abandoned ships, engineering works, treasure trove, artifacts, or other objects with intrinsic historical and archaeological value, or any part thereof, relating to the history, government, and culture of the United States. This is a broad encompassing definition that shows the breadth of what falls under the rubric of cultural

resources. Therefore a management strategy is needed to protect and oversee the development of these resources.

Collections Management

• *Collection Policy*-It is in the County's best interest to limit the acquisition of artifacts and not engage in indiscriminate acquisition. Physical and staff limitations, as well as financial and ethical considerations need to be considered. Consequently, it is suggested that the acquisition of new material be limited to the following:

a. Materials from archaeological sites located within the boundaries;
b. Materials from archaeological sites within the park that are threatened;
c. Materials encountered during management activities;
d. Materials removed from the area before the development of the park.

Objects should be collected or accepted only if:

a. The County is able to give proper care to the object;
b. Acceptance of the object shall not result in major expense for conservation disproportionate to the usefulness of the object to the collections;
c. The object is, if possible, documented as to provenience or includes adequate scientific or historic information.

• *Ethics of acquisition*

All acquisitions should reflect a commitment to preserve the cultural heritage of the Carlton Reserve.

• *Human Remains*:

a. No human remains should be collected, stored, or exhibited within any of the Carlton Reserve facilities. The Sarasota County History Center shall provide proper storage should curation by required.
b. Chapter 872, Florida State Statutes (F.S.) should be followed regarding any graves and associated artifacts.

Curation of Archaeological Materials

All material s collected from cultural resource will be curated within the archive in the Sarasota County History Center.

Natural Resources Operations

Exotic Species Control

Natural Resources staff will continue to oversee hog management activities at the Reserve. The operations component of the program involves supervision of a contracted hog trapper. Any additional measures required to supplement trapping activities must be reviewed, authorized and approved by Natural Resources staff before implementation.

Invasive, exotic plants continue to create severe problems in disturbed areas like trails, and utility easements as well as the Myakka River and the Deer Prairie Slough corridors. Invasive, exotic plants that fall under FLEPPC Category 1, in all habitats, will continue to be monitored and treated. Wetland systems that are connected by water flow during the summer wet season also require close monitoring to prevent further spread of invasive exotics into unaffected areas. An active mapping and monitoring program is in place to track the occurrence of invasive, exotic plant species, although access into remote upland communities makes tracking difficult.

Treatment of invasive, exotic plant species will be conducted by in-house staff when possible. Larger, more extensive projects will be outsourced to a qualified contractor. All herbicide use is in accordance with the County's Integrated Pest Management (IPM) program that promotes sustainable pest management methods that minimize health, environmental and economic risks.

Prescribed Burning

Prescribed burning activities are necessary and will be ongoing under the direction of the Sarasota County Fire Mitigation Specialist and his Assistant. As part of the Firewise program, burn zones are assessed for wildfire danger and given a numerical score based on fuel height, distance to a water drafting source, width of firebreaks, etc. The higher the score is, the greater the wildfire threat. The most recent assessment yielded an average score of 47 across all burn zones, a significant improvement compared to a score of 63 in 2002.

The current burn program has continued to evolve as a result of wildfires in 2000 and 2001. Its focus is on wildfire mitigation, with a gradual shift over the next several years toward ecological burning. As this occurs, management of fire dependant vegetation communities will mimic natural conditions by manipulating the fire return interval within the recommended range for each habitat type. For example, mesic flatwoods naturally burn every 2 to 4 years (FNAI, 2009 Draft), thus burn zones will be burned regularly at intervals to reflect that range rather than being burned repetitively at a set interval. Varying degrees of patchiness are also desirable.

A successful wildfire mitigation strategy along with an aggressive prescribed burning program will greatly reduce the cost of fire suppression and associated environmental impacts resulting from plowlines. To date, wildfire mitigation has been accomplished through the use of rollerchopping, selective timber thinning, and prescribed fire. A rollerchopped buffer area approximately 400 feet wide has been created along the boundary of the Carlton Reserve and the City of North Port. Other similar buffers are now in place along the Carlton Reserve's eastern boundary and along the southern boundary, to the west of Deer Prairie Slough. These areas of lower fuel greatly reduce the possibility of wildfires crossing from the Carlton Reserve into neighboring properties. These buffers also offer an excellent place to stop such fires.

Vegetation Reduction/Timber Thinning

The long-term management goal for the pine flatwoods and dry prairie communities on the Reserve is to restore and maintain natural conditions by utilizing prescribed fire, mechanical vegetation reduction, and selective timber thinning where necessary. These land management tools will help create a more open pine canopy in the flatwoods by reducing basal area to a more historic level and by reducing the saw palmetto understory in both the flatwoods and dry prairie to allow for greater coverage of native forbs and grasses.

Timber Thinning

In March 2003 Sarasota County entered into a Memorandum of Agreement with the Florida Division of Forestry (DOF) for the purposes of assisting the County with planning, administering, and supervising the harvest of timber on County lands. The DOF has established Best Management Practices for Silviculture in Florida. It can be found at this website http://www.fl-dof.com/forest_management/bmp/index.html

These practices are designed as the minimum standards necessary for protecting and maintaining the State's water quality as well as certain wildlife habitat values, during forestry activities. All timber thinning operations at the Carlton Reserve will conform to the Best Management Practices (BMPs) found in this manual.

Monitoring

A monitoring program is in place that will measure the density of slash pines pre and post harvest. The objective of the monitoring is to photo-document the conditions before and after timber thinning and to estimate basal area along a transect line to determine tree density within the timbered area. The transects, as well as photo points that represent a 360 degree view of each monitored location, are mapped and entered into a GIS database.

Estimated Management Budget

Recurring Annual Costs

1) Land Management staff: 288 man hours for the land manager site visits (6 hrs/site visit, 4 site visits /mo.) and 400 hrs/ year for reporting and contract oversight @ $ 37/hr [includes overhead]) = $ 25,456.00

2) Mowing and maintenance:
   Contractor mowing and maintaining trails (200 acres of trails @ $75/acre = $15,000/ mowing x 3 mowings per year = $45,000)

3) Exotic species removal:
   Maintenance: 36 labor days annually performing maintenance plus chemical costs (288 hours @ $28/hour = $8064) plus chemical costs ($5000)= $13,064.00
   Contracts: Contract labor targeting 500 acres of exotics/ year @ $ 50.00/ acre =$25,000 =$ 38,064.00

4) Signage ($200/ year replacement costs) = $ 200.00

5) Prescribed burns (average 8000 acres per year @ $10/acre)= $ 80,000.00/year

6) Mechanical vegetation reduction: (500 acres per year at $75 per acre) = $ 37,500.00/year

7) Other Direct Expenses
   $ 25,000.00/year for trail infrastructure upkeep
   $ 2,500.00/fencing/security
   $ 350.00/year for travel
   $ 27,850.00/year

Total Recurring Annual Costs:
$ 254.070.00 per year

Additional Tasks (of management plan implementation):

1) **Coarse Filter Survey (Once per 5 years)**

PLANT
Field Prep (6 Hours)
+ Surveys (6hrs/habitat type * 10 habitat types=60 hrs)
= 66 hrs @ $35/hour = $2,310

ANIMAL
Field Prep (6 hrs)
+ Seasonal bird surveys (15hrs/habitat type * 10 habitat types=150; currently provided by volunteers)
+ Anuran surveys (18-24hrs)
+ Herp stations [site selection (2-4 hrs/ habitat * 10 habitats= 20-40) + site set up (2-4 hrs/ habitat * 10 habitats= 20-40) + survey (1-2 hrs/habitat * 10 habitats = 10-20) = 50-100 hrs]

=133-204 hrs (not including volunteer time) @ $35/ hour = $4,655 – $7,140

Direct Expense:
Herpetofaunal Monitoring Stations: 20 stations * $25-30 stations = $500-600

Total Coarse Filter Survey Cost = max $10,050

2) **Fine Filter Survey**

PLANT
Site Set up: 24-30 hours (ONE TIME ONLY)
+Surveys: 48-60 hours annually
+ Data Entry: 3-5 hours annually
(= 75 to 95 hours per selected habitat first year; 51-65 hours/ habitat/ year thereafter for an estimated 3 habitats= max 285 hours the first year; 195 hours/ year thereafter @ $35/ hour)

Total Plant Fine Filter Survey Costs = max $9,975 the first year; $6,825 / year thereafter

ANIMAL
Herp Stations
Herp Station Site Selection: 4 hours (ONE TIME ONLY)
+ Site Set up: 24 to 30 hours (ONE TIME ONLY)
+ Check traps: 60 hours annually
+Data entry and analysis: 6-9 hrs annually
(=94 to 103 hours per habitat the first year; 66 to 69 hours per year thereafter for an estimated 3 habitats = max 309 hours the first year; 207 hours/ year thereafter @ $35/ hour)

= max $10,815 the first year; $7,245/ year thereafter

Seasonal Bird Surveys (currently provided by volunteers)
Set up: 16-20 hrs (ONE TIME ONLY)
+ Surveys: 24-30 hrs annually
= 40-50 hrs first year; 24-30 hrs per year thereafter (for whole property)

