



Levy Nuclear Plant Project

Listed Species Assessment

Citrus Substation



March 2011

Table of Contents

1.0	INTRODUCTION.....	1
1.1	Central Florida South Substation Site Description.....	2
2.0	METHODOLOGY.....	3
2.1	Habitat Classification.....	3
2.2	Data Review.....	3
2.3	Preliminary Field Survey.....	4
3.0	RESULTS.....	5
3.1	Habitat Classification.....	5
3.2	Data Review.....	5
3.3	Preliminary Field Survey.....	6
3.4	Plants.....	6
3.4.1	Chapman’s Sedge.....	6
3.4.2	Cutthroat Grass.....	6
3.5	Amphibians.....	6
3.5.1	Gopher Frog.....	6
3.6	Reptiles.....	7
3.6.1	Gopher Tortoise.....	7
3.6.2	Eastern Indigo Snake.....	7
3.6.3	Florida Pine Snake.....	7
3.7	Birds.....	8
3.7.1	Southeastern American Kestrel.....	8
3.7.2	Limpkin.....	8
3.7.3	Florida Burrowing Owl.....	8
3.7.4	Little Blue Heron.....	9
3.7.5	Snowy Egret.....	9
3.7.6	Tricolored Heron.....	9
3.7.7	White Ibis.....	10
3.7.8	Florida Sandhill Crane.....	10
3.7.9	Bald Eagle.....	10
3.7.10	Wood Stork.....	10
3.8	Mammals.....	11
3.8.1	Sherman’s Fox Squirrel.....	11
3.8.2	Florida Mouse.....	11
4.0	LISTED SPECIES SURVEYS.....	12
4.1	Gopher Tortoise and Commensals.....	12
4.2	Eastern Indigo Snake.....	13
4.3	Bald Eagle.....	13
5.0	SUMMARY.....	15

6.0 REFERENCES..... 16

List of Tables

Table 1 Land Use/Land Cover Summary of the CFS Substation Site
Table 2 Protected Plants and Animals Potentially Occurring on the CFS Substation Site

List of Figures

Figure 1 General Location Map
Figure 2 USGS Topographic Map
Figure 3 Habitat Classification Map
Figure 4 Listed Species Map
Figure 5 Soils Map
Figure 6 Gopher Tortoise Suitable Soils Map

List of Appendices

Appendix A Florida Natural Areas Inventory Element Occurrence Report
Appendix B Listed Species Descriptions
Appendix C Listed Species Consultation Areas

1.0 INTRODUCTION

Florida Power Corporation d/b/a Progress Energy Florida, Inc. (PEF) is committed to providing safe, reliable, and affordable energy to its customers. PEF provides electric service to 1.7 million customers and a population of more than 5 million people. The company maintains a diverse mix of power generating facility resources to ensure affordable, efficient, and reliable service. The Levy Nuclear Plant (LNP) and associated facilities are components in PEF's baseload generation plan. PEF is proposing to construct and operate two Westinghouse, AP1000 Reactors at the LNP site located in Levy County, Florida. Project requirements include several offsite linear facilities including a new blow down pipeline and approximately 180 miles of new transmission lines. PEF is continuing to pursue all licenses and permits necessary to construct and operate the LNP. These permits include a Combined Operating License (COL) from the Nuclear Regulatory Commission (NRC), a Clean Water Act Section 404 permit from the U.S. Army Corps of Engineers (USACE) and certification from the State under the Florida Electrical Power Plant Siting Act (PPSA).

On June 2, 2008, PEF submitted a Site Certification Application (SCA) to the Florida Department of Environmental Protection (FDEP) pursuant to the PPSA, Chapter 403, F.S., and Chapter 62-17, Florida Administrative Code (F.A.C.) requesting certification of the LNP, including the new transmission lines.

The Governor and Cabinet, sitting as the Siting Board, voted unanimously to approve the Administrative Law Judge's Recommended Order to grant full and final certification to PEF for the construction and operation of the LNP and associated facilities. The Final Order on Certification of PEF LNP Units 1 and 2 was granted on August 11, 2009 (Final Order). The Final Order for the project approved by the Siting Board contains a set of conditions that the project must abide by during the construction and operation of the plant and associated facilities. These are collectively referred to as the LNP Conditions of Certification (COC).

PEF has also submitted a Combined Operating License Application (COLA) to the NRC in July 2008. The USACE is a cooperating agency with the NRC and has participated in the development of a Draft Environmental Impact Statement (DEIS) for the project. The NRC issued the DEIS on the project in August 2010. The public comment period for the DEIS has closed. The NRC expects to issue a Final Environmental Impact Statement (FEIS) on the project around April 2012.

PEF has also submitted a permit application for wetland impacts under Section 404 of the Clean Water Act to the USACE. PEF has been working with the USACE to address additional information needs for the Section 404 permit. The USACE anticipates issuing a Record of Decision on the project sometime after the FEIS. The preparation of these various regulatory documents required the review of the potential impacts to listed species for the project.

To support this effort, Golder Associates Inc. (Golder) conducted preliminary assessments of listed plant and animal species occurrence within each of the transmission line rights-of-way (ROW) and substations. The purpose of the preliminary listed species assessments was to gather information regarding the existing habitat conditions within each transmission line ROW and substation, document the occurrence of listed species, both plant and animal, within the ROWs and substation boundaries, and, based on the results of the field assessment and habitat conditions, develop species-specific surveys to be conducted prior to clearing and construction within each ROW and substation, in consultation with the Florida Fish and Wildlife Conservation Commission (FWC) and the U.S. Fish and Wildlife Service (USFWS).

Listed plant species are those plants that are listed by the USFWS under Title 50, Part 17 of the Code of Federal Regulations (50 CFR 17), or by the Florida Department of Agriculture and Consumer Services (FDACS) as endangered, threatened, of special concern, or commercially exploited. Listed animal species are those animals that are classified as endangered, threatened, or of special concern by the USFWS under 50 CFR 11-12, or by the FWC under Chapter 68-27, F.A.C.

The following presents the listed species assessment for the Central Florida South (CFS) Substation.

1.1 Central Florida South Substation Site Description

The approximately 165-acre CFS Substation Site is located at the Sumter - Lake County line just east of the Florida Turnpike and north of County Road 470 (Figure 1). The Site includes the area proposed for construction of the substation as well as an access roadway between CR 470 and the substation. The boundaries of the CFS Substation Site on a USGS topographic map and a habitat classification map are provided in Figures 2 and 3, respectively.

2.0 METHODOLOGY

Golder evaluated the likelihood of listed species occurrence within the CFS Substation Site through a combination of assessment of existing habitat type, quality, and extent, geographic information system (GIS) database queries, literature reviews, and field reconnaissance, described below.

2.1 Habitat Classification

Golder updated existing landuse/landcover and ecological habitat classifications within the CFS Substation Site utilizing the Florida Department of Transportation's 1999 Florida Land Use, Cover and Forms Classification System (FLUCFCS). The FLUCFCS classification system uses dominant components of the vegetative habitat or land use characteristics to assign landuse/landcover codes. Habitat classification is useful in the assessment of potential threatened and endangered species utilization of a site. Based upon the habitat present, inferences can be made regarding the potential for listed species occurrence.

In addition to the FLUCFCS data, land use/land cover data was obtained from the Southwest Florida Water Management District (SWFWMD), dated 2007, and was updated based on field observations (see Figure 3).

2.2 Data Review

Prior to field surveys, county-specific information regarding the presence of listed species was obtained from the Florida Natural Areas Inventory (FNAI), which maintains a database of documented occurrences of listed species throughout the State of Florida, as well as lists of federally listed species by county from the USFWS (<http://www.fws.gov/northflorida/CountyList>). The FNAI geographic information system (GIS) element occurrence data and the FWC bald eagle nest database were reviewed to assess the location of documented listed species occurrence within, adjacent to, or in the vicinity of the Site. In addition, a site-specific Element Occurrence Report from the FNAI was obtained, detailing known occurrences of listed species within and adjacent to the CFS Substation Site (see Appendix A). USFWS listed species consultation area data were also obtained and their geographic location in relation to the Site are presented in Appendix C.

In addition to review of FNAI, FWC, and USFWS data, references utilized for the listed species assessment include:

Beever, James W. III. 2006. Standardized State-Listed Animal Survey Procedures for Use in the Review of SWFRPC Projects. Southwest Florida Regional Planning Council, Hollywood, FL.

Coile, N.C. and M.A. Garland. 2003. Notes on Florida's Regulated Plant Index (Rule 5B-40), Botany Contribution 38, 4th edition. Florida Department of Agriculture & Consumer Services, Division of Plant Industry, Gainesville, FL.

Florida Natural Areas Inventory. 2001. Field Guide to the Rare Plants and Animals of Florida, http://www.fnai.org/FieldGuide/search_001.cfm (retrieved March 2010).

Humphrey, S.R., editor. 1992. "Rare and Endangered Biota of Florida, Volume I. Mammals." University Press of Florida, Gainesville, FL.

Moler, P.E., editor. 1992. "Rare and Endangered Biota of Florida, Volume III. Amphibians and Reptiles." University Press of Florida, Gainesville, FL.

Rodgers, J.A., H.W. Kale II and H.T. Smith, editors. 1992. "Rare and Endangered Biota of Florida, Volume V. Birds." University Press of Florida, Gainesville, FL.

Runde, D.E., J.A. Gore, J.A. Hovis, M.S. Robson and P.D. Southall. 1991. "Florida Atlas of Breeding Sites for Herons and Their Allies: Update 1986-89." Florida Game and Freshwater Fish Commission, Division of Wildlife, Nongame Wildlife Program Technical Report, No. 10, Florida Fish and Wildlife Conservation Commission, Tallahassee, FL.

Wood, Don A. 2001. "Florida's Fragile Wildlife – Conservation and Management" University Press of Florida, Gainesville, FL.

These data sources were used to prepare a comprehensive summary of listed species known to occur within Lake and Sumter Counties, their habitat preferences, and regulatory status, which was then updated with results of field surveys and presence of suitable habitat to determine species' probability of occurrence (Table 2).

2.3 Preliminary Field Survey

A reconnaissance-level listed species survey was conducted within the CFS Substation Site concurrent with the jurisdictional wetland delineation field effort in September 2009, during which time the entire Site was traversed by pedestrian and vehicular surveys. Observations were made for the presence of listed species based upon sight, call, burrow, nest, track, scat, and probable habitat. Locations of observed listed species were marked upon aerial photographs and, where feasible, identified with flagging tape, and coordinates recorded with a GPS receiver.

3.0 RESULTS

3.1 Habitat Classification

A summary of land use/land cover and corresponding acreages within the CFS Substation Site is presented in Table 1. The location and extent of vegetative communities and land use/land cover classifications are depicted on Figure 3.

Upland habitats compose approximately 156 acres within the Site, dominated by improved pasture (approximately 142 acres). Additional upland areas include unimproved pastures, open land, and coniferous (pine) plantations.

Wetland habitats are limited to approximately 5.5 acres of freshwater marshes and a small area (<0.1 acre) of wet prairie (Figure 3).

3.2 Data Review

Based on the presence of suitable habitat as described in Beever (2006); Coile and Garland (2003); FNAI (2001); Humphrey (1992); Moler (1992); and Rodgers et al. (1992); and the Site location within the species' geographic ranges, a variety of listed species are likely to occur within the CFS Substation Site (Table 2).

Within the CFS Substation Site, freshwater marsh and wet prairie habitats provide potential foraging habitat for listed species of wading birds, including limpkin (*Aramus guarauna*), little blue heron (*Egretta caerulea*), snowy egret (*Egretta thula*), tricolored heron (*Egretta tricolor*), white ibis (*Eudocimus albus*), Florida sandhill crane (*Grus canadensis pratensis*), and wood stork (*Mycteria americana*), as well potential habitat for the state-listed plants Chapman's sedge (*Carex chapmanii*) and cutthroat grass (*Panicum abscissum*).

Upland pasturelands provide suitable habitat for the gopher tortoise (*Gopherus polyphemus*) and Florida burrowing owl (*Athene cunicularia floridana*), while the burrows of the gopher tortoise provide habitat for listed commensal species, including the Eastern indigo snake (*Drymarchon couperi*), Florida mouse (*Podomys floridanus*), and gopher frog (*Rana capito*). Upland habitats within the CFS Substation Site also provide suitable habitat for the southeastern American kestrel (*Falco sparverius paulus*) and Florida pine snake (*Pituophis melanoleucus mugitus*).

According to the FNAI GIS database and the FNAI element occurrence report (Appendix A), there are no listed species occurrences within or immediately adjacent to the Site.

The FWC bald eagle nest database (<https://public.myfwc.com/FWRI/EagleNests/nestlocator.aspx>) illustrates the location of active and inactive bald eagle nests documented by the FWC. The information contained within this database is current through the 2008-2009 nesting season, with accuracy of the nest

locations estimated to be within 0.1 mile of the true location. According to the FWC bald eagle nest database, there are no bald eagle nests within one mile of the Site.

The CFS Substation Site is within USFWS-designated consultation areas for the Everglades snail kite (*Rostrhamus sociabilis plumbeus*) and the Florida scrub-jay (*Aphelocoma coerulescens*) (Appendix C). Consultation areas for the red-cockaded woodpecker (*Picoides borealis*) are located approximately 15 miles east and 5 miles west of the CFS Substation Site. The consultation area for the West Indian (Florida) manatee (*Trichechus manatus*) is located greater than 10 miles to the east of the CFS Substation Site.

3.3 Preliminary Field Survey

Figure 4 depicts the locations of listed species observed during field surveys conducted in September 2009 as well as documented occurrences from the FNAI GIS database. Listed species known to occur in Lake and Sumter Counties, their suitable habitat, presence of suitable habitat within the preferred ROW, likelihood of occurrence, regulatory status, and any field observations are summarized in Table 2. Species observed during field surveys or likely to potentially occur based upon presence of suitable habitat are discussed below. FNAI species descriptions for species observed or likely to potentially occur are provided in Appendix B.

3.4 Plants

3.4.1 Chapman's Sedge

Chapman's sedge is classified as threatened by the FWC, but is not listed by the USFWS. It is a perennial sedge that fruits in the spring. Chapman's sedge is found in grasslands and pinelands in Alachua, Clay, Citrus, Columbia, Dixie, Duval, Franklin, Hernando, Hillsborough, Jefferson, Lake, Levy, Marion, Orange, Osceola, Pasco, Polk, Putnam, Seminole, St. Johns, Sumter, Taylor, Volusia and Wakulla counties (Coile and Garland, 2003). No individuals were within the CFS Substation Site.

3.4.2 Cutthroat Grass

Cutthroat grass is classified as endangered by the FWC, but is not listed by the USFWS. It is a perennial grass found in mesic flatwoods and dry prairies; wet flatwoods; edges of depressional marshes; wet prairies; and, on the ecotones between flatwoods and drainageways. It is known from Highlands, Orange, Osceola, Palm Beach and Polk counties (Coile and Garland, 2003). FNAI also reports cutthroat grass from Lake County. No individuals were within the CFS Substation Site.

3.5 Amphibians

3.5.1 Gopher Frog

The gopher frog is listed as a species of special concern by the FWC, but is not listed federally by the USFWS. The gopher frog is a medium-sized, boldly spotted frog with a chunky appearance. Gopher

frogs are found in dry, sandy uplands that include isolated wetlands or large ponds within one mile. Breeding occurs in seasonal or more permanent wetlands. Gopher frogs are nocturnal, spending the daytime hours in stump holes, tunnels, or burrows (particularly those of gopher tortoises) (FNAI, 2001). No individuals were within the CFS Substation Site.

3.6 Reptiles

3.6.1 Gopher Tortoise

Gopher tortoises are listed as a threatened species in the State of Florida due to loss of preferred habitat, which includes xeric upland areas that are prime parcels for development. Gopher tortoises are protected by state law, Chapter 68A - 27.004, F.A.C. According to FWC regulations, construction activities or land disturbance are to be avoided within a 25-foot buffer zone around gopher tortoise burrows; where burrow avoidance is not practicable, a permit for the excavation and relocation of gopher tortoises is required. The FWC Gopher Tortoise Permitting Guidelines, revised April 2009, describe regulations and permits required for disturbance of gopher tortoises, including the protocols for surveying, burrow excavation, and relocation of gopher tortoises.

Gopher tortoises are medium-sized terrestrial turtles that dig burrows for shelter, typically in dry sandy areas where the depth to the seasonal high water table is greater than 45 centimeters (FWC, 2009). Gopher tortoises are commonly found in dry upland habitats, such as sandhills, scrub, xeric oak hammock, and dry pine flatwoods. They are also found in pastures and old fields (FNAI, 2001). The breeding season for gopher tortoises is generally considered to be spring, but males may attempt to mate from April through December. During May and June, females deposit 3-12 eggs in the sand mounds in their burrow mounds or in other nearby open sandy sites. Incubation depends upon climate and takes from 80 to 110 days. Other listed species such as the Eastern indigo snake, gopher frog, and Florida mouse may utilize gopher tortoise burrows.

A total of 49 gopher tortoise burrows were observed on or within the vicinity of the Site (Figure 4).

3.6.2 Eastern Indigo Snake

The Eastern indigo snake, classified as threatened by the FWC and the USFWS, is a large, stout-bodied snake reaching lengths up to 8 feet. Indigo snakes may be found in habitats ranging from mangrove swamps and wet prairies to xeric uplands and scrub, often wintering in gopher tortoise burrows. Breeding occurs November – April, with eggs laid in May or June (Moler, 1992). No individuals were observed within the CFS Substation Site.

3.6.3 Florida Pine Snake

The Florida pine snake is listed as a species of special concern by the FWC. The Florida pine snake is a large, stocky, tan or rusty colored snake with an indistinct pattern of large blotches on a lighter background. Adults may reach lengths greater than 7 feet. Florida pine snakes are found in habitats with

relatively open canopies and dry sandy soils, in which they burrow. They often coexist with pocket gophers and gopher tortoises. Florida pine snakes spend most of time below ground with occasional surface activity from spring through fall, especially May - October. Eggs are laid June – August and hatch in September and October (FNAI, 2001). No individuals were observed within the CFS Substation Site.