Anuran Surveys
8 hours per year (for whole property) @ $35/ hour
= $280 per year

Gopher Tortoise Surveys
Surveys: 8-12 hrs per selected burn annually
+ GIS Map development: 4-10 hrs per selected burn annually
= 12-22 hrs per burn; 2 burns annually = 44 hrs max annually @ $35/ hour)
=$1,540 per year

Other Trap Surveys Site Set Up: 6 hours per habitat (ONE TIME ONLY)
+ Check Traps: 54-108 hrs per habitat annually
+ Data Entry and analysis: 6-9 hrs per habitat annually
=66-123hrs per habitat first year; 60 – 117 hrs per habitat annually thereafter for an estimated 3 habitats = max 369 hrs first year; 351hrs / year thereafter @ $35/ hour)
=$12,915 the first year; $12,285/ year thereafter

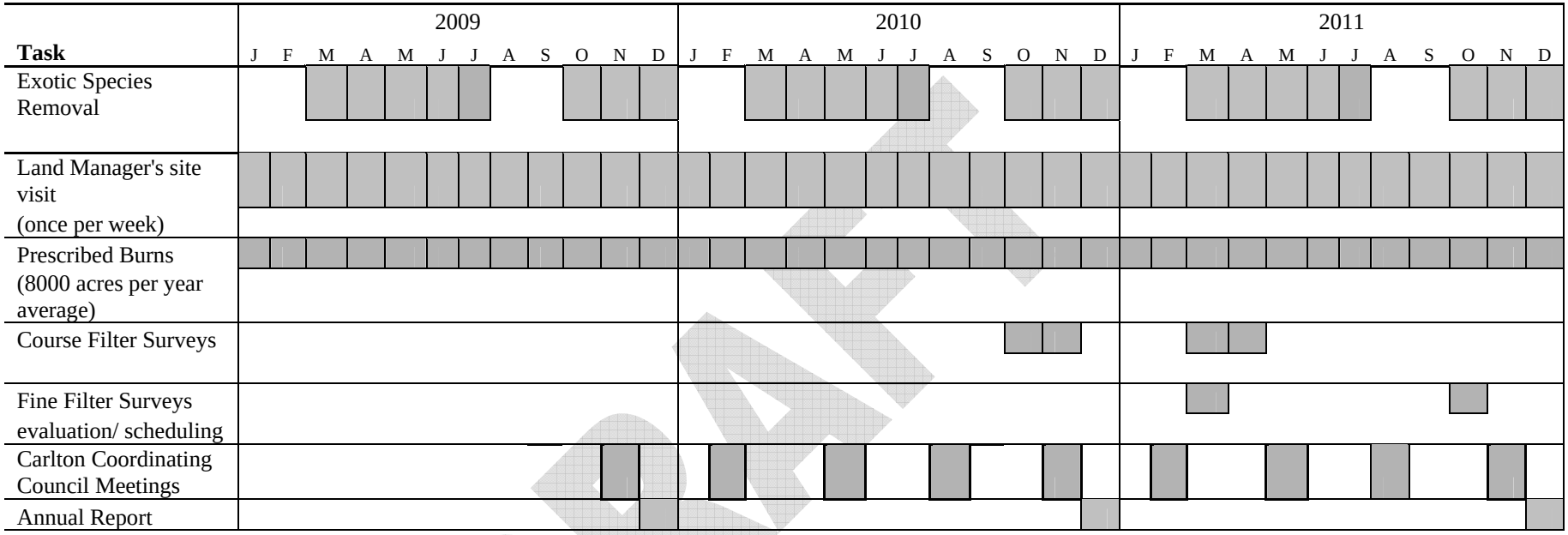
Annual Data Entry and Analysis: 12-16 hrs annually @ $35/ hour
=$420-$560 per year

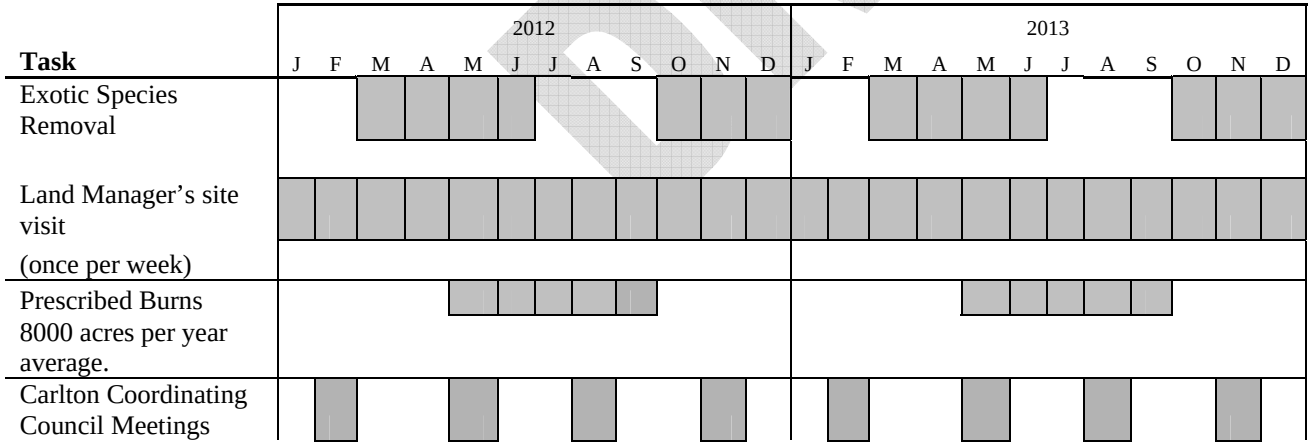
Total Animal Fine Filter Survey Costs = $26,110 the first year; $21,910 per year thereafter

Total Plant and Animal Fine Filter Survey Costs = $36,085 the first year; $28,735 per year thereafter

Total Survey Costs for Year 1 (Coarse and Fine Filter): $46,135 max
Total Fine Filter Survey Costs Per Year Thereafter: $28,735
Total Coarse Filter Survey Costs Every Five Years: $10,050

Table 1. Proposed Five-Year Management Schedule
(Schedule will be updated annually to include successive years through 2017.)





Annual Report				

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Appendix G: Confirmed and Potentially Occurring Plant Species
T. Mabry Carlton, Jr. Memorial Reserve

FAMILY	SCIENTIFIC NAME	COMMON NAME(S)
ACANTHACEAE	***Dyschoriste oblongifolia***	blue twinflower
ACANTHACEAE	***Justicia angusta***	water willow
ACANTHACEAE	***Justicia ovata***	water willow
ACANTHACEAE	***Ruellia caroliniana***	wild petunia
ACERACEAE	***Acer rubrum***	red maple
ALISMATACEAE	***Sagittaria graminea***	sagittaria
ALISMATACEAE	***Sagittaria isoetiformis***	sagittaria
ALISMATACEAE	***Sagittaria lancifolia***	sagittaria
ALISMATACEAE	***Sagittaria latifolia***	sagittaria
ALISMATACEAE	***Sagittaria subulata***	sagittaria
AMARANTHACEAE	**Alternanthera philoxeroides***	alligator-weed
AMARANTHACEAE	***Alternanthera*** sp.	chaff-flower
AMARANTHACEAE	***Amaranthus spinosus***	spiny amaranth
AMARANTHACEAE	***Gomphrena serrata***	globe amaranth
AMARANTHACEAE	***Iresine diffusa***	bloodleaf
AMARYLLIDACEAE	***Crinum americanum***	string lily; swamp lily
AMARYLLIDACEAE	***Hymenocallis crassifolia***	spider lily
AMARYLLIDACEAE	***Hymenocallis palmeri***	alligator lily
AMARYLLIDACEAE	***Zephyranthes atamasco***	Atamasco lily; rain lily
AMARYLLIDACEAE	***Zephyranthes simpsonii***	rain lily
ANACARDIACEAE	***Rhus copallina***	winged sumac;shining sumac
ANACARDIACEAE	**Schinus terebinthifolius***	Brazilian pepper
ANACARDIACEAE	***Toxicodendron radicans***	poison ivy
ANNONACEAE	***Asimina reticulata***	pawpaw
ANNONACEAE	***Asimina*** sp.	pawpaw
APIACEAE	***Centella asiatica***	coinwort
APIACEAE	***Cicuta maculata***	spotted water hemlock
APIACEAE	***Eryngium aromaticum***	fragrant eryngium
APIACEAE	***Eryngium baldwinii***	snakeroot; eryngium
APIACEAE	***Eryngium yuccifolium***	button snakeroot
APIACEAE	***Hydrocotyle bonariensis***	water pennywort
APIACEAE	***Hydrocotyle umbellata***	marsh pennywort
APIACEAE	***Oxypolis filiformis***	water dropwort
APIACEAE	***Ptilimnium capillaceum***	mock bishop's-weed
AQUIFOLIACEAE	***Ilex cassine***	dahoon holly
AQUIFOLIACEAE	***Ilex glabra***	gallberry; inkberry
ARACEAE	***Peltandra virginica***	green arum
ARACEAE	**Pistia stratiotes***	water-lettuce
ARECACEAE	***Sabal palmetto***	cabbage palm; sabal palm
ARECACEAE	***Serenoa repens***	saw palmetto
ASCLEPIADACEAE	***Asclepias feayi***	Florida milkweed(endemic)
ASCLEPIADACEAE	***Asclepias incarnata***	swamp milkweed
ASCLEPIADACEAE	***Asclepias lanceolata***	milkweed
ASCLEPIADACEAE	***Asclepias pedicellata***	pedicellate milkweed
ASCLEPIADACEAE	***Asclepias perennis***	milkweed
ASCLEPIADACEAE	***Asclepias tuberosa***	butterfly milkweed
ASCLEPIADACEAE	***Matelea suberosa***	milkweed

ASCLEPIADACEAE	***Sarcostemma clausum***	white-vine
ASPIDIACEAE	***Thelypteris interrupta***	swamp shield fern
ASPIDIACEAE	***Thelypteris kunthii***	southern shield fern
ASTERACEAE	***Ageratina jucunda***	hoarhound
ASTERACEAE	***Ambrosia artemisiifolia***	common ragweed
ASTERACEAE	***Arnoglossum ovatum***	indian plantain
ASTERACEAE	***Symphyotrichum adnatum***	scaleleaf aster
ASTERACEAE	***Symphyotrichum carolinianum***	climbing aster
ASTERACEAE	***Symphyotrichum dumosum***	aster
ASTERACEAE	***Oclemena reticulata***	pine barren aster
ASTERACEAE	***Sericocarpus tortifolius***	white-topped aster
ASTERACEAE	***Baccharis glomeruliflora***	groundsel tree
ASTERACEAE	***Baccharis halimifolia***	groundsel tree;sea myrtle
ASTERACEAE	***Bidens alba*** var. ***radiata***	Spanish needles
ASTERACEAE	***Bidens laevis***	burmarigold
ASTERACEAE	***Bidens mitis***	begger-ticks
ASTERACEAE	***Bigelowia nudata***	rayless goldenrod
ASTERACEAE	***Boltonia diffusa***	doll's daisy
ASTERACEAE	***Carphephorus corymbosus***	Florida paintbrush
ASTERACEAE	***Carphephorus odoratissimus***	vanilla plant, deer tongue
ASTERACEAE	***Chaptalia tomentosa***	pineland daisy
ASTERACEAE	***Chrysopsis mariana***	goldenaster
ASTERACEAE	***Cirsium horridulum***	horrid thistle
ASTERACEAE	***Cirsium nuttallii***	bull thistle
ASTERACEAE	***Conoclinium coelestinum***	mistflower
ASTERACEAE	***Conyza canadensis*** **var.** ***pusilla***	dwarf horseweed
ASTERACEAE	***Coreopsis floridana***	tickseed; coreopsis
ASTERACEAE	***Coreopsis leavenworthii***	tickseed; coreopsis
ASTERACEAE	***Eclipta alba***	false daisy
ASTERACEAE	***Elephantopus elatus***	Florida elephant's-foot
ASTERACEAE	***Erechtites hieracifolia***	fireweed
ASTERACEAE	***Erigeron quercifolius***	southern fleabane
ASTERACEAE	***Erigeron vernus***	fleabane
ASTERACEAE	***Eupatorium capillifolium***	dog fennel
ASTERACEAE	***Eupatorium leptophyllum***	boneset; thoroughwort
ASTERACEAE	***Eupatorium mikanioides***	semaphore eupatorium
ASTERACEAE	***Eupatorium mohrii***	boneset; thoroughwort
ASTERACEAE	***Eupatorium rotundifolium***	false hoarhound
ASTERACEAE	***Euthamia minor***	flat-topped goldenrod
ASTERACEAE	***Flaveria linearis***	yellowtop
ASTERACEAE	***Gnaphalium obtusifolium***	cudweed
ASTERACEAE	***Helenium amarum***	Spanish daisy;
ASTERACEAE	***Helenium pinnatifidum***	sneezeweed
ASTERACEAE	***Helianthus agrestis***	sunflower
ASTERACEAE	***Helianthus angustifolius***	swamp sunflower
ASTERACEAE	***Heterotheca subaxillaris***	camphorweed
ASTERACEAE	***Hieracium gronovii***	hawkweed
ASTERACEAE	***Iva microcephala***	aster
ASTERACEAE	***Liatris garberi***	Garber’s gayfeather
ASTERACEAE	***Liatris tenuifolia***	Shortleaf gayfeather
ASTERACEAE	***Liatris savannensis***	Savanna gayfeather
ASTERACEAE	***Lygodesmia aphylla***	roserush
ASTERACEAE	***Melanthera nivea***	aster
ASTERACEAE	***Mikania cordifolia***	hemp vine
ASTERACEAE	***Mikania scandens***	hemp vine

ASTERACEAE	***Pityopsis graminifolia***	grass-leaved golden aster
ASTERACEAE	***Pluchea foetida***	marsh fleabane
ASTERACEAE	***Pluchea odorata***	saltmarsh fleabane; camphorweed
ASTERACEAE	***Pluchea rosea***	marsh fleabane
ASTERACEAE	***Pterocaulon pycnostachyum***	blackroot
ASTERACEAE	***Rudbeckia hirta***	black-eyed Susan
ASTERACEAE	***Senecio glabellus***	butterweed; golden ragwort
ASTERACEAE	***Solidago chapmanii***	goldenrod
ASTERACEAE	***Solidago fistulosa***	goldenrod
ASTERACEAE	***Solidago stricta***	goldenrod
ASTERACEAE	***Solidago tortifolia***	goldenrod
ASTERACEAE	**Sonchus oleraceus*	common sow thistle
ASTERACEAE	***Verbesina virginica***	frostweed
ASTERACEAE	***Vernonia blodgettii***	ironweed
BIGNONIACEAE	***Campsis radicans***	trumpet creeper
BLECHNACEAE	***Blechnum serrulatum***	swamp fern
BLECHNACEAE	***Woodwardia virginica***	Virginia chain fern
BORAGINACEAE	***Heliotropium polyphyllum***	pineland heliotrope
BRASSICACEAE	***Cardamine*** sp.	cress
BRASSICACEAE	***Rorippa teres***	Rorippa
BROMELIACEAE	***Tillandsia bartramii***	wild pine; air plant
BROMELIACEAE	***Tillandsia fasciculata*** E (FDA)	cardinal air plant
BROMELIACEAE	***Tillandsia polystachia***	wild pine; air plant
BROMELIACEAE	***Tillandsia recurvata***	ball moss
BROMELIACEAE	***Tillandsia setacea***	grass-leaved air plant
BROMELIACEAE	***Tillandsia usneoides***	Spanish moss
BROMELIACEAE	***Tillandsia utriculata***E (FDA)	giant air plant; giant wild pine
CACTACEAE	***Opuntia humifusa***	prickly pear
CAMPANULACEAE	***Campanula floridana***	Florida bellflower
CAMPANULACEAE	***Lobelia feayana***	bay lobelia
CAMPANULACEAE	***Lobelia glandulosa***	lobelia
CAMPANULACEAE	***Lobelia homophylla***	white lobelia
CAMPANULACEAE	***Lobelia paludosa***	lobelia
CAMPANULACEAE	***Triodanus perfoliata***	Venus' looking glass
CANNACEAE	***Canna flaccida***	golden canna
CAPRIFOLIACEAE	***Sambucus canadensis***	elderberry
CAPRIFOLIACEAE	***Viburnum obovatum***	Small viburnum
CARYOPHYLLACEAE	***Drymaria cordata***	West Indian chickweed
CARYOPHYLLACEAE	***Stipulicida setacea***	wire plant
CERATOPHYLLACEAE	***Ceratophyllum*** sp.	hornwort
CHENOPODIACEAE	***Chenopodium ambrosioides***	Mexican tea
CHRYSOBALANACEAE	***Licania michauxii***	gopher apple
CISTACEAE	***Helianthemum corymbosum***	rock rose; frostweed
CISTACEAE	***Lechea cernua***T (FDA); C2 (USFWS)	nodding pinweed; drooping pinweed
COMMELINACEAE	***Commelina diffusa***	day-flower
COMMELINACEAE	***Commelina erecta***	day-flower
COMMELINACEAE	***Cuthbertia ornata***	roseling
COMMELINACEAE	***Murdannia nudiflora***	murdannia
CONVOLVULACEAE	***Dichondra caroliniensis***	pony-foot
CONVOLVULACEAE	***Evolvulus sericeus***	creeping morning-glories
CONVOLVULACEAE	***Ipomoea sagittata***	glades morning-glory
CORNACEAE	***Cornus foemina***	stiff-cornel
CUCURBITACEAE	***Melothria pendula***	creeping cucumber
CYCADACEAE	***Zamia pumila*** CE (FDA); II (CITES)	Florida arrowroot; coontie
CYPERACEAE	***Bulbostylis ciliatifolia***	hair sedge