3.7 Birds

3.7.1 Southeastern American Kestrel

Southeastern American kestrels are listed as threatened by the FWC. Kestrels are the smallest falcon in the U.S. They are found throughout Florida year-round, but northern migrants are also present in the winter. The subspecies that breeds in Florida (southeastern American kestrel) is listed as threatened by the FWC, but the northern migrants are not listed. Northern migrants generally arrive in September and leave by March, but there are some records outside of these dates. Since the observation occurred in late March/early April, it was assumed the individual was the listed subspecies. In Florida, the southeastern American kestrel typically nests from March to June (Collopy, 1996).

3.7.2 Limpkin

The limpkin is classified as a species of special concern by the FWC, but is not listed federally. It is a large, brown feathered, long-billed, long legged wader of swamps and marshes. Limpkins inhabit mangroves, freshwater marshes, swamps, springs and spring runs, and pond and river margins. They are also found along lake margins in peninsular Florida and swales, strand swamps, sloughs, and impoundments in south Florida and may also forage in ruderal areas such as sugarcane fields and the banks of irrigation canals. Limpkins utilize a wide range of nesting sites, including mounds of aquatic vegetation and marsh grasses among cypress knees and high up in trees. Nesting generally occurs from late February - May in north Florida and late January - March in central Florida, and possibly earlier in south Florida (FNAI, 2001). No individuals were observed within the CFS Substation Site.

3.7.3 Florida Burrowing Owl

Florida burrowing owls are classified as a species of special concern by the FWC, but are not listed federally by the USFWS. They are opportunistic feeders, preying on invertebrates, small mammals, and other birds. Burrowing owls are small, ground-dwelling owls with long legs, white chin strip, round head, and a stubby tail. They will often dig their own burrows, and prior to egg laying, will line the entrance and burrows with materials such as palm fronds and grass clumps. In Florida, burrowing owl burrows are considered active (potentially having eggs or unfledged young) from February 15 to July 10. The female lays 7 to 10 eggs, which she incubates for 28 to 30 days (FWC, 2011). No individuals were observed within the CFS Substation Site.

3.7.4 Little Blue Heron

The little blue heron is classified as a species of special concern by the FWC, but is not listed by the USFWS. The little blue heron is a medium-sized heron, with a purplish to maroon-brown head and neck, small white patch on throat and upper neck, and slate-blue body. The little blue heron feeds in shallow freshwater, brackish, and saltwater habitats. The largest nesting colonies of little blue herons occur in coastal areas, but they prefer to forage in freshwater lakes, marshes, swamps, and streams. Little blue herons nest in a variety of woody vegetation types, including cypress, willow, maple, black mangrove, and cabbage palm. They usually breed in mixed-species colonies in flooded vegetation or on islands. Little blue herons are mostly resident throughout year, but numbers in north Florida in winter are lower than numbers during spring, summer, and fall (FNAI, 2001). No individuals were observed within the CFS Substation Site.

3.7.5 Snowy Egret

The snowy egret is classified as a species of special concern by the FWC, but is not listed by the USFWS. The snowy egret is a medium sized, all-white wading bird. Adults have black legs with bright yellow feet. Snowy egrets occur in Florida in all seasons, but are generally less common in winter. Snowy egrets nest both inland and in coastal wetlands, with nests placed in many types of woody shrubs, especially mangroves and willows. Almost all nesting is over shallow waters or on islands that are separated from shoreline by extensive open water. Snowy egrets feed in a variety of permanently and seasonally flooded wetlands, streams, lakes, and swamps, and in manmade impoundments and ditches. A wide variety of wetland types must be available within 7 miles to support breeding colonies (FNAI, 2001). Nesting may begin as early as January in southern Florida. Egg laying occurs primarily between late March and June, but may continue into August (Ogden, 1996b). No individuals were observed within the CFS Substation Site.

3.7.6 Tricolored Heron

The tricolored heron is classified as a species of special concern by the FWC, but is not listed by the USFWS. It is a medium sized heron with dark slate coloration on the head, neck, and body that contrasts with the white rump, belly, and undertail. Most tricolor nesting colonies occur on mangrove islands or in willow thickets in fresh water, but nesting sites include other woody thickets on islands or over standing water. Egg laying can begin as early as February in south Florida and continue into August (Ogden, 2001c). Tricolored herons prefer coastal environments, but will feed in a variety of permanently and seasonally flooded wetlands, mangrove swamps, tidal creeks, ditches, and edges of ponds and lakes. Tricolored herons are permanent residents and found throughout Florida in all seasons, except they are rare in winter in the western Panhandle and also somewhat less common inland during winter (FNAI, 2001). No individuals were observed within the CFS Substation Site.

3.7.7 White Ibis

The white ibis is classified as a species of special concern by the FWC, but is not listed by the USFWS. The white ibis is found throughout Florida in a wide variety of habitats, including freshwater and brackish marshes, salt flats and salt marsh meadows, many types of forested wetlands, wet prairies, swales, seasonally inundated fields, and man-made ditches. White ibis typically nest in Florida from March to August. Nesting occurs in trees, shrubs, cactus, and grass clumps, from ground level to a height of approximately 50 feet. Eggs incubate for a period of approximately 22 days and young begin leaving the nest around 9 to 16 days of age, but complete independence from the parents does not occur until 40 to 50 days of age (FWC, 2003). No individuals were observed within the CFS Substation Site.

3.7.8 Florida Sandhill Crane

The Florida sandhill crane is classified as threatened by the FWC, but is not listed by the USFWS. The Florida sandhill crane is indistinguishable from the greater sandhill crane, which winters in Florida. Greater sandhill cranes generally arrive in Florida in October and leave in March. Florida sandhill cranes typically start nesting in late December and continue through June. Sandhill cranes create nest mounds of plant material in herbaceous wetlands. The female will lay two eggs, which incubate for 28 to 32 days. Fledging occurs at about 67 days (FWC, 2003). No individuals were observed within the CFS Substation Site.

3.7.9 Bald Eagle

The bald eagle was removed from the USFWS endangered species list on June 28, 2007, and is no longer protected under the Endangered Species Act, but remains protected under the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act (U.S. Department of Interior, 2007). The bald eagle was delisted by the FWC through adoption of the Bald Eagle Management Plan on April 9, 2008 (FWC, 2008). The FWC Bald Eagle Management Plan recommends maintaining a 660-ft buffer zone, with certain activities allowable within between 330 and 660 ft of an active nest outside of the nesting season. No individuals were observed within the CFS Substation Site; according to the FWC bald eagle nest database, there are no nests within a one-mile radius of the CFS Substation Site.

3.7.10 Wood Stork

The wood stork is classified as endangered by the USFWS and the FWC. Wood storks utilize a variety of habitats, including cypress/gum ponds, forested wetlands, river swamps, marshes (freshwater and saltwater), and bays. The wood stork is highly gregarious in its nesting and feeding behavior. They are tactile feeders (vision is seldom used to locate or catch prey) and usually forage in shallow water (6 to 20 inches). Small fish are the primary food items, but storks also consume crustaceans, salamanders, tadpoles, and insects. The distance between nesting colonies and feeding areas can range up to 60 miles or more, although the average distance is typically 12 to 15 kilometers (km) (7 to 9 miles) (Ogden, 1996a). The USFWS has defined "core foraging areas" (CFAs) for wood storks in central Florida to be that area within 15 miles of the colony, and within north Florida to be the area within 13 miles of the

colony. Colonies are located on coastal islands and on willow islands in swamps, cypress swamps, impoundments, and other inundated areas. Nesting has been reported throughout the year. Nests are platforms of sticks formed in tall cypress trees and, less often, mangroves. Typically, three to five eggs are laid and incubate for 28 to 32 days before hatching, while the young fledge in 50 to 55 days. No individuals were observed within the CFS Substation Site; the CFS Substation Site does not occur within the CFA of any wood stork colonies (Appendix C).

3.8 Mammals

3.8.1 *Sherman's Fox Squirrel*

Sherman's fox squirrel (*Sciurus niger shermani*), classified as a Species of Special Concern by the FWC, is not listed federally by the USFWS. Sherman's fox squirrels are larger than gray squirrels and have tails almost as long as their head and torso length. They typically occur in sandhills, pine flatwoods, pastures, and other open, ruderal habitats with scattered pines and oaks. They depend on a variety of oak trees for seasonal food and nest material; longleaf pine cones and seeds are important foods. Sherman's fox squirrels are active year-round in Florida (FNAI, 2001). No individuals were observed within the CFS Substation Site.

3.8.2 *Florida Mouse*

The Florida mouse is classified as a species of special concern by the FWC, but is not listed by the USFWS. It is distinguished from all other mice within its range by the presence of five plantar tubercles on the hind feet versus six or seven in *Peromyscus* spp. The Florida mouse is found in xeric upland communities with sandy soils, including scrub, sandhill, and ruderal sites where they inhabit the burrows of the gopher tortoise. In the absence of gopher tortoises, Florida mice will dig their own burrows or use those of oldfield mice. The Florida mouse is active year-round except on especially cold nights (FNAI, 2001). No individuals were observed within the CFS Substation Site.

4.0 LISTED SPECIES SURVEYS

The results of the preliminary listed species assessment will be used to develop a detailed listed species survey plan for the CFS Substation. PEF will consult with the FWC and the USFWS to review the listed species assessment and obtain consensus on the location, timing, and methodology for conducting the detailed species-specific surveys prior to clearing and construction.

Following FWC and USFWS consultation, surveys will be conducted within the CFS Substation Site prior to clearing and construction in accordance with the survey protocols. The results of those detailed surveys will be provided to the FWC and USFWS, and coordination will occur with the FWC on appropriate impact mitigation methodologies.

Based upon the results of the preliminary listed species assessment and proposed impacts associated with construction of the CFS Substation, pre-clearing surveys and additional evaluations are proposed for the following species: gopher tortoise and commensals, Eastern indigo snake, and bald eagle.

4.1 Gopher Tortoise and Commensals

As detailed in the Conditions of Certification, PEF will conduct surveys for gopher tortoises within the CFS Substation Site in accordance with the FWC-approved Gopher Tortoise Management Plan (adopted in 2007) and FWC Gopher Tortoise Permitting Guidelines (revised April 2009), or subsequent FWC-approved versions of the Plan or Guidelines. A burrow survey covering a minimum of 15 percent of the potential gopher tortoise habitat to be impacted by development will be conducted in order to apply for a relocation permit. Potential gopher tortoise habitat includes those areas classified as preferred habitat, as described in Section 3.5.1, underlain by acceptable soils with depth to the water table of greater than 31-45 centimeters, as defined by FWC in Table 2 of the Gopher Tortoise Permitting Guidelines. Soil types within the CFS Substation Site are illustrated in Figure 5; areas of acceptable gopher tortoise soils within the CFS Substation Site are identified on Figure 6.

Immediately prior to capturing tortoises for relocation, a 100 percent survey will be conducted to locate and mark all potentially occupied tortoise burrows and to subsequently remove the tortoises. Burrow survey methods will follow Gopher Tortoise Permitting Guidelines Appendix 4, Methods for Burrow Surveys on Development (Donor) and Recipient Sites. Surveys will be conducted within 90 days of application submittal to the FWC; and will not be conducted within 30 days of any ground disturbance or clearing activities on the Donor Site. The gopher tortoise surveys will be conducted during the months of April through October.

PEF will minimize impacts to gopher tortoises through maintenance of a minimum 25-foot buffer zone around all burrows to the greatest extent practicable. Where gopher tortoise burrow avoidance is not feasible, PEF will coordinate with and provide the FWC a detailed gopher tortoise relocation permit application for the CFS Substation Site in accordance with the FWC-approved Gopher Tortoise

Management Plan and Gopher Tortoise Permitting Guidelines. This permit application will provide information on the location for on-site recipient areas and/or any off-site FWC-approved recipient site, as well as appropriate mitigation contributions.

Any commensal species observed during the burrow excavations that are listed by the USFWS or FWC will be relocated in accordance with the applicable guidelines for that species.

4.2 Eastern Indigo Snake

Prior to clearing and construction, PEF will perform a survey for Eastern indigo snakes in accordance with the *Survey Protocol for the Eastern Indigo Snake, Drymarchon couperi, in North/North-Central Florida* established by the USFWS North Florida Ecological Services Field Office (NFESFO) in February 2011. Pedestrian surveys will be conducted during the period from October 1st through April 30th along established transects within areas to be impacted by construction of the transmission facilities. The impact area will be surveyed a minimum of five times per the *Survey Protocol* with surveys being conducted under the optimum temperature range of 60° F – 70° F.

Pedestrian surveys are intended to locate Eastern indigo snakes above ground and to identify refugia for subsequent inspection of the impact area. Underground refugia commonly used by this species include active or inactive burrows excavated by gopher tortoises or other species, natural ground holes, and hollows at the base of trees. Above ground refugia include thick shrub formations, the base of thick palmetto (*Serenoa repens* or *Sabal etonia*) ground litter, trash piles, abandoned structures, and crevices of rock-lined ditch walls. The preferred inspection methods when underground refugia are present in the impact area include the excavation of burrows or natural holes in the ground. Excavation of burrows will be conducted in conjunction with any permitted gopher tortoise relocation activities. If an Eastern indigo snake is located during excavation procedures, all activities must be temporarily halted in order to photograph the specimen and subsequently allow it to move out of harm's way, and the USFWS is to be notified as soon as possible and forwarded all pertinent information. PEF will submit a Final Survey Report to USFWS after the completion of all Eastern indigo snake survey activities. During construction, PEF will comply with the USFWS Standard Protection Measures for the Eastern Indigo Snake (2004).

4.3 Bald Eagle

Based on the FWC bald eagle nest database, no nests occur within one mile of the CFS Substation Site, therefore no impacts to the eagle would be anticipated in association with construction of the CFS Substation Site. Prior to clearing and construction, PEF will update the bald eagle nest location and status (active/inactive) information within and adjacent to the CFS Substation Site.

In accordance with the FWC Eagle Management Guidelines, for construction areas that fall within 330 feet of an active or alternate bald eagle nest, construction activities will be conducted only during the non-nesting season (May 16 - September 30). Any construction activities that fall within 660 feet of the nest

during the nesting season will be conducted following USFWS-approved Bald Eagle Monitoring Guidelines, dated 2007, or USFWS-approved subsequent versions. In areas where adverse impacts to nests cannot be avoided, resulting in nest disturbance, an FWC Eagle Permit is required, as authorized by Section 372.072, F.S., and Rule 68A-16.002, F.A.C, and minimization and conservation measures outlined in the FWC Bald Eagle Management Plan are to be followed, as applicable.

5.0 SUMMARY

To support compliance with the federal regulatory process, Golder has prepared an evaluation of listed species occurrence within the CFS Substation Site. This evaluation will facilitate the development of detailed listed species surveys to be conducted prior to clearing and construction, including specific locations and protocols, in consultation with the FWC and USFWS.

The CFS Substation Site contains approximately 156 acres of uplands and 5.5 acres of wetlands, which provide suitable habitat to a variety of listed species. Based upon field reconnaissance, database queries, presence of suitable habitat, and literature reviews, two species were observed or are highly likely to occur within the CFS Substation Site, the gopher tortoise and gopher frog (Table 2). Detailed listed species surveys are recommended for the gopher tortoise, gopher tortoise burrow commensal species, and the Eastern indigo snake. Specific listed species survey locations, timing, and methodology will be determined in consultation with the FWC and USFWS.

PEF will conduct surveys for gopher tortoises within the CFS Substation Site in accordance with the FWC-approved Gopher Tortoise Management Plan (adopted in 2007) and FWC Gopher Tortoise Permitting Guidelines (revised April 2009). PEF will minimize impacts to gopher tortoises during construction through maintenance of a minimum 25-foot buffer zone around all burrows to the greatest extent practicable. Where gopher tortoise burrow avoidance is not feasible, PEF will coordinate with the FWC and submit a detailed gopher tortoise relocation permit application for the CFS Substation Site in accordance with the FWC-approved Gopher Tortoise Management Plan and Gopher Tortoise Permitting Guidelines prior to clearing and construction.

PEF will perform a survey for Eastern indigo snake in accordance with the *Survey Protocol for the Eastern Indigo Snake, Drymarchon couperi, in North/North-Central Florida* established by the USFWS NFESFO in February 2011. Pedestrian surveys will be conducted during the period from October 1st through April 30th along established transects within areas to be impacted during construction. During construction, PEF will comply with the USFWS Standard Protection Measures for the Eastern Indigo Snake (2004).

Prior to construction, PEF will update the bald eagle nest location and status information within and adjacent to the CFS Substation Site. In accordance with the FWC Eagle Management Guidelines, for areas within 330 feet of an active or alternate bald eagle nest, construction activities will be conducted only during the non-nesting season (May 16 - September 30). Any construction activities that fall within 660 feet of the nest during the nesting season will be conducted following USFWS-approved Bald Eagle Monitoring Guidelines. In areas where adverse impacts to nests cannot be avoided, PEF will obtain the information required for an FWC Eagle Permit from the FWC, and minimization and conservation measures outlined in the FWC Bald Eagle Management Plan will be followed, as applicable.