CYPERACEAE	***Bulbostylis stenophylla***	sedge
CYPERACEAE	***Carex albolutescens***	sedge
CYPERACEAE	***Carex lupulina***	sedge
CYPERACEAE	***Cladium jamaicense***	sawgrass
CYPERACEAE	***Cyperus articulatus***	sedge; nutgrass
CYPERACEAE	***Cyperus compressus***	sedge; nutgrass
CYPERACEAE	***Cyperus distinctus***	sedge; nutgrass
CYPERACEAE	***Cyperus erythrorhizos***	sedge; nutgrass
CYPERACEAE	***Cyperus globulosus***	sedge; nutgrass
CYPERACEAE	***Cyperus haspan***	sedge; nutgrass
CYPERACEAE	***Cyperus odoratus***	sedge; nutgrass
CYPERACEAE	***Cyperus polystachyos***	sedge; nutgrass
CYPERACEAE	***Cyperus retrorsus***	sedge; nutgrass
CYPERACEAE	***Cyperus strigosus***	sedge; nutgrass
CYPERACEAE	***Cyperus surinamensis***	sedge; nutgrass
CYPERACEAE	***Dichromena colorata***	white-tops; star rush
CYPERACEAE	***Dichromena latifolia***	star rush
CYPERACEAE	***Eleocharis baldwinii***	roadgrass
CYPERACEAE	***Eleocharis cellulosa***	spikerush
CYPERACEAE	***Eleocharis elongata***	spikerush
CYPERACEAE	***Eleocharis equisetoides***	knotted spikerush
CYPERACEAE	***Eleocharis fallax***	spikerush
CYPERACEAE	***Eleocharis interstincta***	spikerush
CYPERACEAE	***Eleocharis vivipara***	spikerush
CYPERACEAE	***Fimbristylis annua***	sedge
CYPERACEAE	***Fimbristylis puberula***	sedge
CYPERACEAE	***Fuirena pumila***	umbrellagrass
CYPERACEAE	***Fuirena scirpoidea***	sedge
CYPERACEAE	***Lipocarpha maculata***	sedge
CYPERACEAE	***Psilocarya nitens***	sedge
CYPERACEAE	***Rhynchospora cephalantha***	beak-rush
CYPERACEAE	***Rhynchospora corniculata***	beak-rush
CYPERACEAE	***Rhynchospora fascicularis***	beak-rush
CYPERACEAE	***Rhynchospora filifolia***	threadleaf beaksedge
CYPERACEAE	***Rhynchospora inundata***	beak-rush
CYPERACEAE	***Rhynchospora microcarpa***	beak-rush
CYPERACEAE	***Rhynchospora miliacea***	beak-rush
CYPERACEAE	***Rhynchospora plumosa***	beak-rush
CYPERACEAE	***Rhynchospora pusilla***	beak-rush
CYPERACEAE	***Rhynchospora tracyi***	beak-rush
CYPERACEAE	***Scirpus americanus***	American bulrush
CYPERACEAE	***Scirpus cubensis***	bulrush
CYPERACEAE	***Scirpus validus***	soft-stem bulrush
CYPERACEAE	***Scleria ciliata***	nut sedge
CYPERACEAE	***Scleria reticularis***	reticulate nut sedge
DAVALLIACEAE	***Nephrolepis*** sp.	Boston fern; sword fern
DROSERACEAE	***Drosera brevifolia***	dwarf sundew
DROSERACEAE	***Drosera capillaris***	pink sundew
EBENACEAE	***Diospyros virginiana***	persimmon
ERICACEAE	***Befaria racemosa***	tarflower
ERICACEAE	***Gaylussacia dumosa***	dwarf huckleberry
ERICACEAE	***Lyonia fruticosa***	staggerbush
ERICACEAE	***Lyonia lucida***	fetterbush
ERICACEAE	***Vaccinium arboreum***	sparkleberry
ERICACEAE	***Vaccinium corymbosum***	highbush blueberry

ERICACEAE	***Vaccinium darrowii***	blueberry
ERICACEAE	***Vaccinium myrsinites***	shiny blueberry
ERICACEAE	***Vaccinium stamineum***	deerberry
ERIOCAULACEAE	***Eriocaulon compressum***	pipewort; hatpins
ERIOCAULACEAE	***Eriocaulon decangulare***	pipewort; hatpins
ERIOCAULACEAE	***Lachnocaulon anceps***	bog-buttons
ERIOCAULACEAE	***Syngonanthus flavidulus***	bantam-buttons
EUPHORBIACEAE	***Acalypha gracilens***	three-seeded mercury
EUPHORBIACEAE	***Chamaesyce*** sp.	spurge
EUPHORBIACEAE	***Cnidoscolus stimulosus***	tread-softly
EUPHORBIACEAE	***Croton argyranthemus***	silver croton
EUPHORBIACEAE	***Crotonopsis linearis***	rushfoil
EUPHORBIACEAE	***Stillingia sylvatica***	queen's delight
FABACEAE	***Amorpha fruticosa***	bastard indigo
FABACEAE	***Amorpha herbacea***	wild indigo
FABACEAE	***Apios americana***	groundnut
FABACEAE	***Cassia chamaecrista***	partridge pea
FABACEAE	***Cassia ligustrina***	partridge pea
FABACEAE	***Cassia nictitans***	wild sensitive plant
FABACEAE	***Crotalaria purshii***	rabbit-bells
FABACEAE	**Crotalaria retusa*	rabbit-bells
FABACEAE	***Crotalaria rotundifolia***	rabbit-bells
FABACEAE	***Dalea carnea***	whitetassels; prairieclover
FABACEAE	***Desmodium paniculatum***	begger-ticks
FABACEAE	***Desmodium tenuifolium***	begger-ticks
FABACEAE	**Desmodium triflorum*	begger-ticks
FABACEAE	***Erythrina herbacea***	coralbean
FABACEAE	***Galactia elliottii***	milk pea
FABACEAE	***Galactia volubilis***	milk pea
FABACEAE	***Gleditsia aquatica***	water-locust
FABACEAE	***Indigofera caroliniana***	wild indigo
FABACEAE	***Indigofera suffruticosa***	wild indigo
FABACEAE	**Macroptilium lathyroides*	macroptilium
FABACEAE	***Mimosa strigillosa***	mimosa
FABACEAE	***Sesbania emerus***	bequilla
FABACEAE	***Sesbania vesicaria***	bladderpod
FABACEAE	***Tephrosia hispidula***	hoary pea
FABACEAE	**Trifolium repens*	white clover
FABACEAE	***Vicia acutifolia***	sand vetch
FABACEAE	***Vigna luteola***	cow-pea
FAGACEAE	***Quercus geminata***	sand live oak
FAGACEAE	***Quercus incana***	bluejack oak
FAGACEAE	***Quercus laurifolia***	laurel oak
FAGACEAE	***Quercus minima***	dwarf live oak
FAGACEAE	***Quercus nigra***	water oak
FAGACEAE	***Quercus pumila***	running oak
FAGACEAE	***Quercus virginiana***	live oak
GENTIANACEAE	***Nymphoides aquatica***	floating hearts
GENTIANACEAE	***Sabatia bartramii***	Bartram's marsh pink
GENTIANACEAE	***Sabatia brevifolia***	marsh pink
GENTIANACEAE	***Sabatia calycina***	marsh pink
GENTIANACEAE	***Sabatia grandiflora***	marsh pink
GENTIANACEAE	***Sabatia stellaris***	marsh pink
HAEMODORACEAE	***Lachnanthes caroliniana***	redroot; bloodroot
HALORAGACEAE	***Myriophyllum*** sp.	milfoil