6.0 REFERENCES

- Beever, James W. III. 2006. Standardized State-Listed Animal Survey Procedures for Use in the Review of SWFRPC Projects. Southwest Florida Regional Planning Council, Hollywood, FL.
- Collopy, M.W. 1996. Southeastern American Kestrel (*Falco sparverius paulus*). pp 211-215 in J.A. Rodgers, Jr., H.W. Kale II, and H.T. Smith (eds.), 1996. Volume V, *Birds, Rare and Endangered Biota of Florida*. University of Florida Press, Gainesville, Florida. 688 pp.
- Coile, N.C. and M.A. Garland. 2003. Notes on Florida's Regulated Plant Index (Rule 5B-40), Botany Contribution 38, 4th edition. Florida Department of Agriculture & Consumer Services, Division of Plant Industry, Gainesville, FL.
- Florida Department of Transportation. 1999. Surveying and Mapping Office, Land Use, Cover, and Forms Classification System.
- Florida Fish and Wildlife Conservation Commission. 2008. Bald Eagle Management Plan (*Haliaeetus leucocephalus*) Adopted April 9, 2008. Florida Fish and Wildlife Conservation Commission 620 South Meridian Street Tallahassee, FL 32399.
- Florida Fish and Wildlife Conservation Commission. Eagle Nest Locator, <https://public.myfwc.com/FWRI/EagleNests/nestlocator.aspx> (accessed March 22, 2010).
- Florida Fish and Wildlife Conservation Commission. 2003. Florida's breeding bird atlas: A collaborative study of Florida's birdlife. <http://www.myfwc.com/bba/>
- Florida Natural Areas Inventory. 2001. Field Guide to the Rare Plants and Animals of Florida, http://www.fnai.org/FieldGuide/search_001.cfm (retrieved March 2010).
- Florida Natural Areas Inventory. 2008. Element Occurrence GIS Data.
- Humphrey, S.R., editor. 1992. "Rare and Endangered Biota of Florida, Volume I. Mammals." University Press of Florida, Gainesville, FL.
- Moler, P.E., editor. 1992. "Rare and Endangered Biota of Florida, Volume III. Amphibians and Reptiles." University Press of Florida, Gainesville, FL.
- Ogden, J. C. 1990. Habitat management guidelines for the wood stork in the southeast region. U.S. Fish and Wildlife Service. Available from: www.fws.gov/northflorida/WoodStorks/Documents/Wood-stork-habitat-guidelines-1990.pdf.
- Ogden, J.C.(a). 1996. Wood Stork (*Mycteria americana*). Pp 31-41 in J.A. Rodgers, Jr., H.W. Kale II, and H.T. Smith (eds.), 1996. Volume V, *Birds, Rare and Endangered Biota of Florida*. University of Florida Press, Gainesville, Florida. 688 pp.
- Ogden, J.C.(b), 1996. Snowy Egret (*Egretta thula*). Pp 420-431 in J.A. Rodgers, Jr., H.W. Kale II, and H.T. Smith (eds.), 1996. Volume V, *Birds, Rare and Endangered Biota of Florida*. University of Florida Press, Gainesville, Florida. 688 pp.
- Ogden, J.C.(c). 1996. Tricolored Heron (*Egretta tricolor*). Pp 432-441 in J.A. Rodgers, Jr., H.W. Kale II, and H.T. Smith (eds.), 1996. Volume V, *Birds, Rare and Endangered Biota of Florida*. University of Florida Press, Gainesville, Florida. 688 pp.
- Rodgers, J.A., H.W. Kale II and H.T. Smith, editors. 1992. "Rare and Endangered Biota of Florida, Volume V. Birds." University Press of Florida, Gainesville, FL.

- Runde, D.E., J.A. Gore, J.A. Hovis, M.S. Robson and P.D. Southall. 1991. "Florida Atlas of Breeding Sites for Herons and Their Allies: Update 1986-89." Florida Game and Freshwater Fish Commission, Division of Wildlife, Nongame Wildlife Program Technical Report, No. 10, Florida Fish and Wildlife Conservation Commission, Tallahassee, FL.
- Southwest Florida Water Management District, GIS Data & Maps, http://www.swfwmd.state.fl.us/data/gis/layer_library/ (retrieved September 25, 2007, verified September - October 2009).
- U.S. Department of the Interior. 2007. "Bald Eagle Soars Off Endangered Species List." <http://www.fws.gov/migratorybirds/issues/BaldEagle/FINALEagle%20release.pdf>
- U.S. Fish and Wildlife Service. 2009. Florida Nesting Colony and Core Foraging Areas GIS shapefiles, <http://www.fws.gov/northflorida/WoodStorks/wood-storks.htm> (retrieved January 2010).
- Wood, Don A. 2001. "Florida's Fragile Wildlife – Conservation and Management" University Press of Florida, Gainesville, FL.

TABLES

TABLE 1

**Progress Energy Florida – Levy Nuclear Plant Project
Citrus Substation**

Land Use/Land Cover Summary of the Citrus Substation Site

FLUCFCS Code	Description	Acreage within Substation Site
211	Improved Pastures	65.43
212	Unimproved Pastures	3.53
421	Xeric Oak	5.28
427	Live Oak	4.52
428	Cabbage Palm	2.09
434	Hardwood-Conifer Mixed Forest	43.38
438	Mixed Hardwoods	28.11
511	Ditches	0.30
534	Reservoirs Less Than 10 Acres	0.82
641	Freshwater Marshes	7.63
643	Wet Prairies	2.47
TOTAL		163.56

TABLE 2

Progress Energy Florida – Levy Nuclear Plant Project
Citrus Substation

Protected Plants and Animals Potentially Occurring at the Citrus Substation Site
Citrus County, Florida

Species	Habitat of Occurrence	Habitat Present on Site (Y/N)	Likelihood of Occurrence on Site	Status		Observed
				USFWS	FWC	
AMPHIBIANS						
<i>Rana capito</i> Gopher frog	Sandhill and scrub with isolated wetlands or large ponds; commensal with gopher tortoises	Yes	Medium	N	SSC	No
BIRDS						
<i>Ammodramus maritimus peninsulæ</i> Scott's seaside sparrow	Extensive stands of black needlerush, with smooth cordgrass and scattered areas of saltgrass	No	Unlikely	N	SSC	No
<i>Aphelocoma coerulescens</i> Florida scrub-jay	Low-growing oak scrub habitat	No	Low	T	T	No
<i>Aramus guarauna</i> Limkin	Freshwater marshes, swamps, springs, spring runs, pond, river, and lake margins	Yes	Medium	N	SSC	No
<i>Athene cunicularia floridana</i> Florida burrowing owl	Dry prairie, sandhill, pastures	Yes	Medium	N	SSC	No
<i>Charadrius melodus</i> Piping plover	Open, sandy beaches and tidal mudflats	No	Unlikely	T	T	No
<i>Cistothorus palustris marianae</i> Marian's marsh wren	Tidal marshes dominated by black needlerush	No	Unlikely	N	SSC	No
<i>Egretta caerulea</i> Little blue heron	Freshwater lakes, marshes, swamps, and streams, cypress	Yes	High	N	SSC	No
<i>Egretta thula</i> Snowy egret	Wetlands, streams, lakes, and swamps, manmade impoundments, ditches	Yes	High	N	SSC	No
<i>Egretta tricolor</i> Tricolored heron	Wetlands, ditches, pond and lake edges, coastal areas	Yes	High	N	SSC	No
<i>Eudocimus albus</i> White ibis	Freshwater and brackish marshes, salt flats, forested wetlands, wet prairies, swales, man-made ditches	Yes	High	N	SSC	No
<i>Falco sparverius paulus</i> Southeastern American kestrel	Open pine habitats, woodland edges, prairies, pastures	Yes	High	N	T	No

TABLE 2

Progress Energy Florida – Levy Nuclear Plant Project
Citrus Substation

Protected Plants and Animals Potentially Occurring at the Citrus Substation Site
Citrus County, Florida

Species	Habitat of Occurrence	Habitat Present on Site (Y/N)	Likelihood of Occurrence on Site	Status		Observed
				USFWS	FWC	
<i>Grus canadensis pratensis</i> Florida sandhill crane	Prairies, freshwater marshes, and pastures	Yes	Medium	N	T	No
<i>Haematopus palliatus</i> American oystercatcher	Large areas of beach, sandbar, mudflats, and shellfish beds for foraging. Sparsely vegetated, sandy areas for nesting	No	Unlikley	N	SSC	No
<i>Haliaeetus leucocephalus</i> Bald eagle	Coastal areas, bays, rivers, lakes, or other bodies of water	Yes	Medium	N	N	No
<i>Mycteria americana</i> Wood stork	Cypress strands and domes, mixed hardwood swamps, freshwater marshes	Yes	Medium	E	E	No
<i>Pelecanus occidentalis</i> Brown pelican	Mainly coastal; feeds in shallow, estuarine waters and occasionally offshore. Nests mainly on small islands in open water	No	Unlikley	N	SSC	No
<i>Picoides borealis</i> Red-cockaded woodpecker	Mature pine woodlands	No	Low	E	E	No
<i>Platalea ajaja</i> Roseate spoonbill	Tidal flats, coastal and freshwater marshes	No	Unlikley	N	SSC	No
<i>Rynchops niger</i> Black skimmer	Coastal waters, including beaches, bays, estuaries, sandbars, tidal creeks (foraging), and also inland waters of large lakes, phosphate pits, and flooded agricultural fields	No	Unlikley	N	SSC	No
<i>Sterna antillarum</i> Least tern	Coastal areas throughout Florida; nesting limited to well-drained sand or gravel areas with little to no vegetation.	No	Unlikley	N	T	No
MAMMALS						
<i>Podomys floridanus</i> Florida mouse	Xeric upland communities with sandy soils, including scrub, sandhill, and ruderal sites; potential gopher tortoise burrow commensal	Yes	Medium	N	SSC	No
<i>Puma concolor coryi</i> Florida panther	Extensive blocks of mostly forested communities; large wetlands that are generally inaccessible to humans are important for diurnal refuge; will tolerate improved areas in a mosaic of natural communities	No	Low	E	E	No

TABLE 2

Progress Energy Florida – Levy Nuclear Plant Project
Citrus Substation

Protected Plants and Animals Potentially Occurring at the Citrus Substation Site
Citrus County, Florida

Species	Habitat of Occurrence	Habitat Present on Site (Y/N)	Likelihood of Occurrence on Site	Status		Observed
				USFWS	FWC	
<i>Sciurus niger shermani</i> Sherman's fox squirrel	Sandhills, pine flatwoods, pastures and other open, ruderal habitats with scattered pines and oaks	Yes	High	N	SSC	No
<i>Sorex longirostris eionis</i> Homosassa shrew	Moist areas, forested wetlands, riparian forests, fields, brushy areas; near Homosassa Springs area	No	Low	N	SSC	No
<i>Trichechus manatus</i> West Indian manatee	Rivers, bays, canals, estuaries, Gulf of Mexico	No	Unlikely	E	E	No
<i>Ursus americanus floridanus</i> Florida black bear	Large areas of forested uplands, forested wetlands	No	Low	N	T	No
REPTILES						
<i>Alligator mississippiensis</i> American alligator	Most permanent bodies of fresh water, including marshes, swamps, lakes, and rivers	Yes	Low	T (SA)	SSC	No
<i>Caretta caretta</i> Loggerhead sea turtle	Estuarine and marine coastal and oceanic waters; nests on sandy beaches	No	Unlikely	T	T	No
<i>Chelonia mydas</i> Green sea turtle	Estuarine and marine coastal and oceanic waters; nests on sandy beaches	No	Unlikely	E	E	No
<i>Dermochelys coriacea</i> Leatherback sea turtle	Estuarine and marine coastal and oceanic waters; nests on sandy beaches	No	Unlikely	E	E	No
<i>Drymarchon couperi</i> Eastern indigo snake	Broad range of habitats, from scrub and sandhill to wet prairies and mangrove swamps; often commensal with gopher tortoises	Yes	Medium	T	T	No
<i>Eretmochelys imbricata</i> Hawksbill	Marine coastal and oceanic waters, commonly associated with coral reefs, keys, and mangroves	No	Unlikely	E	E	No
<i>Gopherus polyphemus</i> Gopher tortoise	Dry upland habitats, including sandhills, scrub, xeric oak hammock, and dry pine flatwoods; also pastures, old fields	Yes	High	N	T	Yes
<i>Lampropeltis extenuata</i> Short-tailed snake	Sandhill, xeric hammock, sand pine scrub	Yes	Medium	N	T	No
<i>Lepidochelys kempii</i> Kemp's ridley sea turtle	Estuarine and marine coastal and oceanic waters; nests on sandy beaches	No	Unlikely	E	E	No

TABLE 2

Progress Energy Florida – Levy Nuclear Plant Project
Citrus Substation

Protected Plants and Animals Potentially Occurring at the Citrus Substation Site
Citrus County, Florida

Species	Habitat of Occurrence	Habitat Present on Site (Y/N)	Likelihood of Occurrence on Site	Status		Observed
				USFWS	FWC	
<i>Pituophis melanoleucus mugitus</i> Florida pine snake	Sandhill, old fields and pastures, sand pine scrub, scrubby flatwoods; often commensal with gopher tortoises and pocket gophers	Yes	Medium	N	SSC	No
<i>Pseudemys concinna suwanniensis</i> Suwannee cooter	Rivers, large streams	No	Unlikely	N	SSC	No
FISH						
<i>Acipenser oxyrinchus desotoi</i> Gulf sturgeon	Forages in Gulf of Mexico and associated estuaries; spawns in most major coastal rivers in areas with limestone outcrops	No	Unlikely	T	SSC	No
PLANTS						
<i>Adiantum tenerum</i> Brittle maidenhair fern	Limestone outcrops, grottoes, sinkholes	No	Low	N	E	No
<i>Agrimonia incisa</i> Incised groove-bur	Sandhills and scrub	Yes	Medium	N	E	No
<i>Asplenium pumilum</i> Dwarf spleenwort	shaded limestone boulders and ledges	No	Low	N	E	No
<i>Asplenium verecundum</i> Modest spleenwort	Rockland hammocks, limestone outcrops, grottoes, sinkholes	No	Low	N	E	No
<i>Blechnum occidentale</i> Sinkhole fern	Moist woodlands, hammocks, rocky creek banks, woodlands with open shade	No	Low	N	E	No
<i>Centrosema arenicola</i> Sand butterfly pea	Sandhill, scrubby flatwoods, dry upland woods	Yes	Medium	N	E	No
<i>Cheilanthes microphylla</i> Southern lip fern	Crevices of limestone outcrops and terrestrial on shell mounds in partial to full sun	No	Low	N	E	No
<i>Glandularia maritima</i> Coastal vervain	Disturbed sandy areas, back dunes, dune swales, and coastal hammocks	No	Low	N	E	No
<i>Glandularia tampensis</i> Tampa vervain	Live oak-cabbage palm hammocks and pine-palmetto flatwoods	Yes	Medium	N	E	No
<i>Matelea floridana</i> Florida spiny-pod	Pinelands, temperate forests	No	Low	N	E	No

TABLE 2

Progress Energy Florida – Levy Nuclear Plant Project
Citrus Substation

Protected Plants and Animals Potentially Occurring at the Citrus Substation Site
Citrus County, Florida

Species	Habitat of Occurrence	Habitat Present on Site (Y/N)	Likelihood of Occurrence on Site	Status		Observed
				USFWS	FWC	
<i>Monotropis reynoldsiae</i> Pygmy pipes	Upland mixed hardwood forest, mesic and xeric hammock, sand pine and oak scrub	Yes	Medium	N	E	No
<i>Pecluma ptilodon</i> Swamp plume polypody	Rockland hammocks, strand swamps, wet woods	No	Low	N	E	No
<i>Pteroglossaspis ecristata</i> Giant orchid	Sandhill, scrub, pine flatwoods, pine rocklands	Yes	Medium	N	T	No
<i>Spiranthes polyantha</i> Green ladies'-tresses	Rock outcrops in mesic hammock, rockland hammock, maritime hammock	No	Low	N	E	No
<i>Stylisma abdita</i> Scrub stylisma	Pinelands, sandhills, scrub	Yes	Medium	N	E	No
<i>Thelypteris reptans</i> Creeping maiden fern	Limestone grottoes and sinkholes	No	Low	N	E	No
<i>Triphora craigheadii</i> Craighead's nodding-caps	Mesic hardwood hammocks	No	Low	N	E	No

Notes:

N = Not Listed

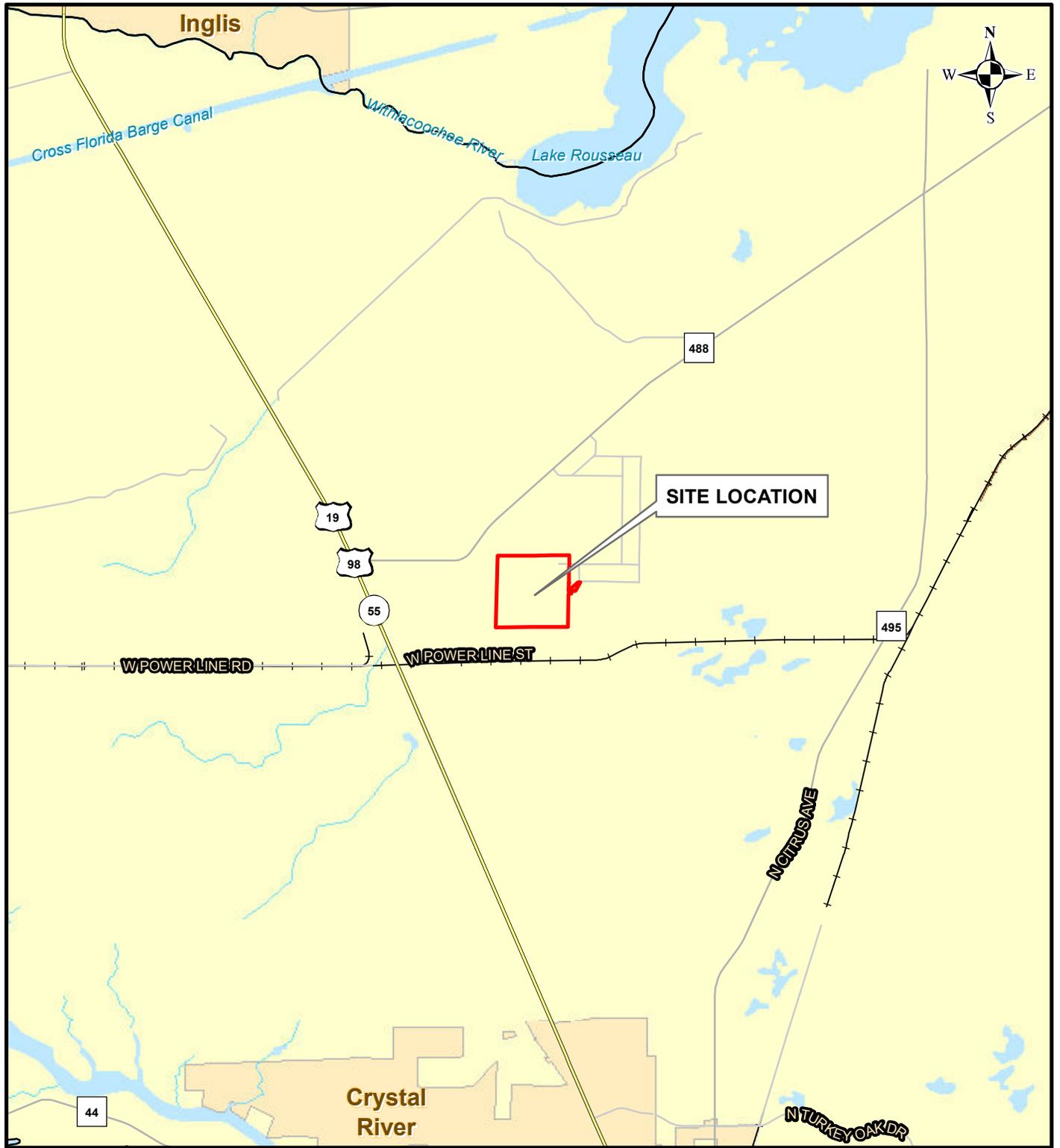
T = Threatened

E = Endangered

SSC = Species of Special Concern

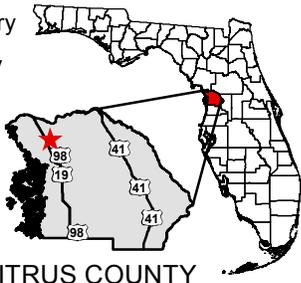
T(SA) = Threatened due to similarity in appearance to a federally listed species

FIGURES



LEGEND

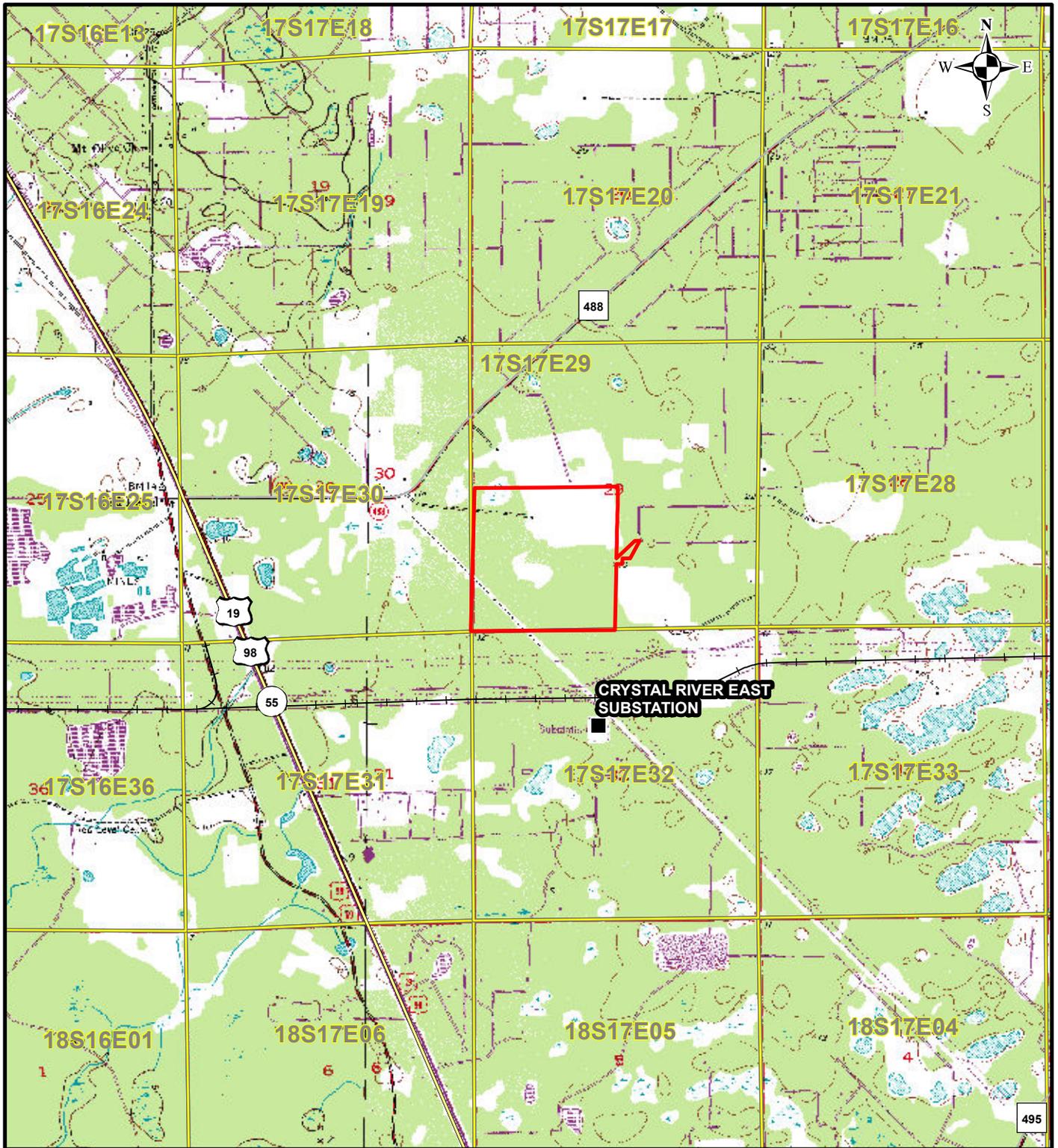
- US Road
- State Road
- County Road
- Local Road
- Railroad
- Property Boundary
- County Boundary



REFERENCE

Substations and Property Boundary: Progress Energy Florida & Golder Associates Inc., 2009; Roads: Florida Department of Transportation, 2010; Railroads: FDEP, 1992; County Boundaries: U.S. Census Bureau, 2000; BaseMap: StreetMap USA, 2007

PROGRESS ENERGY FLORIDA LEVY NUCLEAR PLANT		CITRUS SUBSTATION GENERAL LOCATION MAP	
	MXD File No. 103-89627H001	SCALE AS SHOWN	REV. 0
	DESIGN JG 03/11/2011	FIGURE 1	
	GIS JG 03/11/2011		
	CHECK SR 03/11/2011		
REVIEW KB 03/11/2011			



LEGEND

- Property Boundary
- Township-Range-Section



REFERENCE

Property Boundary & Substation: Progress Energy Florida and Golder Associates Inc., 2009;
 Roads: Florida Department of Transportation, 2010; Railroads: FDEP, 1992; USGS Topographic
 Map: U.S. Geological Survey (USGS), 1988 and 1990; Township-Range-Section: Florida Department
 Environmental Protection, 1994

PROGRESS ENERGY FLORIDA
 LEVY NUCLEAR PLANT

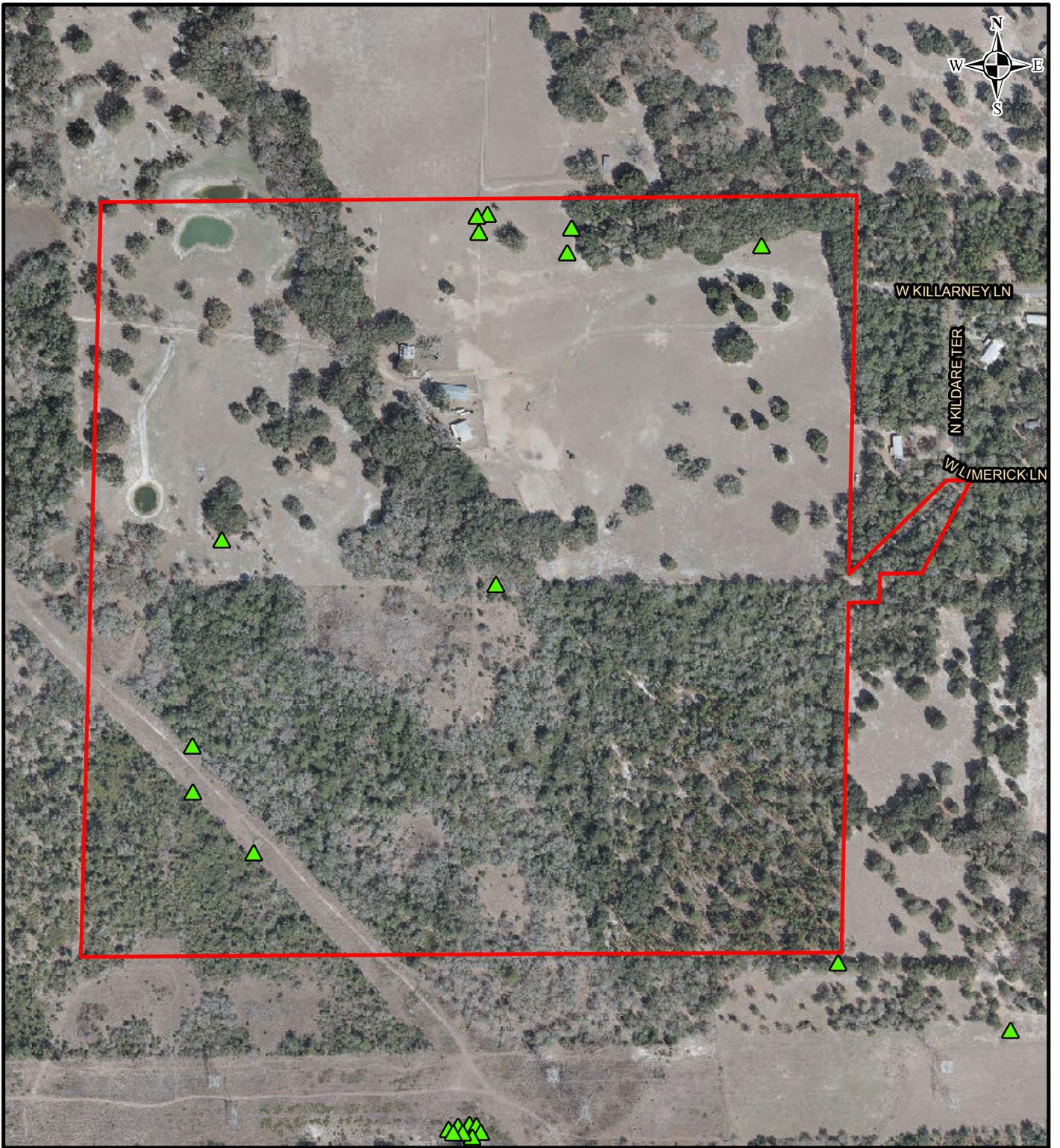
**CITRUS SUBSTATION
 USGS TOPOGRAPHIC MAP**



MXD File No. 103-89627\H002	SCALE AS SHOWN	REV. 0
DESIGN JG 03/11/2011	FIGURE 2	
GIS JG 03/11/2011		
CHECK SR 03/11/2011		
REVIEW KB 03/11/2011		

**FIGURE 3
CITRUS SUBSTATION HABITAT CLASSIFICATION TABLE**

LAND USE/LAND COVER CODE	DESCRIPTION
110	RESIDENTIAL, LOW DENSITY
211	IMPROVED PASTURES
212	UNIMPROVED PASTURES
320	SHRUB AND BRUSHLAND
330	MIXED RANGELAND
421	XERIC OAK
427	LIVE OAK
428	CABBAGE PALM
434	HARDWOOD - CONIFER MIXED
438	MIXED HARDWOODS
511	DITCHES
534	RESERVOIRS <10 ACRES
641	FRESHWATER MARSHES
643	WET PRAIRIES
814	ROADS AND HIGHWAYS



LEGEND

Property Boundary

GOLDER OBSERVED SPECIES

▲ Gopher Tortoise

REFERENCE

Substations and Property Boundary: Progress Energy Florida & Golder Associates Inc., 2009; Roads: Florida Department of Transportation, 2010; Listed Species Data: Florida Natural Areas Inventory, 2006 and Golder Observed, 2009; Wood Stork Colony Data: U.S. Fish & Wildlife Service, 2009; Aerials: Progress Energy, 2009

NOTE: No portion of the Citrus Substation lies within Wood Stork Core Foraging Areas.

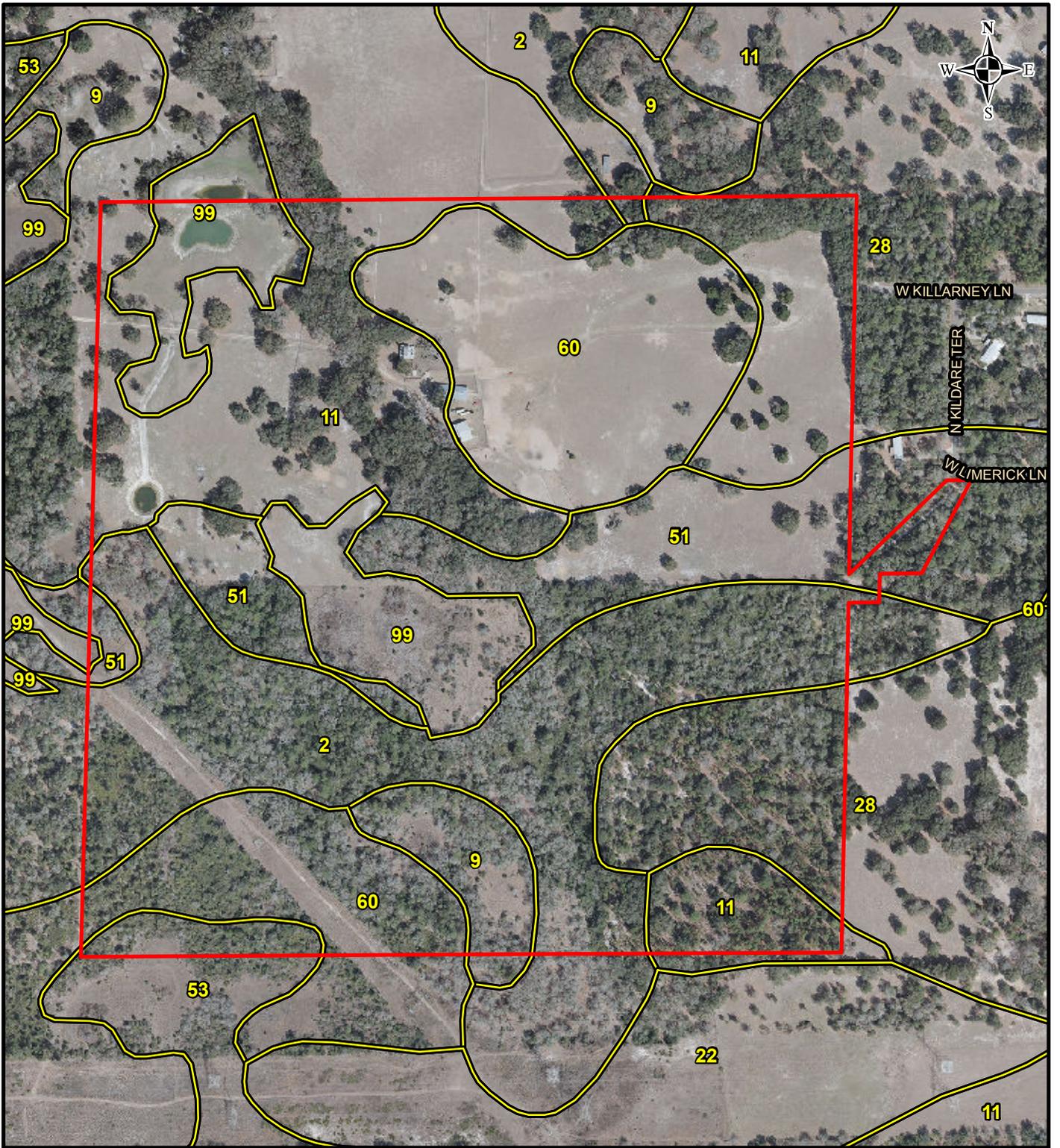
PROGRESS ENERGY FLORIDA
LEVY NUCLEAR PLANT

**CITRUS SUBSTATION
LISTED SPECIES MAP**



MXD File No. 103-89627H004	SCALE AS SHOWN	REV. 0
DESIGN JG 03/11/2011	FIGURE 4	
GIS JG 03/11/2011		
CHECK SR 03/11/2011		
REVIEW KB 03/11/2011		

F:\PROJECTS\2010\PROJ\103-89627\Levy Project - USACE Section 404 Permit Support\H - Listed Species\Citrus Substation\GIS\MXD\103-89627\H005 Soils.mxd



LEGEND

- Property Boundary
- Soil Boundary

NOTE:

See Figure 5 Soil Identification Table for Soil Definitions

REFERENCE

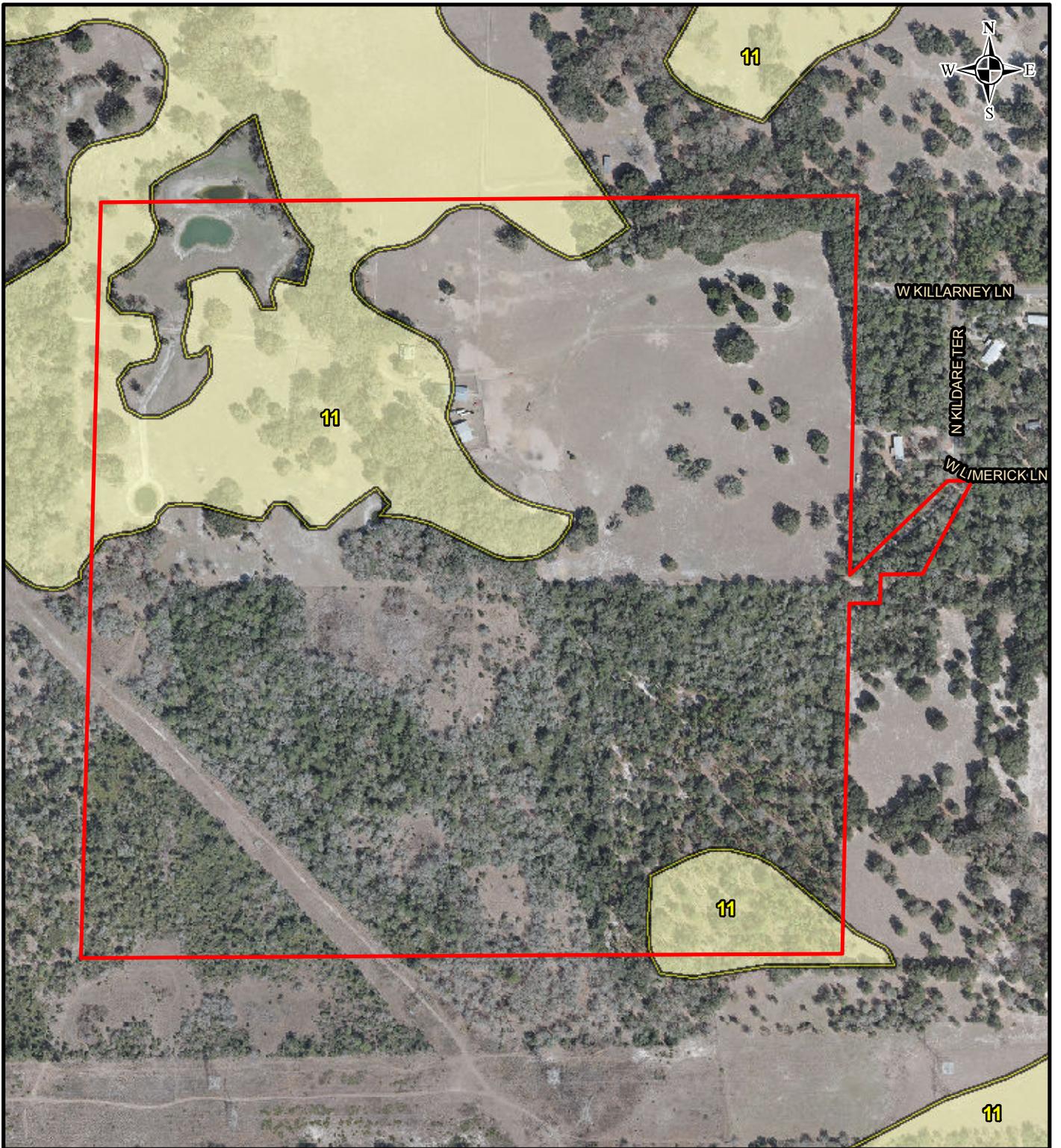
Property Boundary: Progress Energy Florida and Golder Associates Inc., 2009; Roads: Florida Department of Transportation, 2010; Soils: U.S. Department of Agriculture, Natural Resources Conservation Service, 2006; Aerials: Progress Energy Florida, 2009



<p>PROGRESS ENERGY FLORIDA LEVY NUCLEAR PLANT</p>			
<p>CITRUS SUBSTATION SOILS MAP</p>			
	MXD File No. 103-89627H005	SCALE AS SHOWN	REV. 0
	DESIGN JG 03/11/2011		
	GIS JG 03/11/2011		
	CHECK SR 03/11/2011		
	REVIEW KB 03/11/2011		
			<p>FIGURE 5</p>

FIGURE 5
CITRUS SUBSTATION SOIL IDENTIFICATION TABLE

SOIL ID	DESCRIPTION	COUNTY
2	Adamsville fine sand	Citrus
9	Pompano fine sand	Citrus
11	Tavares fine sand, 0 to 5 percent slopes	Citrus
22	Quartzipsaments, 0 to 5 percent slopes	Citrus
28	Redlevel fine sand	Citrus
51	Boca-Pineda, limestone substratum complex	Citrus
53	Boca fine sand	Citrus
60	Broward fine sand	Citrus
99	Water	Citrus



LEGEND

- Property Boundary
- Gopher Tortoise Acceptable Soil Type

NOTE:
See Figure 5 Soil Identification Table for Soil Definitions

REFERENCE
Property Boundary: Progress Energy Florida and Golder Associates Inc., 2009; Roads: Florida Department of Transportation, 2010; Soils: U.S. Department of Agriculture, Natural Resources Conservation Service, 2006; Aerials: Progress Energy Florida, 2009



<p>PROGRESS ENERGY FLORIDA LEVY NUCLEAR PLANT</p>			
<p>CITRUS SUBSTATION SOILS MAP</p>			
	MXD File No. 103-89627H006	SCALE AS SHOWN	REV. 0
	DESIGN JG 03/11/2011	<p>FIGURE 6</p>	
	GIS JG 03/11/2011		
	CHECK SR 03/11/2011		
	REVIEW KB 03/11/2011		

APPENDIX A
FLORIDA NATURAL AREAS INVENTORY ELEMENT OCCURRENCE REPORT

NOTE: THIS ATTACHMENT INCLUDES FLORIDA NATURAL AREAS INVENTORY (FNAI) ELEMENT OCCURRENCE MAPS AND DATA FOR THE CITRUS SUBSTATION, EXTRACTED FROM THE COMMON ROUTE FNAI ELEMENT OCCURRENCE REPORT.



1018 Thomasville Road
Suite 200-C
Tallahassee, FL 32303
850-224-8207
fax 850-681-9364
www.fnai.org

Stacy Rizzo
Golder Associates, Inc.
6026 NW 1st Place
Gainesville, FL 32607

December 1, 2009

Dear Ms. Rizzo,

Thank you for your request for information from the Florida Natural Areas Inventory (FNAI). We have compiled the following information for your project area.

Project: Common Corridor
Date Received: November 24, 2009
Location: Levy and Citrus Counties

Element Occurrences

A search of our maps and database indicates that currently we have several Element Occurrences mapped within the vicinity of the study area (see enclosed maps and element occurrence tables). Please be advised that a lack of element occurrences in the FNAI database is not a sufficient indication of the absence of rare or endangered species on a site.

The Element Occurrences data layer includes occurrences of rare species and natural communities. The map legend indicates that some element occurrences occur in the general vicinity of the label point. This may be due to lack of precision of the source data, or an element that occurs over an extended area (such as a wide ranging species or large natural community). For animals and plants, Element Occurrences generally refer to more than a casual sighting; they usually indicate a viable population of the species. Note that some element occurrences represent historically documented observations which may no longer be extant.

Likely and Potential Rare Species

In addition to documented occurrences, other rare species and natural communities may be identified on or near the site based on habitat models and species range models (see enclosed Biodiversity Matrix Reports). These species should be taken into consideration in field surveys, land management, and impact avoidance and mitigation.

FNAI habitat models indicate areas, which based on land cover type, offer suitable habitat for one or more rare species that is known to occur in the vicinity. Habitat models have been developed for approximately 300 of the rarest species tracked by the Inventory, including all federally listed species.

FNAI species range models indicate areas that are within the known or predicted range of a species, based on climate variables, soils, vegetation, and/or slope. Species range models have been developed for approximately 340 species, including all federally listed species.



Florida Resources
and Environmental
Analysis Center

Institute of Science
and Public Affairs

The Florida State University

Tracking Florida's Biodiversity

The FNAI Biodiversity Matrix Geodatabase compiles Documented, Likely, and Potential species and natural communities for each square mile Matrix Unit statewide.

Florida Scrub-jay Survey – U.S. Fish and Wildlife Service

This survey was conducted by staff and associates of the Archbold Biological Station from 1992 to 1996. An attempt was made to record all scrub-jay (*Aphelocoma coerulescens*) groups, although most federal lands were not officially surveyed. Each map point represents one or more groups.

This data layer indicates that there are potential scrub-jay populations on or very near your site. For additional information:

Fitzpatrick, J.W., B. Pranty, and B. Stith, 1994, Florida scrub jay statewide map, 1992-1993. U. S. Fish and Wildlife Service Report, Cooperative Agreement no. 14-16-004-91-950.

Managed Areas

Portions of the site appear to be located within the Marjorie Harris Carr Cross Florida Greenway State Recreation and Conservation Area, managed by the Florida Department of Environmental Protection, Division of Greenways and Trails.

The Managed Areas data layer shows public and privately managed conservation lands throughout the state. Federal, state, local, and privately managed conservation lands are included.

Land Acquisition Projects

This site appears to be located within the Etoniah/Cross Florida Greenway Florida Forever BOT Project, which is part of the State of Florida's Conservation and Recreation Lands land acquisition program. A description of this project is enclosed. For more information on this Florida Forever Project, contact the Florida Department of Environmental Protection, Division of State Lands.

Florida Forever Board of Trustees (BOT) projects are proposed and acquired through the Florida Department of Environmental Protection, Division of State Lands. The state has no regulatory authority over these lands until they are purchased.

The Inventory always recommends that professionals familiar with Florida's flora and fauna should conduct a site-specific survey to determine the current presence or absence of rare, threatened, or endangered species.

Please visit www.fnai.org/trackinglist.cfm for county or statewide element occurrence distributions and links to more element information.

The database maintained by the Florida Natural Areas Inventory is the single most comprehensive source of information available on the locations of rare species and other significant ecological resources. However, the data are not always based on comprehensive or site-specific field surveys. Therefore, this information should not be regarded as a final statement on the biological resources of the site being considered, nor should it be substituted for on-site surveys. Inventory data are designed for the purposes of conservation planning and scientific research, and are not intended for use as the primary criteria for regulatory decisions.

Information provided by this database may not be published without prior written notification to the Florida Natural Areas Inventory, and the Inventory must be credited as an information source in these publications. FNAI data may not be resold for profit.

Thank you for your use of FNAI services. If I can be of further assistance, please give me a call at (850) 224-8207.

Sincerely,

Alicia C. Newberry

Alicia C. Newberry
Data Services Coordinator

Encl



1018 Thomasville Road
Suite 200-C
Tallahassee, FL 32303
(850) 224-8207
(850) 681-9364 Fax
www.fnai.org

FLORIDA
Natural Areas
INVENTORY

Element Occurrences

- Animals
- Plants
- Communities
- Other
- Data Sensitive
- Point Indicates General Vicinity of Element
- U.S. Fish & Wildlife Service Scrub Jay Survey 1992-96

Conservation Lands

- Federal
- State
- Local
- Private
- State Aquatic Preserves

Land Acquisition Projects

- Florida Forever
- Board of Trustees Projects

- FNAI Rare Species Habitat
- FNAI Biodiversity Matrix Square Mile Units

- County Boundary
- Interstate
- Turnpike
- Major Highway
- Local Road
- Railroad [Inactive railroads shown in Gray]
- Water

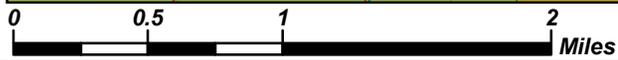
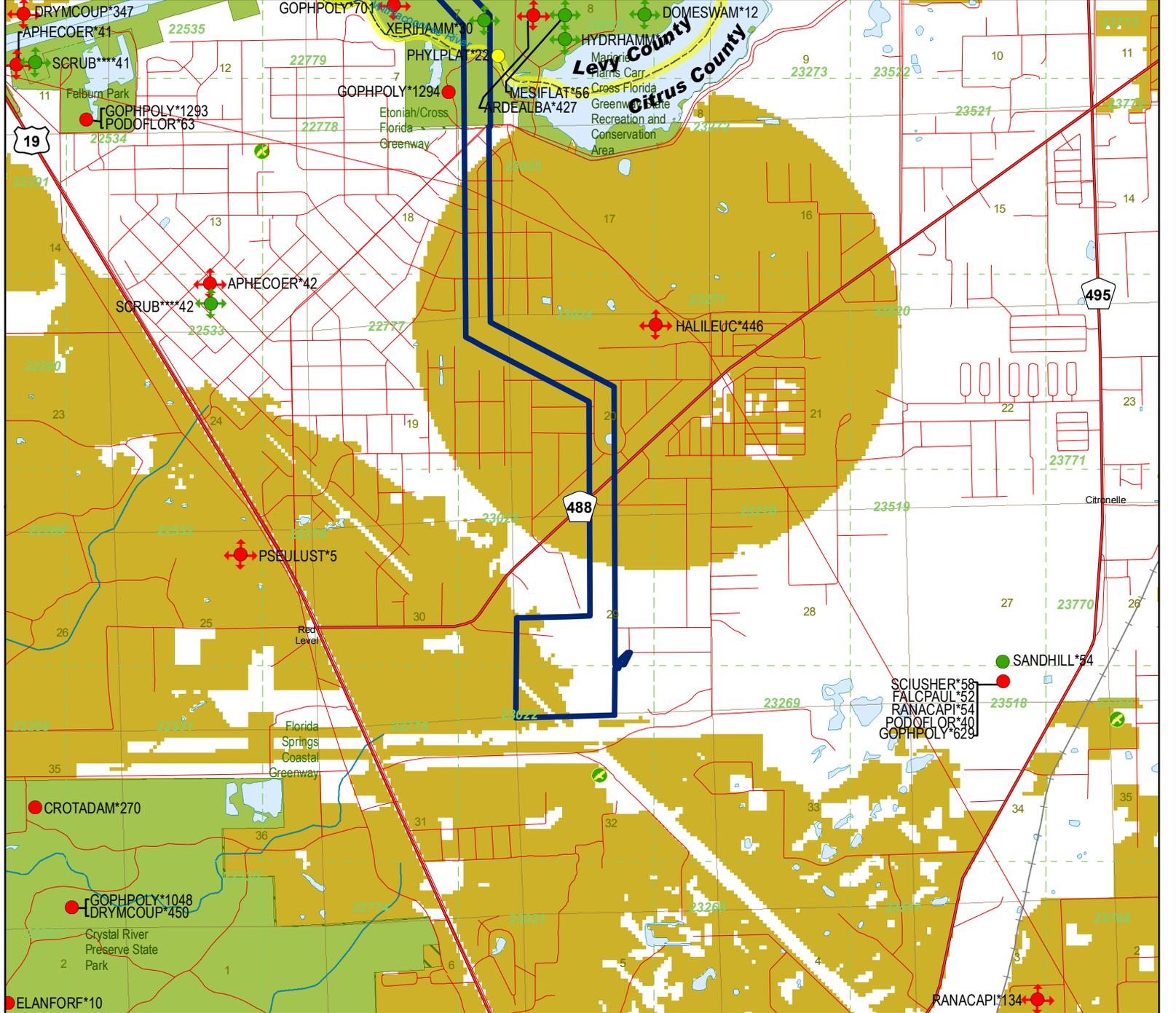


NOTE
Map should not be interpreted without accompanying documents.

Common Corridor (Map 2 of 2)

Site boundaries are approximate.

Citrus County



Map produced by ACN
Map Date: 1 DEC 2009



1018 Thomasville Road
Suite 200-C
Tallahassee, FL 32303
(850) 224-8207
(850) 681-9364 Fax
www.fnai.org

FLORIDA
Natural Areas
INVENTORY

Florida Natural Areas Inventory

ELEMENT OCCURRENCES DOCUMENTED ON OR NEAR Common Corridor (Map 2 of 2)



Map Label	Scientific Name	Common Name	Global State Federal State Observation				Date	Description	EO Comments
			Rank	Rank	Status	Listing			
DOMESWAM*12	Dome swamp		G4	S4	N	N	2004	SCATTERED OCCURRENCES UP TO 20 AC.; NO EVIDENCE OF LOGGING, TREES MAY BE DWARFED; WATER QUALITY APPARENTLY GOOD; POOLS ARE PEAT BOTTOMED.	2004: Update to last obs date was based on interpretation of aerial photography (previous value was 1991-11-12) (U05FNA02FLUS). OVERSTORY DOMINATED BY SMALL TAXODIUM ASCENDENS; WATER DEPTH UP TO 3 FEET.
MESIFLAT*56	Mesic flatwoods		G4	S4	N	N	2004	No general description given	2004: Update to last obs date was based on interpretation of aerial photography (previous value was 1991-11-12) (U05FNA02FLUS). APPROX. 50 YEAR OLD PINUS PALUSTRIS WITH RELATIVELY DENSE UNDERSTORY OF SERENOA REPENS, LYONIA LUCIDA, AND ILEX GLABRA.
APHECOER*42	Aphelocoma coerulescens	Florida Scrub-jay	G2	S2	LT	LT	1981-02-21	GRASSY PALMETTO SCRUB	1981-02-21: 11 SCRUB JAYS
RANACAPI*134	Rana capito	Gopher Frog	G3	S3	N	LS	1991-03-17	Upland Pine Forest; old field community	1991-03-17: D.J. STEVENSON, observed 1 adult female.
HYDRHAMM*17	Hydric hammock		G4	S4	N	N	2004	ISOLATED OCCURRENCE WITH LIMESTONE BOULDERS AT THE SURFACE; SOME DEEPER POOLS OF WATER.	2004: Update to last obs date was based on interpretation of aerial photography (previous value was 1991-11-12) (U05FNA02FLUS). DOMINATED BY SABAL PALMETTO AND ACER RUBRUM.
SCRUB****42	Scrub		G2	S2	N	N	2004	GRASSY PALMETTO SCRUB	2004: Update to last obs date was based on interpretation of aerial photography (previous value was 1981-02-21) (U05FNA02FLUS). OCCURRENCE AT SITE
SCRUB****41	Scrub		G2	S2	N	N	1981-02-21	PALMETTO SCRUB, SCATTERED PALMS	OCCURRENCE AT SITE
GOPHPOLY*629	Gopherus polyphemus	Gopher Tortoise	G3	S3	N	LT	1990-04	SANDHILL, LONGLEAF PINE-TURKEY OAK, WIREGRASS, ALSO SOME PASTURE.	NUMEROUS BURROWS. 300+/- INDIVIDUALS BASED ON BURROW SURVEYS TO FGFWFC STANDARDS, EST POPULATION DENSITY OF 1.3/AC. 42%, 25% AND 33% OF OBSERVED BURROWS WERE ACTIVE, INACTIVE AND OLD RESPECTIVELY.
FALCPAUL*52	Falco sparverius paulus	Southeastern American Kestrel	G5T4	S3	N	LT	1990-04	SANDHILL, LONGLEAF PINE-TURKEY OAK, WIREGRASS.	8 INDIVIDUALS AND SURVIVING FLEDGLINGS AND 2 CONFIRMED NESTS.