HALORAGACEAE	***Proserpinaca palustris***	mermaid-weed
HALORAGACEAE	***Proserpinaca pectinata***	mermaid-weed
HYDOPHYLLACEAE	***Hydrolea corymbosa***	sky flower
HYDROCHARITACEAE	***Limnobium spongia***	frog's-bit
HYMENOPHYLLACEAE	**Lygodium microphyllum*	Old World climbing fern
HYPERICACEAE	***Hypericum brachyphyllum***	St. John's-wort
HYPERICACEAE	***Hypericum cistifolium***	St. John's-wort
HYPERICACEAE	***Hypericum fasciculatum***	St. John's-wort
HYPERICACEAE	***Hypericum gentianoides***	pineweeds
HYPERICACEAE	***Hypericum hypericoides***	St. Andrew's cross
HYPERICACEAE	***Hypericum mutilum***	St. John's-wort
HYPERICACEAE	***Hypericum myrtifolium***	St. John's-wort
HYPERICACEAE	***Hypericum tetrapetalum***	St. John's-wort
HYPERICACEAE	***Triadenum virginicum***	marsh St. John's-wort
HYPOXIDACEAE	***Hypoxis juncea***	yellow star-grass
HYPOXIDACEAE	***Hypoxis leptocarpa***	yellow star-grass
IRIDACEAE	***Iris hexagona*** var. ***savannarum***	prairie iris
IRIDACEAE	***Sisyrinchium atlanticum***	blue-eyed grass
JUNCACEAE	***Juncus dichotomus***	rush
JUNCACEAE	***Juncus effusus***	soft rush
JUNCACEAE	***Juncus marginatus***	rush
JUNCACEAE	***Juncus megacephalus***	rush
JUNCACEAE	***Juncus polycephalus***	rush
JUNCACEAE	***Juncus repens***	rush
LAMIACEAE	***Hyptis alata***	musky mint
LAMIACEAE	***Lycopus rubellus***	water hoarhound
LAMIACEAE	***Micromeria brownei***	mint
LAMIACEAE	***Physostegia purpurea***	false dragon-head; obedient plant
LAMIACEAE	***Piloblephis rigida***	pennyroyal
LAMIACEAE	***Salvia lyrata***	lyre-leaved sage
LAMIACEAE	***Scutellaria integrifolia***	rough skullcap
LAMIACEAE	***Teucrium canadense***	wood sage; wood germander
LAMIACEAE	***Trichostema dichotomum***	blue curls
LAURACEAE	***Persea palustris***	swampbay
LEMNACEAE	***Lemna obscura***	duckweed
LEMNACEAE	***Lemna valdiviana***	duckweed
LEMNACEAE	***Spirodela*** sp.	duckweed
LEMNACEAE	***Wolffiella gladiata***	bog-mat; mud-midget
LENTIBULARIACEAE	***Pinguicula caerulea*** T (FDA)	blue butterwort
LENTIBULARIACEAE	***Pinguicula lutea*** T (FDA)	yellow butterwort
LENTIBULARIACEAE	***Pinguicula pumila***	small bladderwort
LENTIBULARIACEAE	***Utricularia cornuta***	horned bladderwort
LENTIBULARIACEAE	***Utricularia floridana***	bladderwort
LENTIBULARIACEAE	***Utricularia foliosa***	bladderwort
LENTIBULARIACEAE	***Utricularia gibba***	cone-spur bladderwort
LENTIBULARIACEAE	***Utricularia inflata***	floating bladderwort
LENTIBULARIACEAE	***Utricularia purpurea***	purple bladderwort
LENTIBULARIACEAE	***Utricularia resupinata***	bladderwort
LENTIBULARIACEAE	***Utricularia simulans***	bladderwort
LENTIBULARIACEAE	***Utricularia subulata***	bladderwort
LILIACEAE	***Aletris lutea***	yellow colic-root
LILIACEAE	***Lilium catesbaei*** T (FDA); S3 (FNAI)	pine lily; Catesby's lily
LILIACEAE	***Zigadenus densus***	crow-poison
LINACEAE	***Linum carteri*** var. ***smallii***	Carter's large-flowered flax; South Florida E (FDA); C2 (USFWS); flax S2 (FNAI)

LOGANIACEAE	***Mitreola petiolata***	miterwort
LOGANIACEAE	***Polypremum procumbens***	rustweed
LORANTHACEAE	***Phoradendron serotinum***	mistletoe
LYTHRACEAE	***Cuphea carthagenensis***	cuphea
LYTHRACEAE	***Decodon verticillatus***	willow-herb; swamp loosestrife
LYTHRACEAE	***Lythrum flagellare***	lowland loosestrife; creeping loosestrife C2 (USFWS); S2,S3 (FNAI)
MAGNOLIACEAE	***Magnolia virginiana***	sweet bay
MALVACEAE	***Hibiscus grandiflorus***	swamp hibiscus
MALVACEAE	***Kosteletzkya virginica***	Virginia saltmarsh mallow
MALVACEAE	**Urena lobata*	Caesar-weed
MARANTACEAE	***Thalia geniculata***	thalia; fireflag
MELASTOMATACEAE	***Rhexia cubensis***	meadow beauty
MELASTOMATACEAE	***Rhexia mariana***	pale meadow beauty
MELASTOMATACEAE	***Rhexia nuttallii***	meadow beauty
MELASTOMATACEAE	***Rhexia petiolata***	meadow beauty
MORACEAE	***Morus rubra***	red mulberry
MYRICACEAE	***Myrica cerifera***	wax myrtle
MYRSINACEAE	***Ardisia escallonoides***	marlberry
MYRSINACEAE	***Rapanea punctata***	myrsine
MYRTACEAE	**Melaleuca quinquenervia*	melaleuca; punk tree
NYMPHAEACEAE	***Nuphar lutea*** subsp. *macrophylla*	spatter-dock
NYMPHAEACEAE	***Nymphaea odorata***	white waterlily
NYSSACEAE	***Nyssa sylvatica*** var. ***biflora***	swamp black gum; swamp tupelo
OLEACEAE	***Chionanthus virginica***	fringe tree
OLEACEAE	***Fraxinus caroliniana***	pop ash; water ash
ONAGRACEAE	***Ludwigia arcuata***	ludwigia
ONAGRACEAE	***Ludwigia decurrens***	ludwigia
ONAGRACEAE	***Ludwigia leptocarpa***	ludwigia
ONAGRACEAE	***Ludwigia linifolia***	ludwigia
ONAGRACEAE	***Ludwigia maritima***	coastal rattlebox
ONAGRACEAE	***Ludwigia microcarpa***	ludwigia
ONAGRACEAE	***Ludwigia octovalvis***	ludwigia
ONAGRACEAE	***Ludwigia palustris***	ludwigia
ONAGRACEAE	**Ludwigia peruviana*	primrose willow
ONAGRACEAE	***Ludwigia pilosa***	ludwigia
ONAGRACEAE	***Ludwigia repens***	ludwigia
ONAGRACEAE	***Ludwigia suffruticosa***	ludwigia
ORCHIDACEAE	***Calopogon multiflorus*** E (FDA); II (CITES)	grass-pink
ORCHIDACEAE	***Calopogon pallidus***	grass-pink
ORCHIDACEAE	***Corallorhiza wisteriana***	spring coral-root
ORCHIDACEAE	***Encyclia tampensis***	butterfly orchidC (FDA); II (CITES)
ORCHIDACEAE	***Eulophia alta*** T (FDA); II (CITES)	wild coco; ground
ORCHIDACEAE	***Habenaria odontopetala***	rein orchid
ORCHIDACEAE	***Habenaria quinqueseta***	rein orchid;long-horned habenaria
ORCHIDACEAE	***Habenaria repens***	water spider orchid; creeping orchid
ORCHIDACEAE	***Ponthieva brittoniae*** E (FDA)	Mrs. Britton's shadow witch
ORCHIDACEAE	***Pteraglossapsis ecristata*** T (FDA); C2 (USFWS); II (CITES); S2 (FNAI)	wild coco
ORCHIDACEAE	***Spiranthes longilabris*** T (FDA)	long-lip ladies'-tresses

ORCHIDACEAE	***Spiranthes praecox***	giant ladies'-tresses; grass-leaved ladies tresses;
	II (CITES)	
ORCHIDACEAE	***Spiranthes vernalis***	ladies'-tresses
	II (CITES)	
ORCHIDACEAE	**Zeuxine strateumatica***	lawn orchid
OSMUNDACEAE	***Osmunda cinnamomea***	cinnamon fern
	CE (FDA)	
OSMUNDACEAE	***Osmunda regalis***	royal fern
	CE (FDA)	
OXALIDACEAE	***Oxalis florida***	yellow wood sorrel
	subsp. ***prostrata***	
OXALIDACEAE	***Oxalis*** sp.	wood sorrel
PARKERIACEAE	**Ceratopteris thalictroides***	water horn fern
PASSIFLORACEAE	***Passiflora*** sp.	passion-flower vine
PHYTOLACCACEAE	***Phytolacca americana***	pokeweed; pokeberry
PINACEAE	***Pinus elliottii***	South Florida slash pine
	var. ***densa***	
PINACEAE	***Pinus palustris***	longleaf pine
POACEAE	***Amphicarpum muhlenbergianum***	blue maidencane
POACEAE	***Andropogon glomeratus***	bushy bluestem
POACEAE	***Andropogon ternarius***	splitbeard bluestem
POACEAE	***Andropogon virginicus***	broomsedge
POACEAE	***Aristida berychiana***	wiregrass
POACEAE	***Aristida lanosa***	longleaf threeawn
POACEAE	***Aristida patula***	tall threeawn
POACEAE	***Aristida purpurascens***	arrowfeather
POACEAE	***Aristida spiciformis***	bottlebrush threeawn
POACEAE	***Axonopus affinis***	common carpetgrass
POACEAE	***Axonopus furcatus***	big carpetgrass
POACEAE	**Chloris gayana***	rhodesgrass
POACEAE	***Coelorachis rugosa***	wrinkled jointtail
POACEAE	***Coelorachis tuberculosa***	Florida jointtail; piedmont jointgrass
	C2 (USFWS); S3 (FNAI)	
POACEAE	**Cynodon dactylon***	Bermudagrass
POACEAE	***Dichanthelium acuminatum***	dichanthelium grass
POACEAE	***Dichanthelium commutatum***	dichanthelium grass
POACEAE	***Dichanthelium dichotomum***	dichanthelium grass
POACEAE	***Dichanthelium ensifolium***	dichanthelium grass
POACEAE	***Dichanthelium erectifolium***	dichanthelium grass
POACEAE	***Dichanthelium laxiflorum***	dichanthelium grass
POACEAE	***Dichanthelium sabulorum***	dichanthelium grass
POACEAE	***Digitaria serotina***	blanket crabgrass
POACEAE	**Echinochloa crusgalli***	barnyardgrass
POACEAE	***Echinochloa walteri***	coast cockspur
POACEAE	**Eragrostis atrovirens***	thalia lovegrass
POACEAE	***Eragrostis elliottii***	Elliott lovegrass
POACEAE	***Eragrostis hypnoides***	teal lovegrass
POACEAE	***Erianthus giganteus***	sugarcane plumegrass
POACEAE	***Eustachys petraea***	fingergrass
POACEAE	***Gymnopogon chapmanianus***	Chapman skeletongrass
POACEAE	***Hydrochloa caroliniensis***	watergrass
POACEAE	**Imperata cylindrica***	cogon grass
POACEAE	***Leersia hexandra***	southern cutgrass
POACEAE	***Leptochloa fascicularis***	bearded spangletop

POACEAE	***Leptochloa uninervia***	Mexican spangletop
POACEAE	***Muhlenbergia capillaris***	purple hairgrass
POACEAE	**Oplismenus setarius***	woodsgrass; basketgrass
POACEAE	***Panicum anceps***	beaked panicum
POACEAE	***Panicum dichotomiflorum***	fall panicum
POACEAE	***Panicum hemitomon***	maidencane
POACEAE	***Panicum hians***	gaping panicum
POACEAE	**Panicum repens***	torpedograss
POACEAE	***Panicum rigidulum***	redtop panicum
POACEAE	***Panicum tenerum***	bluejoint panicum
POACEAE	***Panicum virgatum***	switchgrass
POACEAE	***Paspalidium geminatum***	Egyptian paspalidium
POACEAE	***Paspalum conjugatum***	sour paspalum
POACEAE	***Paspalum dissectum***	mudbank paspalum
POACEAE	***Paspalum distichum***	seashore paspalum
POACEAE	***Paspalum laeve***	field paspalum
POACEAE	**Paspalum notatum***	bahiagrass
POACEAE	***Paspalum repens***	water paspalum
POACEAE	***Paspalum setaceum***	thin paspalum
POACEAE	**Paspalum urvillei***	vaseygrass
POACEAE	***Sacciolepis indica***	India cupscale
POACEAE	***Sacciolepis striata***	American cupscale
POACEAE	***Schizachyrium scoparium***	little bluestem
POACEAE	***Setaria geniculata***	knotroot foxtail
POACEAE	***Setaria magna***	giant foxtail
POACEAE	***Sorghastrum secundum***	lopsided indiangrass
POACEAE	***Spartina bakeri***	sand cordgrass
POACEAE	***Sporobolus curtissii***	Curtis' dropseed
POACEAE	***Sporobolus junceus***	pineywoods dropseed
POACEAE	***Tripsacum dactyloides***	eastern gama grass
POLYGALACEAE	***Polygala balduinii***	batchelor's button
POLYGALACEAE	***Polygala boykinii***	milkwort
POLYGALACEAE	***Polygala cruciata***	milkwort
POLYGALACEAE	***Polygala cymosa***	milkwort
POLYGALACEAE	***Polygala grandiflora***	large-flowered polygala
POLYGALACEAE	***Polygala incarnata***	procession flower
POLYGALACEAE	***Polygala lutea***	wild batchelor's button
POLYGALACEAE	***Polygala nana***	wild batchelor's button
POLYGALACEAE	***Polygala polygama***	milkwort
POLYGALACEAE	***Polygala ramosa***	milkwort
POLYGALACEAE	***Polygala rugelii***	yellow batchelor's button
POLYGALACEAE	***Polygala setacea***	milkwort
POLYGONACEAE	***Polygonum densiflorum***	smartweed
POLYGONACEAE	***Polygonum hydropiperoides***	mild water-pepper
POLYGONACEAE	***Polygonum punctatum***	dotted smartweed
POLYGONACEAE	***Rumex verticillatus***	swamp dock
POLYPODIACEAE	***Phlebodium aureum***	golden polypody; serpent fern; gold-foot fern
POLYPODIACEAE	***Polypodium polypodioides*** var. ***michauxianum***	resurrection fern
PONTEDERIACEAE	**Eichhornia crassipes***	water hyacinth
FAMILY	SCIENTIFIC NAME	COMMON NAME(S)

PONTEDERIACEAE	***Pontederia cordata***	pickerelweed
PORTULACCACEAE	***Portulaca pilosa***	pink purslane
PRIMULACEAE	***Centunculus minimus***	false pimpernel; chaffweed
PRIMULACEAE	***Samolus valerandi*** subsp. ***parviflorus***	pineland pimpernel
PSILOTACEAE	***Psilotum nudum***	whisk fern
PTERIDACEAE	***Pteridium aquilinum***	bracken fern
RANUNCULACEAE	***Clematis baldwinii***	pine-hyacinth
RANUNCULACEAE	***Clematis crispa***	leather flower
RHAMNACEAE	***Berchemia scandens***	rattan vine
ROSACEAE	***Crataegus marshallii***	parsley hawthorn
	Rubus betulifolius	blackberry
ROSACEAE	***Rubus*** sp.	blackberry
RUBIACEAE	***Cephalanthus occidentalis***	buttonbush
RUBIACEAE	***Diodia teres***	poor Joe
RUBIACEAE	***Diodia virginiana***	buttonweed
RUBIACEAE	***Galium tinctorium***	bedstraw
RUBIACEAE	***Hedyotis procumbens***	innocense
RUBIACEAE	***Hedyotis uniflora***	hedyotis
RUBIACEAE	***Mitchella repens***	partridge berry; twinberry
RUBIACEAE	***Psychotria nervosa***	wild coffee
RUBIACEAE	***Psychotria sulzneri***	wild coffee
RUBIACEAE	**Richardia brasiliensis*	Richardia
RUBIACEAE	***Spermacoce*** sp.	spermacoce
RUTACEAE	**Citrus sinensis*	sweet orange
SALICACEAE	***Salix caroliniana***	coastal plain willow; Carolina willow
SALVINIACEAE	***Azolla caroliniana***	mosquito fern
SALVINIACEAE	***Salvinia minima***	water spangles
APOTACEAE	***Bumelia reclinata***	buckthorn
SAXIFRAGACEAE	***Itea virginica***	Virginia willow
SCROPHULARIACEAE	***Agalinis filifolia***	false foxglove
SCROPHULARIACEAE	***Agalinis linifolia***	false foxglove
SCROPHULARIACEAE	***Agalinis purpurea***	false foxglove
SCROPHULARIACEAE	***Bacopa caroliniana***	blue hyssop; lemon bacopa
SCROPHULARIACEAE	***Bacopa monnieri***	hyssop
SCROPHULARIACEAE	***Buchnera americana***	blueheart
SCROPHULARIACEAE	***Gratiola hispida***	hedge hyssop
SCROPHULARIACEAE	***Gratiola ramosa***	hedge hyssop
SCROPHULARIACEAE	***Gratiola virginiana***	hedge hyssop
SCROPHULARIACEAE	***Linaria canadensis***	blue toadflax
SCROPHULARIACEAE	***Lindernia anagallidea***	false pimpernel
SCROPHULARIACEAE	***Lindernia crustacea***	false pimpernel
SCROPHULARIACEAE	***Lindernia grandiflora***	false pimpernel
SCROPHULARIACEAE	***Mecardonia acuminata***	mecardonia
SCROPHULARIACEAE	***Micranthemum umbrosum***	ahade mudflower
SCROPHULARIACEAE	***Penstemon multiflorus***	beardtongue

SCROPHULARIACEAE	***Scoparia dulcis***	sweet broom
SCROPHULARIACEAE	***Seymeria pectinata***	seymeria
SMILACACEAE	***Smilax auriculata***	greenbrier; catbrier
SMILACACEAE	***Smilax bona-nox***	greenbrier; catbrier
SMILACACEAE	***Smilax laurifolia***	catbrier
SMILACACEAE	***Smilax walteri***	coral greenbrier
SOLANACEAE	***Physalis angulata***	ground cherry
SOLANACEAE	***Physalis arenicola***	ground cherry
SOLANACEAE	***Physalis viscosa***	ground cherry
SOLANACEAE	***Solanum capsicoides***	soda-apple (native)
SOLANACEAE	***Solanum nigrescens***	black nightshade
SOLANACEAE	**Solanum viarum***	tropical soda apple
STYRACACEAE	***Styrax americana***	storax
THEACEAE	***Gordonia lasianthus***	loblolly bay
TURNERACEAE	***Piriqueta caroliniana***	piriqueta
TYPHACEAE	***Typha latifolia***	common cattail
TYPHACEAE	***Typha*** sp.	cattail
ULMACEAE	***Celtis laevigata***	hackberry
ULMACEAE	***Ulmus americana***	American elm
URTICACEAE	***Boehmeria cylindrica***	false nettle; bog hemp
URTICACEAE	***Parietaria floridana***	parietaria
VERBENACEAE	***Callicarpa americana***	beautyberry
VERBENACEAE	***Lippia nodiflora***	frog-fruit; carpetweed
VERBENACEAE	***Verbena scabra***	harsh verbena
VERBENACEAE	***Glandularia tampensis*** E (FDA); C2 (USFWS)	Tampa mock vervain
VIOLACEAE	***Viola affinis***	violet
VIOLACEAE	***Viola lanceolata***	long-leaf violet
VIOLACEAE	***Viola septemloba***	violet
VITACEAE	***Ampelopsis arborea***	pepper vine
VITACEAE	***Parthenocissus quinquefolia***	Virginia creeper; woodbine
VITACEAE	***Vitis aestivalis***	summer grape
VITACEAE	***Vitis munsoniana***	scuppernong; muscadine grape
VITACEAE	***Vitis rotundifolia***	wild grape
VITACEAE	***Vitis shuttleworthii***	Calusa grape
VITTARIACEAE	***Vittaria lineata***	shoestring fern
XYRIDACEAE	***Xyris brevifolia***	yellow-eyed grass
XYRIDACEAE	***Xyris caroliniana***	yellow-eyed grass
XYRIDACEAE	***Xyris elliottii***	yellow-eyed grass
XYRIDACEAE	***Xyris jupicai***	yellow-eyed grass
XYRIDACEAE	***Xyris smalliana***	yellow-eyed grass