1018 Thomasville Road
Suite 200-C
Tallahassee, FL 32303
(850) 224-8207
(850) 681-9364 Fax
www.fnai.org

FLORIDA
Natural Areas
INVENTORY

Florida Natural Areas Inventory

ELEMENT OCCURRENCES DOCUMENTED ON OR NEAR Common Corridor (Map 2 of 2)



Map Label	Scientific Name	Common Name	Global State Federal State Observation				Date	Description	EO Comments
			Rank	Rank	Status	Listing			
SANDHILL*54	Sandhill		G3	S2	N	N	1990-04	SANDHILL, LONGLEAF PINE-TURKEY OAK, WIREGRASS.	No EO data given
PODOFLOR*40	Podomys floridanus	Florida Mouse	G3	S3	N	LS	1990-04	SANDHILL, LONGLEAF PINE-TURKEY OAK, WIREGRASS.	36 (ADULTS AND JUVENILE) INDIVIDUALS CAPTURED AND RELEASED, DURING 800 TRAP NIGHT SURVEY. MAJORITY OF TRAPS WERE SET IN VICINITY OF GOPHERUS BURROWS.
RANACAPI*54	Rana capito	Gopher Frog	G3	S3	N	LS	1990-04	SANDHILL, LONGLEAF PINE-TURKEY OAK, WIREGRASS.	6 INDIVIDUALS CAPTURED IN FUNNEL TRAPS SET AT ENTRANCE OF GOPHER TORTOISE BURROWS.
SCIUSHER*58	Sciurus niger shermani	Sherman's Fox Squirrel	G5T3	S3	N	LS	1990-04	SANDHILL, LONGLEAF PINE-TURKEY OAK, WIREGRASS, ALSO IN PASTURE-BAHIA GRASS.	6 INDIVIDUALS OBSERVED IN SANDHILL AND PASTURE.
DRYMCOUP*347	Drymarchon couperi	Eastern Indigo Snake	G3	S3	LT	LT	1973-10	No general description given	MUSEUM SPECIMEN: S. CHRISTMAN, OCT 1973, UF.
APHECOER*41	Aphelocoma coerulescens	Florida Scrub-jay	G2	S2	LT	LT	1981-02-21	PALMETTO SCRUB, SCATTERED PINES	1981-02-21: 2 SCRUB JAYS
ARDEALBA*427	Ardea alba	Great Egret	G5	S4	N	N	1987-05-26	Swamp	1987/05/26: D.E. Runde, GFC; Total = 15.
GOPHPOLY*1048	Gopherus polyphemus	Gopher Tortoise	G3	S3	N	LT	1997-04-08	Planted slash pine; includes some relic sandhill planted with slash pine and turkey oak (NW1/4 of section 2 T18SR16E).	1997-04-08: One individual sighted on dirt road in NW1/4 section 1 T18SR16E (S. Blitch et al.). 1995-1997: S. Blitch made several sightings of tortoises at three different locations within element occurrence boundaries (see attached map).
CROTADAM*270	Crotalus adamanteus	Eastern Diamondback Rattlesnake	G4	S3	N	N	1996	Planted pine.	1996: S. Blitch observed one individual once or twice near state buffer preserve's shop.
ELANFORF*10	Elanoides forficatus	Swallow-tailed Kite	G5	S2	N	N	1995-SPRING	No general description given	1995 Spring: One pair nested in planted slash pine (S. Blitch).
DRYMCOUP*450	Drymarchon couperi	Eastern Indigo Snake	G3	S3	LT	LT	1996-XX-XX	Planted slash pine and pine flatwoods (T17SR16E sec. 35); oak hammock and pasture (T18SR16E Sec. 1) (S. Blitch); mature slash pine plantation (G. Maidhoff).	1995-1996: Individuals observed at four different locations by S. Blitch (no specific dates). 1995-02-21: One snake observed by Ms. Yulee Commander basking in fire trail (U95MAI02).



1018 Thomasville Road
Suite 200-C
Tallahassee, FL 32303
(850) 224-8207
(850) 681-9364 Fax
www.fnai.org

FLORIDA
Natural Areas
INVENTORY

Florida Natural Areas Inventory

ELEMENT OCCURRENCES DOCUMENTED ON OR NEAR Common Corridor (Map 2 of 2)



Map Label	Scientific Name	Common Name	Global State Federal State Observation				Date	Description	EO Comments
			Rank	Rank	Status	Listing			
PODOFLOR*63	<i>Podomys floridanus</i>	Florida Mouse	G3	S3	N	LS	1993-01-30	Remnant sandhills, unburned for an extensive period of time. To north is a highly disturbed dolomite mine. To south is sparsely developed subdivision.	1993-01-30: 3 individuals (1 juvenile male, 1 adult male, and 1 adult female) caught in Sherman traps (U93MAI01).
GOPHPOLY*701	<i>Gopherus polyphemus</i>	Gopher Tortoise	G3	S3	N	LT	2007-09-05	1996-02-24: open grassy area within a slash pine flatwoods; past disturbance from canal construction and spoil deposition (U96MAI01FLUS). 1991-11-12: xeric hammock with <i>Quercus virginiana</i> , <i>Q. laurifolia</i> , <i>Pinus palustris</i> , and patchy	2007-09-05: NeSmith documented one active adult burrow (F08FNA02FLUS). 2004-01-21: A. Davis found eight burrows, only one of which was active (PNDDAV04FLUS, U04DAV01FLUS). 1996-02-24: Maidhof observed adult tortoise and three burro
XERIHAMM*30	Xeric hammock		G3	S3	N	N	2004	GRADES INTO MESIC FLATWOODS.	2004: Update to last obs date was based on interpretation of aerial photography (previous value was 1991-11-12) (U05FNA02FLUS). OVERSTORY WITH QUERCUS VIRGINIANA, Q. LAURIFOLIA, AND PINUS PALUSTRIS; GROUND COVER PATCHY WITH ARISTIDA STRICTA, DALEA SP., A
HALILEUC*446	<i>Haliaeetus leucocephalus</i>	Bald Eagle	G5	S3	PS	N	2003	No general description given	Nest status 1995-2003: Continuously active. (U03FWC01FLUS). Previous data (note different format) NEST: 1995: PRODUCED 1 YOUNG; 1994: GONE; 1993: PRODUCED 2 YOUNG; 1992-87: NO DATA; 1982-1986 ACTIVE; FLEDGED YOUNG 1982-1983, 1985.
PHYLPLAT*22	<i>Phyllanthus leibmannianus</i> ssp. <i>platylepis</i>	Pinewoods Dainties	G4T2	S2	N	LE	2004-05-19	2004-05-19: Both Source Points occurred within upland mixed forest with exposed limestone (U05HER01FLUS, U03HER01FLUS).	2004-05-19: Over 300 plants that were in bud and flower were observed scattered throughout an area covering 100 feet X 10 feet in the eastern-most Source Point (U05HER01FLUS). 2003-04-24: The western-most Source Point consisted of 10 scatte
PSEULUST*5	<i>Pseudobranchius striatus</i> <i>lustricolus</i>	Gulf Hammock Dwarf Siren	G5T1	S1	N	N	1951-03-15	1951: habitat not described by Neill (1951) (A51NEI02FLUS).	1951-03-15: W. T. Neill collected at least eight adults (paratypes, ERA-WTN 14218-14225) (A51NEI02FLUS, B92MOL01FLUS).



1018 Thomasville Road
Suite 200-C
Tallahassee, FL 32303
(850) 224-8207
(850) 681-9364 Fax
www.fnai.org

FLORIDA
Natural Areas
INVENTORY

Florida Natural Areas Inventory

ELEMENT OCCURRENCES DOCUMENTED ON OR NEAR Common Corridor (Map 2 of 2)



Map Label	Scientific Name	Common Name	Global State Federal State Observation				Date	Description	EO Comments
			Rank	Rank	Status	Listing			
GOPHPOLY*1293	Gopherus polyphemus	Gopher Tortoise	G3	S3	N	LT	2002-05-30	2002-05-30: ruderal site south of canal. Disturbances include land clearing, and excavation (U02HER01FLUS, PNDHER03FLUS, PNDSCH03FLUS).	2002-05-30: 2 active burrows were documented (U02HER01FLUS, PNDHER03FLUS, PNDSCH03FLUS).
GOPHPOLY*1294	Gopherus polyphemus	Gopher Tortoise	G3	S3	N	LT	2001-12-20	2001-12-20: ruderal site (limerock mine) (U02HER01FLUS, PNDHER03FLUS, PNDSCH03FLUS).	2001-12-20: one active burrow documented (U02HER01FLUS, PNDHER03FLUS, PNDSCH03FLUS).



1018 Thomasville Road
Suite 200-C
Tallahassee, FL 32303
(850) 224-8207
(850) 681-9364 Fax

FLORIDA
Natural Areas
INVENTORY

Florida Natural Areas Inventory

Biodiversity Matrix Report Map 2 of 2



Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Listing
Matrix Unit ID: 23022					
Likely					
<i>Aphelocoma coerulescens</i>	Florida Scrub-jay	G2	S2	LT	LT
<i>Drymarchon couperi</i>	Eastern Indigo Snake	G3	S3	LT	LT
<i>Heterodon simus</i>	Southern Hognose Snake	G2	S2	N	N
Mesic flatwoods		G4	S4	N	N
Potential					
<i>Agrimonia incisa</i>	Incised Groove-bur	G3	S2	N	LE
<i>Aimophila aestivalis</i>	Bachman's Sparrow	G3	S3	N	N
<i>Asplenium heteroresiliens</i>	Wagner's Spleenwort	GNA	S1	N	N
<i>Corynorhinus rafinesquii</i>	Rafinesque's Big-eared Bat	G3G4	S2	N	N
<i>Forestiera godfreyi</i>	Godfrey's Swampprivet	G2	S2	N	LE
<i>Gopherus polyphemus</i>	Gopher Tortoise	G3	S3	N	LT
<i>Justicia cooleyi</i>	Cooley's Water-willow	G2	S2	LE	LE
<i>Leitneria floridana</i>	Corkwood	G3	S3	N	LT
<i>Matelea floridana</i>	Florida Spiny-pod	G2	S2	N	LE
<i>Mustela frenata peninsulæ</i>	Florida Long-tailed Weasel	G5T3	S3	N	N
<i>Myotis austroriparius</i>	Southeastern Bat	G3G4	S3	N	N
<i>Notophthalmus perstriatus</i>	Striped Newt	G2G3	S2S3	N	N
<i>Phyllanthus leibmannianus ssp. platylepis</i>	Pinewood Dainties	G4T2	S2	N	LE
<i>Podomys floridanus</i>	Florida Mouse	G3	S3	N	LS
<i>Sciurus niger shermani</i>	Sherman's Fox Squirrel	G5T3	S3	N	LS
<i>Spigelia loganioides</i>	Pinkroot	G2Q	S2	N	LE
<i>Stilosoma extenuatum</i>	Short-tailed Snake	G3	S3	N	LT
Matrix Unit ID: 23023					
Likely					
<i>Drymarchon couperi</i>	Eastern Indigo Snake	G3	S3	LT	LT
Mesic flatwoods		G4	S4	N	N
Potential					
<i>Agrimonia incisa</i>	Incised Groove-bur	G3	S2	N	LE
<i>Aimophila aestivalis</i>	Bachman's Sparrow	G3	S3	N	N
<i>Asplenium heteroresiliens</i>	Wagner's Spleenwort	GNA	S1	N	N
<i>Athene cunicularia floridana</i>	Florida Burrowing Owl	G4T3	S3	N	LS
<i>Forestiera godfreyi</i>	Godfrey's Swampprivet	G2	S2	N	LE
<i>Gopherus polyphemus</i>	Gopher Tortoise	G3	S3	N	LT
<i>Heterodon simus</i>	Southern Hognose Snake	G2	S2	N	N
<i>Justicia cooleyi</i>	Cooley's Water-willow	G2	S2	LE	LE
<i>Leitneria floridana</i>	Corkwood	G3	S3	N	LT
<i>Matelea floridana</i>	Florida Spiny-pod	G2	S2	N	LE
<i>Mustela frenata peninsulæ</i>	Florida Long-tailed Weasel	G5T3	S3	N	N
<i>Myotis austroriparius</i>	Southeastern Bat	G3G4	S3	N	N
<i>Notophthalmus perstriatus</i>	Striped Newt	G2G3	S2S3	N	N
<i>Phyllanthus leibmannianus ssp. platylepis</i>	Pinewood Dainties	G4T2	S2	N	LE
<i>Pituophis melanoleucus mugitus</i>	Florida Pine Snake	G4T3	S3	N	LS
<i>Podomys floridanus</i>	Florida Mouse	G3	S3	N	LS

Definitions: Documented - Rare species and natural communities documented on or near this site.
 Documented-Historic - Rare species and natural communities documented, but not observed/reported within the last twenty years.
 Likely - Rare species and natural communities likely to occur on this site based on suitable habitat and/or known occurrences in the vicinity.
 Potential - This site lies within the known or predicted range of the species listed.



1018 Thomasville Road
Suite 200-C
Tallahassee, FL 32303
(850) 224-8207
(850) 681-9364 Fax

FLORIDA
Natural Areas
INVENTORY

Florida Natural Areas Inventory

Biodiversity Matrix Report Map 2 of 2



Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Listing
<i>Rana capito</i>	Gopher Frog	G3	S3	N	LS
<i>Sciurus niger shermani</i>	Sherman's Fox Squirrel	G5T3	S3	N	LS
<i>Spigelia loganioides</i>	Pinkroot	G2Q	S2	N	LE
<i>Stilosoma extenuatum</i>	Short-tailed Snake	G3	S3	N	LT

Matrix Unit ID: 23024

Likely

<i>Haliaeetus leucocephalus</i>	Bald Eagle	G5	S3	N	N
Mesic flatwoods		G4	S4	N	N
Sandhill upland lake		G3	S2	N	N

Potential

<i>Agrimonia incisa</i>	Incised Groove-bur	G3	S2	N	LE
<i>Aimophila aestivalis</i>	Bachman's Sparrow	G3	S3	N	N
<i>Asplenium heteroresiliens</i>	Wagner's Spleenwort	GNA	S1	N	N
<i>Athene cunicularia floridana</i>	Florida Burrowing Owl	G4T3	S3	N	LS
<i>Drymarchon couperi</i>	Eastern Indigo Snake	G3	S3	LT	LT
<i>Forestiera godfreyi</i>	Godfrey's Swampprivet	G2	S2	N	LE
<i>Gopherus polyphemus</i>	Gopher Tortoise	G3	S3	N	LT
<i>Heterodon simus</i>	Southern Hognose Snake	G2	S2	N	N
<i>Leitneria floridana</i>	Corkwood	G3	S3	N	LT
<i>Matelea floridana</i>	Florida Spiny-pod	G2	S2	N	LE
<i>Mustela frenata peninsulæ</i>	Florida Long-tailed Weasel	G5T3	S3	N	N
<i>Myotis austroriparius</i>	Southeastern Bat	G3G4	S3	N	N
<i>Notophthalmus perstriatus</i>	Striped Newt	G2G3	S2S3	N	N
<i>Phyllanthus leibmannianus ssp. platylepis</i>	Pinewood Dainties	G4T2	S2	N	LE
<i>Pituophis melanoleucus mugitus</i>	Florida Pine Snake	G4T3	S3	N	LS
<i>Podomys floridanus</i>	Florida Mouse	G3	S3	N	LS
<i>Rana capito</i>	Gopher Frog	G3	S3	N	LS
<i>Sciurus niger shermani</i>	Sherman's Fox Squirrel	G5T3	S3	N	LS
<i>Spigelia loganioides</i>	Pinkroot	G2Q	S2	N	LE
<i>Stilosoma extenuatum</i>	Short-tailed Snake	G3	S3	N	LT

Matrix Unit ID: 23025

Likely

Hydric hammock		G4	S4	N	N
Mesic flatwoods		G4	S4	N	N
Sandhill upland lake		G3	S2	N	N

Potential

<i>Acipenser oxyrinchus desotoi</i>	Gulf Sturgeon	G3T2	S2	LT	LS
<i>Agrimonia incisa</i>	Incised Groove-bur	G3	S2	N	LE
<i>Aimophila aestivalis</i>	Bachman's Sparrow	G3	S3	N	N
<i>Ardea alba</i>	Great Egret	G5	S4	N	N
<i>Asplenium heteroresiliens</i>	Wagner's Spleenwort	GNA	S1	N	N
<i>Athene cunicularia floridana</i>	Florida Burrowing Owl	G4T3	S3	N	LS
<i>Corynorhinus rafinesquii</i>	Rafinesque's Big-eared Bat	G3G4	S2	N	N
<i>Drymarchon couperi</i>	Eastern Indigo Snake	G3	S3	LT	LT

Definitions: Documented - Rare species and natural communities documented on or near this site.
 Documented-Historic - Rare species and natural communities documented, but not observed/reported within the last twenty years.
 Likely - Rare species and natural communities likely to occur on this site based on suitable habitat and/or known occurrences in the vicinity.
 Potential - This site lies within the known or predicted range of the species listed.