* denotes non-native species

Appendix H: Confirmed and Potentially Occurring Animal Species
T. Mabry Carlton, Jr. Memorial Reserve

Birds

Family	Genus	Species	Common Name	Status*
Accipitridae	*Accipiter*	*cooperii*	Cooper's Hawk	
Accipitridae	*Accipiter*	*striatus*	Sharp-shinned Hawk	
Accipitridae	*Buteo*	*jamaicensis*	Red-tailed Hawk	
Accipitridae	*Buteo*	*lineatus*	Red-shouldered Hawk	
Accipitridae	*Elanoides*	*forficatus*	Swallow-tailed Kite	
Accipitridae	*Haliaeetus*	*leucocephalus*	Bald Eagle	T (FWC); T (USFWS)
Accipitridae	*Pandion*	*haliaetus*	Osprey	
Alcedinidae	*Ceryle*	*alcyon*	Belted Kingfisher	
Anatidae	*Aix*	*sponsa*	Wood Duck	
Anatidae	*Anas*	*crecca*	Green-winged Teal	
Anatidae	*Anas*	*discors*	Blue-winged Teal	
Anatidae	*Anas*	*fulvigula*	Mottled Duck	
Anatidae	*Anas*	*platyrhynchos*	Mallard	
Anatidae	*Dendrocygna*	*bicolor*	Fulvous Whistling-Duck	Exotic
Anatidae	*Lophodytes*	*cucullatus*	Hooded merganser	
Anhingidae	*Anhinga*	*anhinga*	Anhinga	
Aramidae	*Aramus*	*guarauna*	Limpkin	SSC (FWC)
Ardeidae	*Ardea*	*alba*	Great Egret	
Ardeidae	*Ardea*	*herodias*	Great Blue Heron	
Ardeidae	*Bubulcus*	*ibis*	Cattle Egret	Range Expansion
Ardeidae	*Butorides*	*virescens*	Green Heron	
Ardeidae	*Egretta*	*caerulea*	Little Blue Heron	SSC (FWC)
Ardeidae	*Egretta*	*thula*	Snowy Egret	SSC (FWC)
Ardeidae	*Egretta*	*tricolor*	Tricolored Heron	SSC (FWC)
Ardeidae	*Nyctanassa*	*violacea*	Yellow-crowned Night-Heron	
Bombycillidae	*Bombycilla*	*cedrorum*	Cedar Waxwing	
Caprimulgidae	*Caprimulgus*	*carolinensis*	Chuck-will's-widow	
Caprimulgidae	*Chordeiles*	*minor*	Common Nighthawk	
Cardinallidae	*Cardinalis*	*cardinalis*	Northern Cardinal	
Cardinallidae	*Guiraca*	*caerulea*	Blue Grosbeak	
Cardinallidae	*Passerina*	*cyanea*	Indigo Bunting	
Cardinallidae	*Pheucticus*	*ludovicianus*	Rose-breasted Grosbeak	
Cathartidae	*Cathartes*	*aura*	Turkey Vulture	
Cathartidae	*Coragyps*	*atratus*	Black Vulture	
Charadriidae	*Charadrius*	*vociferus*	Killdeer	
Ciconiidae	*Mycteria*	*americana*	Wood Stork	E (FWC); E (USFWS)
Columbidae	*Columbina*	*passerina*	Common Ground-Dove	

Columbidae	*Zenaida*	*macroura*	Mourning Dove	
Corvidae	*Aphelocoma*	*coerulescens*	Florida scrub-jay	Unconfirmed T (FWC); T (USFWS)
Corvidae	*Corvus*	*ossifragus*	Fish Crow	
Corvidae	*Cyanocitta*	*cristata*	Blue Jay	
Emberizidae	*Aimophila*	*aestivalis*	Bachman's sparrow	
Emberizidae	*Chondestes*	*grammacus*	Lark Sparrow	
Emberizidae	*Melospiza*	*georgiana*	Swamp Sparrow	
Emberizidae	*Melospiza*	*melodia*	Song Sparrow	
Emberizidae	*Passerculus*	*sandwichensis*	Savannah Sparrow	
Falconidae	*Falco*	*sparverius*	American Kestrel	
Falconidae	*Pipilo*	*erythrophthalmus*	Eastern Towhee	
Falconidae	*Spizella*	*passerina*	Chipping Sparrow	
Fringilidae	*Falco*	*columbarius*	Merlin	
Fringilidae	*Falco*	*peregrinus*	Peregrine Falcon	E (FWC)
Gruidae	*Carduelis*	*tristis*	American goldfinch	
Hirundinidae	*Grus*	*canadensis pratensis*	Florida sandhill crane	T (FWC)
Hirundinidae	*Hirundo*	*rustica*	Barn Swallow	
Hirundinidae	*Progne*	*subis*	Purple Martin	
Icteridae	*Agelaius*	*phoeniceus*	Red-winged Blackbird	
Icteridae	*Euphagus*	*cyanocephalus*	Brewer's Blackbird	
Icteridae	*Molothrus*	*ater*	Brown-headed Cowbird	
Icteridae	*Quiscalus*	*major*	Boat-tailed Grackle	
Icteridae	*Stelgidopteryx*	*serripennis*	Northern Rough-winged Swallow	
Icteridae	*Tachycineta*	*bicolor*	Tree Swallow	
Laniidae	*Quiscalus*	*quiscula*	Common Grackle	
Laridae	*Lanius*	*ludovicianus*	Loggerhead shrike	
Laridae	*Larus*	*atricilla*	Laughing Gull	
Laridae	*Sturnella*	*magna*	Eastern Meadowlark	
Mimidae	*Dumetella*	*carolinensis*	Gray Catbird	
Mimidae	*Larus*	*delawarensis*	Ring-billed Gull	
Mimidae	*Sterna*	*forsteri*	Forster's Tern	
Odontiphoridae	*Mimus*	*polyglottos*	Northern Mockingbird	
Paridae	*Colinus*	*virginianus*	Northern Bobwhite	
Paridae	*Toxostoma*	*rufum*	Brown Thrasher	
Parulidae	*Baeolophus*	*bicolor*	Tufted Titmouse	
Parulidae	*Dendroica*	*caerulescens*	Black-throated Blue Warbler	
Parulidae	*Dendroica*	*coronata*	Yellow-rumped Warbler	
Parulidae	*Dendroica*	*discolor*	Prairie Warbler	
Parulidae	*Dendroica*	*dominica*	Yellow-throated Warbler	
Parulidae	*Dendroica*	*magnolia*	Magnolia Warbler	
Parulidae	*Dendroica*	*palmarum*	Palm Warbler	
Parulidae	*Dendroica*	*petechia*	Yellow Warbler	
Parulidae	*Dendroica*	*pinus*	Pine Warbler	
Parulidae	*Dendroica*	*striata*	Blackpoll Warbler	
Parulidae	*Dendroica*	*tigrina*	Cape May Warbler	

Parulidae	*Geothlypis*	*trichas*	Common Yellowthroat	
Parulidae	*Helmitheros*	*vermivorus*	Worm-eating Warbler	
Parulidae	*Mniotilta*	*varia*	Black-and-White Warbler	
Parulidae	*Parula*	*americana*	Northern Parula	
Parulidae	*Poecile*	*carolinensis*	Carolina Chickadee	
Parulidae	*Protonotaria*	*citrea*	Prothonotary Warbler	
Parulidae	*Seiurus*	*aurocapillus*	Ovenbird	
Parulidae	*Seiurus*	*motacilla*	Louisiana Waterthrush	
Parulidae	*Seiurus*	*noveboracensis*	Northern Waterthrush	
Parulidae	*Setophaga*	*ruticilla*	American Redstart	
Phalacrocoracidae	*Phalacrocorax*	*auritus*	Double-crested Cormorant	
Picidae	*Colaptes*	*auratus*	Northern Flicker	
Picidae	*Dryocopus*	*pileatus*	Pileated Woodpecker	
Picidae	*Melanerpes*	*carolinus*	Red-bellied Woodpecker	
Picidae	*Melanerpes*	*erythrocephalus*	Red-headed Woodpecker	
Picidae	*Meleagris*	*gallopavo*	Wild Turkey	
Picidae	*Picoides*	*pubescens*	Downy Woodpecker	
Rallidae	*Fulica*	*americana*	American coot	
Rallidae	*Gallinula*	*chloropus*	Common Moorhen	
Rallidae	*Picoides*	*villosus*	Hairy Woodpecker	
Rallidae	*Porphyrula*	*martinica*	Purple Gallinule	
Rallidae	*Porzana*	*carolina*	Sora	
Rallidae	*Sphyrapicus*	*varius*	Yellow-bellied Sapsucker	
Recurvirostridae	*Rallus*	*elegans*	King Rail	
Regulidae	*Rallus*	*limicola*	Virginia Rail	
Scolopasidae	*Actitis*	*macularius*	Spotted Sandpiper	
Scolopasidae	*Calidris*	*mauri*	Western Sandpiper	
Scolopasidae	*Himantopus*	*mexicanus*	Black-necked Stilt	
Scolopasidae	*Regulus*	*calendula*	Ruby-crowned Kinglet	
Scolopasidae	*Tringa*	*melanoleuca*	Greater Yellowlegs	
Sittidae	*Tringa*	*flavipes*	Lesser Yellowlegs	
Strigidae	*Bubo*	*virginianus*	Great Horned Owl	
Strigidae	*Sitta*	*pusilla*	Brown-headed Nuthatch	
Strigidae	*Tringa*	*solitaria*	Solitary Sandpiper	
Sturnidae	*Otus*	*asio*	Eastern Screech-Owl	
Syviidae	*Strix*	*varia*	Barred Owl	
Thraupidae	*Sturnus*	*vulgaris*	European Starling	Exotic
Threskiornithidae	*Ajaia*	*ajaja*	Roseate Spoonbill	SSC (FWC)
Threskiornithidae	*Piranga*	*rubra*	SummerTanager	
Threskiornithidae	*Polioptila*	*caerulea*	Blue-gray Gnatcatcher	
Troglodytidae	*Cistothorus*	*platensis*	Sedge Wren	
Troglodytidae	*Eudocimus*	*albus*	White Ibis	SSC (FWC)
Troglodytidae	*Plegadis*	*falcinellus*	Glossy Ibis	
Turdidae	*Catharus*	*guttatus*	Hermit Thrush	
Turdidae	*Thryothorus*	*ludovicianus*	Carolina Wren	
Turdidae	*Troglodytes*	*aedon*	House Wren	
Tyrannidae	*Empidonax*	*virescens*	Acadian Flycatcher	
Tyrannidae	*Myiarchus*	*crinitus*	Great Crested Flycatcher	

Tyrannidae	*Sayornis*	*phoebe*	Eastern Phoebe	
Tyrannidae	*Sialia*	*sialis*	Eastern Bluebird	
Tyrannidae	*Turdus*	*migratorius*	American Robin	
Vireonidae	*Tyrannus*	*tyrannus*	Eastern Kingbird	
Vireonidae	*Tyrannus*	*verticalis*	Western Kingbird	
Vireonidae	*Vireo*	*flavifrons*	Yellow-throated Vireo	
Vireonidae	*Vireo*	*griseus*	White-eyed Vireo	
Vireonidae	*Vireo*	*olivaceus*	Red-eyed Vireo	

Reptiles and Amphibians				
Family	**Genus**	**Species**	**Common Name**	**Status***
Alligatoridae	***Alligator***	*mississippiensis*	American Alligator	
Bufonidae	*Bufo*	*quercicus*	Oak Toad	
Bufonidae	*Bufo*	*terrestris*	Southern Toad	
Chelydridae	*Chelydra*	*serpentina*	Florida Snapping Turtle	
Colubridae	*Coluber*	*constrictor*	Southern Black Racer	
Colubridae	*Diadophis*	*punctatus*	Ringneck Snake	
Colubridae	*Drymarchon*	*corais*	Eastern Indigo Snake	T (FWC); T (USFWS)
Colubridae	*Elaphe*	*guttata*	Corn Snake	
Colubridae	*Elaphe*	*obsoleta*	Yellow Rat Snake	
Colubridae	*Farancia*	*abacura*	Eastern Mud Snake	
Colubridae	*Nerodia*	*fasciata*	Banded Watersnake	
Colubridae	*Opheodrys*	*aestivus*	Rough Green Snake	
Colubridae	*Pituophis*	*melanoleucus mugitus*	Florida pine snake	Unconfirmed SSC (FWC)
Colubridae	*Regina*	*alleni*	Striped Crayfish Snake	
Colubridae	*Thamnophis*	*sauritus*	Ribbon Snake	
Colubridae	*Thamnophis*	*sirtalis*	Garter Snake	
Emydidae	*Deirochelys*	*reticularia*	Florida chicken turtle	
Emydidae	*Pseudemys*	*floridana*	Florida Cooter	
Emydidae	*Pseudemys*	*nelsoni*	Florida redbelly turtle	
Emydidae	*Terrapene*	*carolina*	Box Turtle	
Hylidae	*Acris*	*gryllus*	Florida Cricket Frog	
Hylidae	*Hyla*	*femoralis*	Pinewoods Treefrog	
Hylidae	*Hyla*	*gratiosa*	Barking Treefrog	
Hylidae	*Pseudacris*	*crucifer*	Southern Spring Peeper	
Hylidae	*Pseudacris*	*nigrita*	Florida Chorus Frog	
Hylidae	*Pseudacris*	*ocularis*	Little Grass Frog	
Iguanidae	*Anolis*	*carolinensis*	Green Anole	
Iguanidae	*Anolis*	*sagreii*	Brown Anole	Exotic
Kinosternidae	*Kinosternon*	*subrubrum*	Florida Mud Turtle	
Kinosternidae	*Sternotherus*	*odoratus*	Stinkpot	
Ranidae	*Amphiuma*	*means*	Two-toed Amphiuma	
Ranidae	*Rana*	*capito*	Gopher Frog	Unconfirmed SSC (FWC)
Ranidae	*Rana*	*grylio*	Pig Frog	
Ranidae	*Rana*	*sphenocephala*	Southern Leopard Frog	
Ranidae	*Siren*	*lacertina*	Greater Siren	
Scincidae	*Eumeces*	*inexpectatus*	Southeastern Five-lined Skink	
Varanidae	*Varanus*	*niloticus*	Nile Monitor Lizard	Exotic
Viperidae	*Agkistrodon*	*piscivorus*	Cottonmouth	
Viperidae	*Crotalus*	*adamanteus*	Eastern Diamondback Rattlesnake	
Viperidae	*Sistrurus*	*miliarius*	Dusky Pygmy Rattlesnake	

Mammals				
Family	**Genus**	**Species**	**Common Name**	**Status***
Canidae	*Canis*	*latrans*	Coyote	Range Expansion
Cervidae	*Odocoileus*	*Virginianus*	White-tailed Deer	
Dasypodidae	*Dasypus*	*novemcinctus*	Nine-banded Armadillo	Range Expansion**
Felidae	*Lynx*	*rufus*	Bobcat	
Felidae	*Puma*	*concolor*	Florida Panther	E (FWC); E (USFWS)
Leporidae	*Didelphis*	*virginiana*	Virginia Opossum	
Leporidae	*Sylvilagus*	*floridanus*	Eastern Cottontail	
Leporidae	*Sylvilagus*	*palustris*	Marsh Rabbit	
Molossidae	*Eumops*	*glaucinus floridanus*	Florida Mastiff Bat	Unconfirmed E (FWC)
Muridae (Sigmodontinae),	*Neofiber*	*alleni*	Florida Round-tailed Muskrat	
Muridae (Sigmodontinae),	*Neotoma*	*floridana*	Eastern Woodrat	
Muridae (Sigmodontinae),	*Oryzomys*	*palustris*	Marsh Rice Rat	
Muridae (Sigmodontinae),	*Peromyscus*	*gossypinus*	Cotton Mouse	
Muridae (Sigmodontinae),	*Podomys*	*floridanus*	Florida Mouse	Unconfirmed SSC (FWC)
Muridae (Sigmodontinae),	*Sigmodon*	*hispidus*	Hispid Cotton Rat	
Mustelidae	*Lutra*	*canadensis*	River Otter	
Procyonidae	*Procyon*	*lotor*	Raccoon	
Sciuridae	*Glaucomys*	*volans*	Southern Flying Squirrel	
Sciuridae	*Sciurus*	*carolinensis*	Gray Squirrel	
Sciuridae	*Sciurus*	*niger shermanii*	Sherman's Fox Squirrel	Unconfirmed SSC (FWC)
Soricidae	*Blarina*	*carolinensis*	Southern Short-tailed Shrew	
Suidae	*Sus*	*scrofa*	Wild Pig	Exotic
Talpidae	*Scalopus*	*aquaticus*	Eastern Mole	
Trichechidae	*Trichechus*	*manatus*	Florida (West Indian) Manatee	E (FWC); E (USFWS)
Ursidae	*Ursus*	*americanus floridanus*	Florida Black Bear	T (FWC)

Range Expansion = *a natural process where a species has moved to places it may not have been found before*