1018 Thomasville Road
Suite 200-C
Tallahassee, FL 32303
(850) 224-8207
(850) 681-9364 Fax

FLORIDA
Natural Areas
INVENTORY

Florida Natural Areas Inventory

Biodiversity Matrix Report Map 2 of 2



Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Listing
<i>Forestiera godfreyi</i>	Godfrey's Swampprivet	G2	S2	N	LE
<i>Gopherus polyphemus</i>	Gopher Tortoise	G3	S3	N	LT
<i>Heterodon simus</i>	Southern Hognose Snake	G2	S2	N	N
<i>Leitneria floridana</i>	Corkwood	G3	S3	N	LT
<i>Litsea aestivalis</i>	Pondspice	G3	S2	N	LE
<i>Matelea floridana</i>	Florida Spiny-pod	G2	S2	N	LE
<i>Mustela frenata peninsulae</i>	Florida Long-tailed Weasel	G5T3	S3	N	N
<i>Myotis austroriparius</i>	Southeastern Bat	G3G4	S3	N	N
<i>Notophthalmus perstriatus</i>	Striped Newt	G2G3	S2S3	N	N
<i>Phyllanthus leibmannianus ssp. platylepis</i>	Pinewood Dainties	G4T2	S2	N	LE
<i>Pituophis melanoleucus mugitus</i>	Florida Pine Snake	G4T3	S3	N	LS
<i>Podomys floridanus</i>	Florida Mouse	G3	S3	N	LS
<i>Pseudemys concinna suwanniensis</i>	Suwannee Cooter	G5T3	S3	N	LS
<i>Pteroglossaspis ecristata</i>	Giant Orchid	G2G3	S2	N	LT
<i>Rana capito</i>	Gopher Frog	G3	S3	N	LS
<i>Rhexia parviflora</i>	Small-flowered Meadowbeauty	G2	S2	N	LE
<i>Sciurus niger shermani</i>	Sherman's Fox Squirrel	G5T3	S3	N	LS
<i>Spigelia loganioides</i>	Pinkroot	G2Q	S2	N	LE
<i>Stilosoma extenuatum</i>	Short-tailed Snake	G3	S3	N	LT

Definitions: Documented - Rare species and natural communities documented on or near this site.
 Documented-Historic - Rare species and natural communities documented, but not observed/reported within the last twenty years.
 Likely - Rare species and natural communities likely to occur on this site based on suitable habitat and/or known occurrences in the vicinity.
 Potential - This site lies within the known or predicted range of the species listed.

GLOBAL AND STATE RANKS

Florida Natural Areas Inventory (FNAI) defines an **element** as any rare or exemplary component of the natural environment, such as a species, natural community, bird rookery, spring, sinkhole, cave, or other ecological feature. FNAI assigns two ranks to each element found in Florida: the **global rank**, which is based on an element's worldwide status, and the **state rank**, which is based on the status of the element within Florida. Element ranks are based on many factors, including estimated number of occurrences, estimated abundance (for species and populations) or area (for natural communities), estimated number of adequately protected occurrences, range, threats, and ecological fragility.

GLOBAL RANK DEFINITIONS

- G1** Critically imperiled globally because of extreme rarity (5 or fewer occurrences or less than 1000 individuals) or because of extreme vulnerability to extinction due to some natural or man-made factor.
- G2** Imperiled globally because of rarity (6 to 20 occurrences or less than 3000 individuals) or because of vulnerability to extinction due to some natural or man-made factor.
- G3** Either very rare and local throughout its range (21-100 occurrences or less than 10,000 individuals) or found locally in a restricted range or vulnerable to extinction from other factors.
- G4** Apparently secure globally (may be rare in parts of range).
- G5** Demonstrably secure globally.
- G#?** Tentative rank (e.g., G2?)
- G#G#** Range of rank; insufficient data to assign specific global rank (e.g., G2G3)
- G#T#** Rank of a taxonomic subgroup such as a subspecies or variety; the G portion of the rank refers to the entire species and the T portion refers to the specific subgroup; numbers have same definition as above (e.g., G3T1)
- G#Q** Rank of questionable species - ranked as species but questionable whether it is species or subspecies; numbers have same definition as above (e.g., G2Q)
- G#T#Q** Same as above, but validity as subspecies or variety is questioned.
- GH** Of historical occurrence throughout its range, may be rediscovered (e.g., ivory-billed woodpecker)
- GNA** Ranking is not applicable because element is not a suitable target for conservation (e.g. as for hybrid species)
- GNR** Not yet ranked (temporary)
- GNRTNR** Neither the full species nor the taxonomic subgroup has yet been ranked (temporary)
- GX** Believed to be extinct throughout range
- GXC** Extirpated from the wild but still known from captivity/cultivation
- GU** Unrankable. Due to lack of information, no rank or range can be assigned (e.g., GUT2).

STATE RANK DEFINITIONS

Definition parallels global element rank: substitute "S" for "G" in above global ranks, and "in Florida" for "globally" in above global rank definitions.

**FEDERAL AND STATE LEGAL STATUSES (U.S. Fish and Wildlife Service – USFWS)
PROVIDED BY FNAI FOR INFORMATION ONLY.**

For official definitions and lists of protected species, consult the relevant state or federal agency.

FEDERAL LEGAL STATUS

Definitions derived from U.S. Endangered Species Act of 1973, Sec. 3. Note that the federal status given by FNAI refers only to Florida populations and that federal status may differ elsewhere.

- LE** Listed as Endangered Species in the List of Endangered and Threatened Wildlife and Plants under the provisions of the Endangered Species Act. Defined as any species which is in danger of extinction throughout all or a significant portion of its range.
- LE,XN** A non essential experimental population of a species otherwise Listed as an Endangered Species in the List of Endangered and Threatened Wildlife and Plants. LE,XN for *Grus americana* (Whooping crane), Federally listed as XN (Non essential experimental population) refers to the Florida experimental population only. Federal listing elsewhere for *Grus americana* is LE.
- PE** Proposed for addition to the List of Endangered and Threatened Wildlife and Plants as Endangered Species.
- LT** Listed as Threatened Species, defined as any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.
- LT,PDL** Species currently listed Threatened but has been proposed for delisting.
- PT** Proposed for listing as Threatened Species.
- C** Candidate Species for addition to the list of Endangered and Threatened Wildlife and Plants, Category 1. Federal listing agencies have sufficient information on biological vulnerability and threats to support proposing to list the species as Endangered or Threatened.
- SAT** Threatened due to similarity of appearance to a threatened species.
- SC** Species of Concern, species is not currently listed but is of management concern to USFWS.
- N** Not currently listed, nor currently being considered for addition to the List of Endangered and Threatened Wildlife and Plants.

**FLORIDA LEGAL STATUSES (Florida Fish and Wildlife Conservation Commission – FFWCC/
Florida Department of Agriculture and Consumer Services – FDACS)**

Animals: Definitions derived from “Florida’s Endangered Species and Species of Special Concern, Official Lists” published by Florida Fish and Wildlife Conservation Commission - FFWCC, 1 August 1997, and subsequent updates.

- LE** Listed as Endangered Species by the FFWCC. Defined as a species, subspecies, or isolated population which is so rare or depleted in number or so restricted in range of habitat due to any man-made or natural factors that it is in immediate danger of extinction or extirpation from the state, or which may attain such a status within the immediate future.
- LT** Listed as Threatened Species by the FFWCC. Defined as a species, subspecies, or isolated population which is acutely vulnerable to environmental alteration, declining in number at a rapid rate, or whose range or habitat is decreasing in area at a rapid rate and as a consequence is destined or very likely to become an endangered species within the foreseeable future.
- LT*** Indicates that a species has LT status only in selected portions of its range in Florida. LT* for *Ursus americanus floridanus* (Florida black bear) indicates that LT status does not apply in Baker and Columbia counties and in the Apalachicola National Forest. LT* for *Neovison vison* pop. 1 (Southern mink, South Florida population) state listed as Threatened refers to the Everglades population only (Note: species formerly listed as *Mustela vison* mink pop. 1. Also, priorly listed as *Mustela evergladensis*).
- LS** Listed as Species of Special Concern by the FFWCC, defined as a population which warrants special protection, recognition, or consideration because it has an inherent significant vulnerability to habitat modification,

environmental alteration, human disturbance, or substantial human exploitation which, in the foreseeable future, may result in its becoming a threatened species.

LS* Indicates that a species has LS status only in selected portions of its range in Florida. LS* for *Pandion haliaetus* (Osprey) state listed as LS (Species of Special Concern) in Monroe County only.

PE Proposed for listing as Endangered.

PT Proposed for listing as Threatened.

PS Proposed for listing as a Species of Special Concern.

N Not currently listed, nor currently being considered for listing.

Plants: Definitions derived from Sections 581.011 and 581.185(2), Florida Statutes, and the Preservation of Native Flora of Florida Act, 5B-40.001. FNAI does not track all state-regulated plant species; for a complete list of state-regulated plant species, call Florida Division of Plant Industry, 352-372-3505 or please visit: <http://DOACS.State.FL.US/PI/Images/Rule05b.pdf>

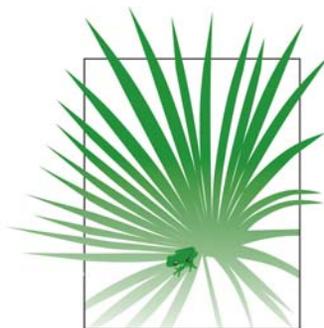
LE Listed as Endangered Plants in the Preservation of Native Flora of Florida Act. Defined as species of plants native to the state that are in imminent danger of extinction within the state, the survival of which is unlikely if the causes of a decline in the number of plants continue, and includes all species determined to be endangered or threatened pursuant to the Federal Endangered Species Act of 1973, as amended.

PE Proposed by the FDACS for listing as Endangered Plants.

LT Listed as Threatened Plants in the Preservation of Native Flora of Florida Act. Defined as species native to the state that are in rapid decline in the number of plants within the state, but which have not so decreased in such number as to cause them to be endangered. LT* indicates that a species has LT status only in selected portions of its range in Florida.

PT Proposed by the FDACS for listing as Threatened Plants.

N Not currently listed, nor currently being considered for listing.



**1018 Thomasville Road
Suite 200-C
Tallahassee, FL 32303
(850) 224-8207
(850) 681-9364 Fax
www.fnai.org**

FLORIDA
Natural Areas
INVENTORY

Etoniah/Cross Florida Greenway Group A: Full Fee

Clay, Putnam, Marion, Levy and Citrus Counties Group A: Less-Than-Fee

Purpose for State Acquisition

Though partially logged and planted in pine, the large expanse of flatwoods, sandhills, and scrub in central Putnam County, extending to the Cross-Florida Greenway along the Ocklawaha River, is important for the survival of many kinds of wildlife and plants. The Greenway itself is a unique strip of land for recreation and conservation that makes a cross-section of the peninsula from the Withlacoochee River to the St. Johns. The Etoniah/Cross Florida Greenway project will conserve the Putnam County land as well as fill in gaps in the Greenway; ensure that wildlife such as Florida black bear and scrub jays and plants such as the Etoniah rosemary will have areas in which to live; and provide recreation for the public ranging from long-distance hiking trails to fishing, camping, and hunting. This project may also help complete the Florida National Scenic Trail, a statewide non-motorized trail that crosses a number of Florida Forever project sites.

Manager

Division of Forestry (DOF), Florida Department of Agriculture and Consumer Services (Etoniah Creek tract) and Office of Greenways and Trails (OGT), Florida Department Environmental Protection (remaining tracts). DOF will monitor compliance with the terms of any less-than-fee purchase agreement.

General Description

The project consists of a large tract extending north from the Cross Florida Greenway to Clay County, and four smaller tracts designed to fill in gaps in state ownership along the Cross Florida Greenway. The original Etoniah/Cross Florida Greenway project is important for the survival of black bear in northeast Florida, includes many acres of pine plantation and cut-over flatwoods, but also high-quality sandhill, a unique white-cedar swamp along Deep Creek, and patches of sand pine scrub near Etoniah Creek that harbor at least a dozen rare species including fox squirrel, gopher tortoise, indigo and pine snakes, rare crayfish, and seven rare plants including the only known site for federally listed Etoniah rosemary. The smaller tracts include high-quality floodplain swamps along the Ocklawaha River; mixed forest land near U.S. 441 south of Ocala; and Inglis Island, disturbed pinelands between the old Cross Florida Barge Canal and the Withlacoochee River. Eight archaeological sites are known from the project. The greatest threat to the project area is intensive logging, but the uplands on the large tract are suitable for residential development. The smaller sites would lose their value as connectors if developed for residences.

Public Use

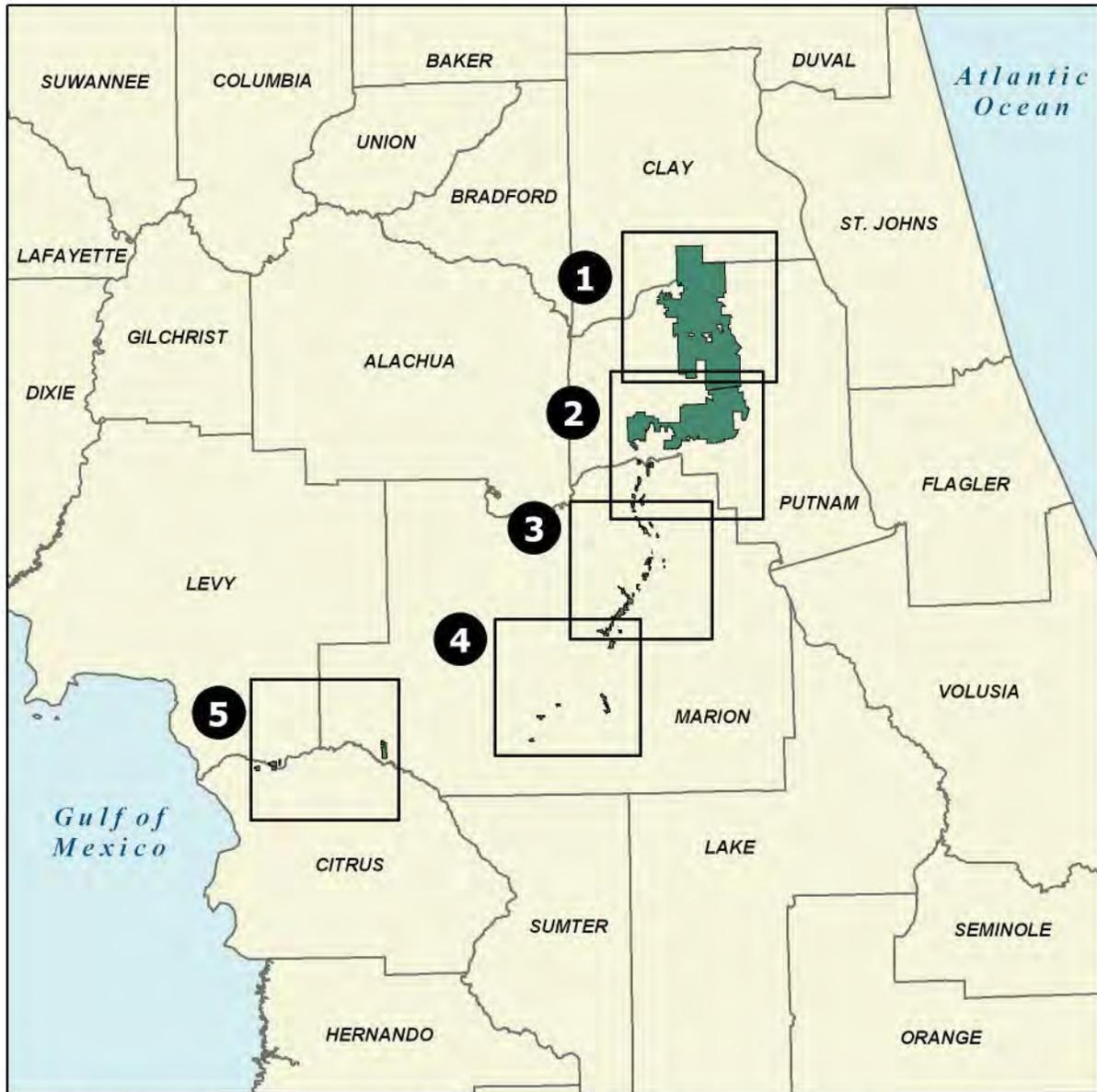
The Cross Florida Greenway connectors will form part of a conservation and recreation area; the majority of

Etoniah/Cross Florida Greenway	
FNAI Elements - July 2009	
<i>Etonia Rosemary</i>	G1/S1
Florida Scrub-jay	G2/S2
Florida Black Bear	G5T2/S2
Eastern Indigo Snake	G3/S3
Gopher Tortoise	G3/S3
Florida Mouse	G3/S3
Swallow-tailed Kite	G5/S2
<i>Pinkroot</i>	G2Q/S2
<i>Florida Willow</i>	G2/S2
<i>Variable-leaved Indian-plantain</i>	G2/S2
<i>Pinewood Dainties</i>	G4T2/S2
Black Creek Crayfish	G2/S2
31 rare species are associated with the project	

Placed on list	1995*
Project Area (Not GIS Acreage)	89,907
Acres Acquired	22,143**
at a Cost of	\$20,256,131**
Acres Remaining	67,764
with Estimated (Tax Assessed) Value of \$174,247,293	

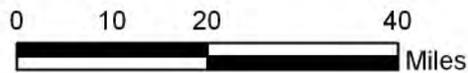
* Etoniah Creek, Cross Florida Greenways and Cross Florida Greenways Phase II were combined in 1995 to create Etoniah/Cross Florida Greenway. A Less-Than-Fee parcel of approximately 18,406 acres was added to the project in 1997.

** Includes a donation of 43 acres and acreage acquired and funds spent by the SJRWMD on Plum Crk/Rick Co.



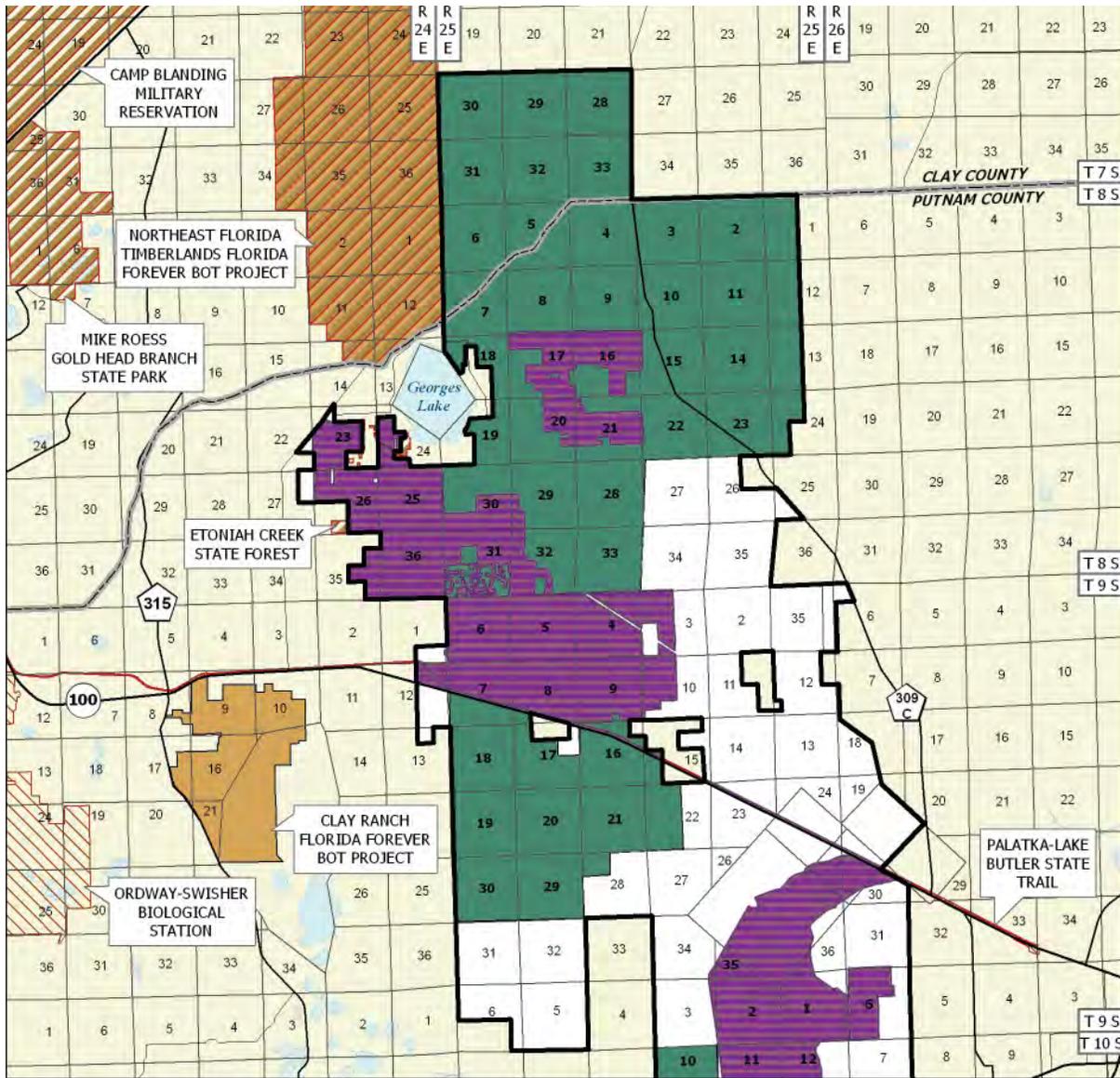
ETONIAH/CROSS FLORIDA GREENWAY: OVERVIEW

CLAY, PUTNAM, MARION, LEVY, AND CITRUS COUNTIES



APRIL 2007

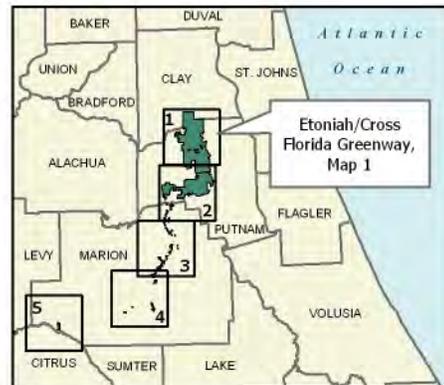
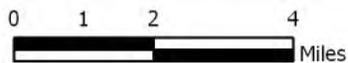
Etoniah/Cross Florida Greenway - Group A/Full Fee Group A/Less-Than-Fee



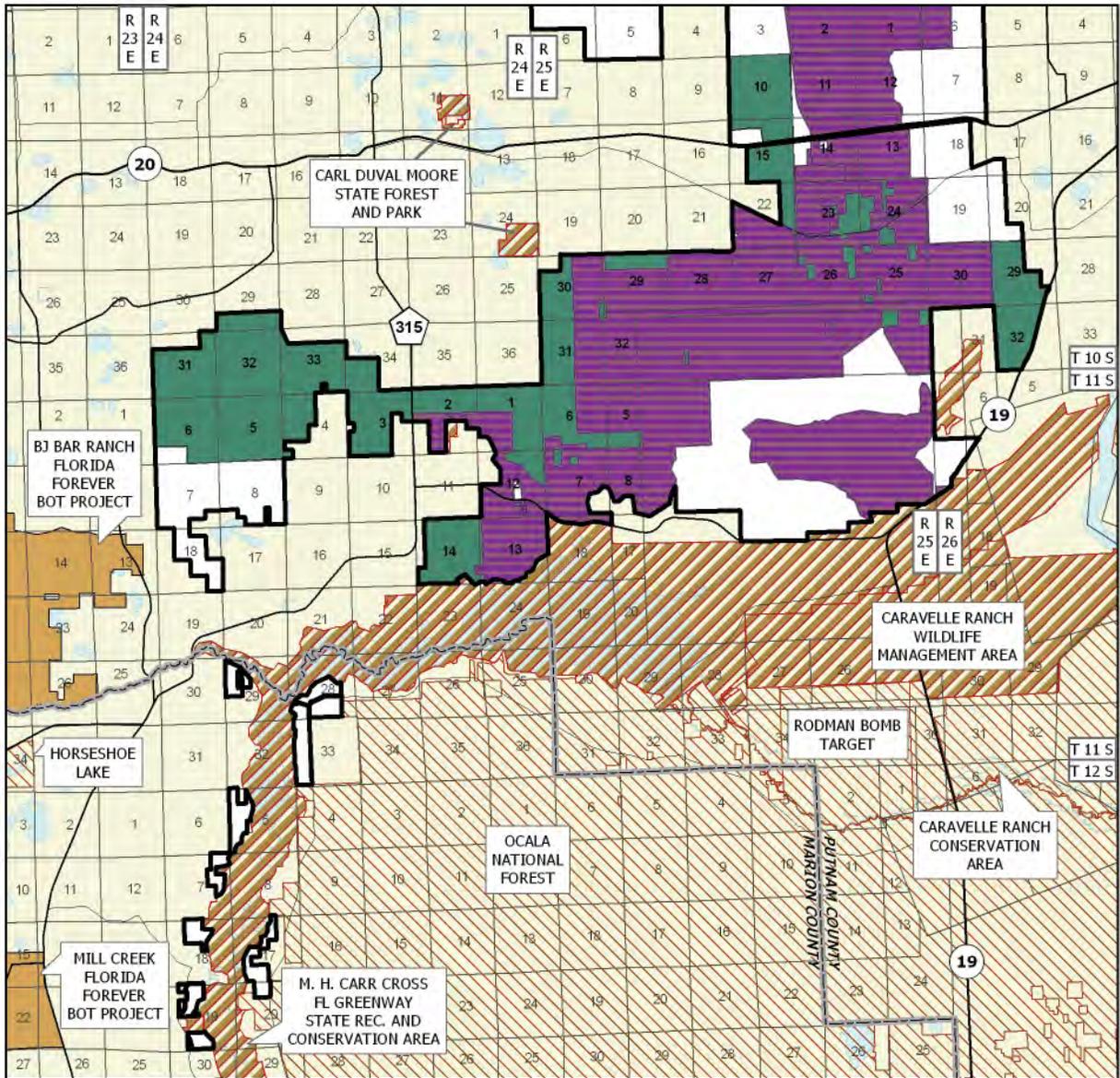
ETONIAH/CROSS FLORIDA GREENWAY: MAP 1 OF 5

CLAY AND PUTNAM COUNTIES

-  Florida Forever BOT Project Boundary
-  Acquired
-  Essential Parcel(s) Remaining
-  Other Florida Forever BOT Projects
-  State Owned Lands
-  Other Conservation Lands



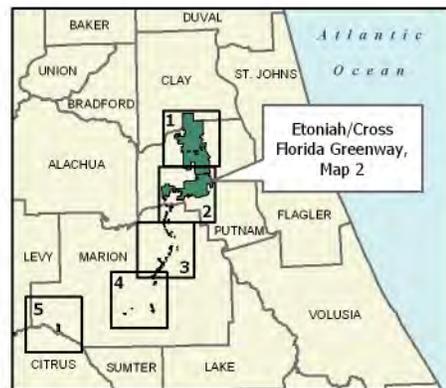
APRIL 2009



ETONIAH/CROSS FLORIDA GREENWAY: MAP 2 OF 5

PUTNAM AND MARION COUNTIES

-  Florida Forever BOT Project Boundary
-  Acquired
-  Essential Parcel(s) Remaining
-  Other Florida Forever BOT Projects
-  State Owned Lands
-  Other Conservation Lands



JULY 2009

Etoniah/Cross Florida Greenway - Group A/Full Fee Group A/Less-Than-Fee

the large (Etoniah) tract will become a state forest. The various parts of the project will offer opportunities for hiking, hunting, fishing and nature appreciation.

Acquisition Planning

Etoniah Creek

Phase I tracts (essential) include Stokes and Agricola, formerly Deltona (acquired), Union Camp, Manning (acquired) and Interlachen Lake Estates Subdivision. Life-of-the-South (Odom) is also an essential tract. Phase II includes other large ownerships, such as Roberts, as well as other smaller tracts and subdivisions.

Cross Florida Greenway

Phase I (essential) includes the westernmost segment (Deep Creek Corridor) consisting of a portion of the Miller family ownerships and approximately 14 other owners.

Cross Florida Greenway Phase II

The priority tract (essential) within this portion of the project is the Inglis Island site (acquired by the Office of Greenways and Trails).

On July 20, 1994 the Council added 210 acres to the boundaries of the predecessor projects.

On December 7, 1995, the Council approved the addition of 2,664 acres to the project boundary. The addition included lakeshore and lake bottom associated with Rodman Reservoir. A second modification was made to allow the St. Johns River Water Management District to acquire, on the State's behalf, a large ownership (Odom) not identified in the original Phase I area. Acquisition of the canal easement areas is also a priority.

On March 15, 1996 the Council approved adding 141 acres to the project boundaries.

On December 5, 1996, the Council transferred the Georgia-Pacific ownership (18,146 acres) to the Less-Than-Fee category.

On October 15, 1998, the Council designated as essential an additional 9,870 acres - Georgia-Pacific and seven smaller tracts in a corridor between two already acquired tracts, and portions of the Roberts ownership.

On August 22, 2000, the Acquisition and Restoration Council (ARC) added 2,110 acres (Florida Power ownership along the Cross Florida Greenway State

Recreation and Conservation areas) to the project.

On January 25, 2001, ARC added 1,543 acres to the project (boundary in the Deep Creek area).

On May 17, 2001, ARC added 1,110 acres to the boundaries of the project.

On February 25, 2003 the project was added to the Group A list of Florida Forever projects.

On April 13, 2007, the ARC approved a fee-simple, 85-acre addition, known as Foxtrotter Ranch, to the project boundary. It was sponsored by the Office of Greenways & Trails (OGT), consisted of one landowner, Richard Simon, one parcel, and a taxable value of \$2,267,908. OGT will manage the site. The house (approximately 2.5 acres) is not included in the addition, however, it may be donated to the state subsequent to acquisition.

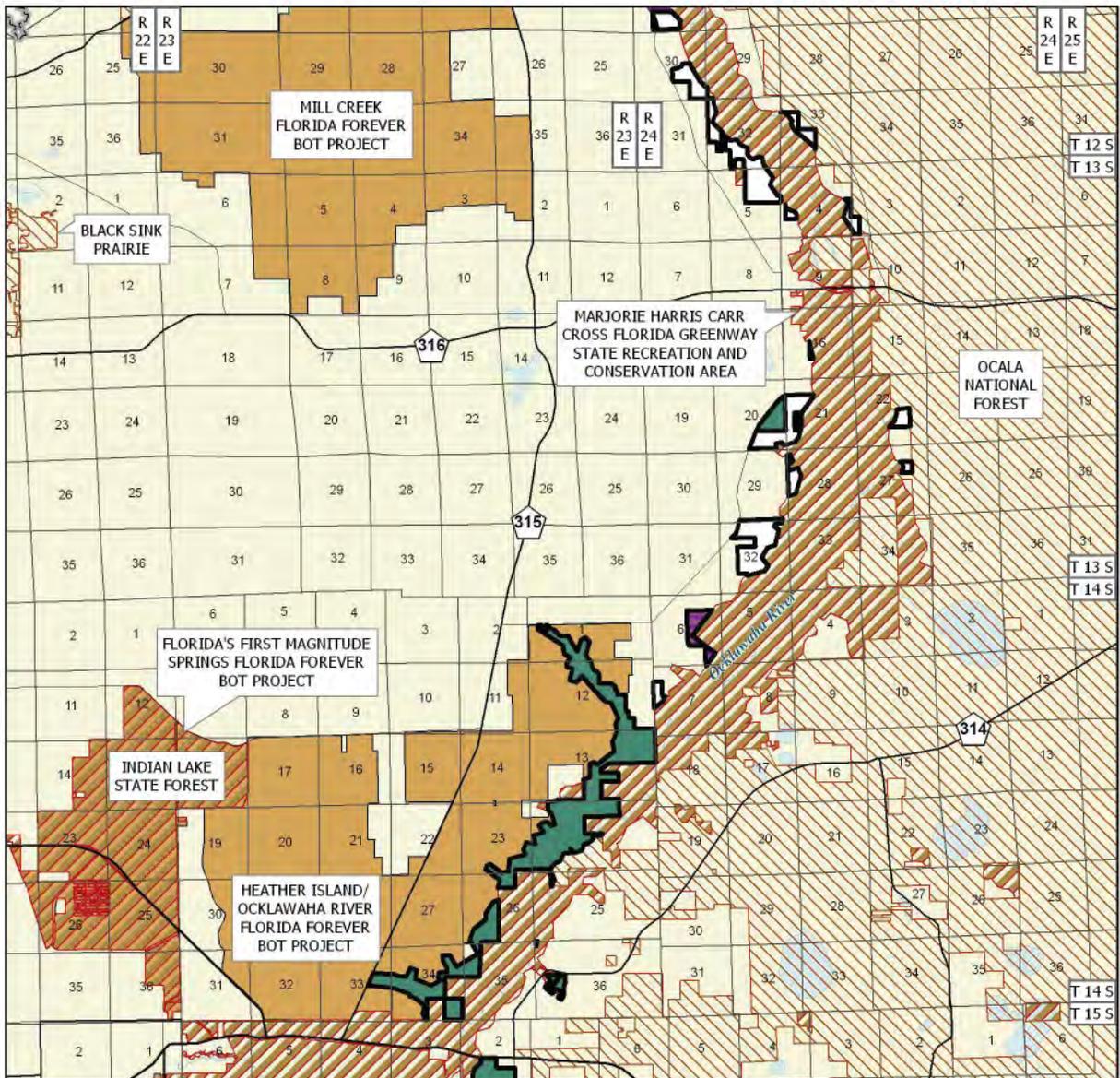
In June, 2008, some 1.19 acres of the Harrington ownership were purchased for \$15,000 with the Division of Forestry (DOF) Florida Forever funds. Forestry will manage this section.

In September, 2008, the DOF used Florida Forever funds to buy the following acreages: 1.08 acres (Fred Yankee, LLC) for \$13,500; 0.87 acres (Goddard) for \$23,000; 1.01 acres (Land Reclamation, Inc.) for \$15,000; 2.52 acres (Cann) for \$23,000; 1.21 acres (Martin) for \$14,000; 1.27 acres (Vehoski) for \$14,000; and 1 acre (Murray) for \$15,000. The DOF will manage all of these parcels.

In October, 2008, the DOF used Florida Forever funds to buy 1.25 acres (Uttech) for \$11,500; 2.5 acres (Lachmansingh) for \$25,000; 3.61 acres (Chapman) for \$37,500; and 2.53 acres (Thornton) for \$23,000. The DOF will manage these parcels.

In November, 2008, the DOF used Florida Forever funds to buy 1.27 acres (Dubay) for \$14,000; 1.24 acres (Hood) for \$15,500; 1.25 acres (Contreras) for \$14,000; and 1.24 acres (South) for \$14,000. The DOF will manage these parcels.

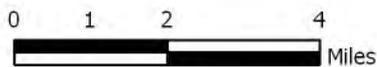
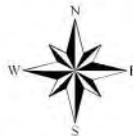
January 21, 2009 SJRWMD purchased 208 acres for \$474,363 (Plum Creek/Rick Co.).



ETONIAH/CROSS FLORIDA GREENWAY: MAP 3 OF 5

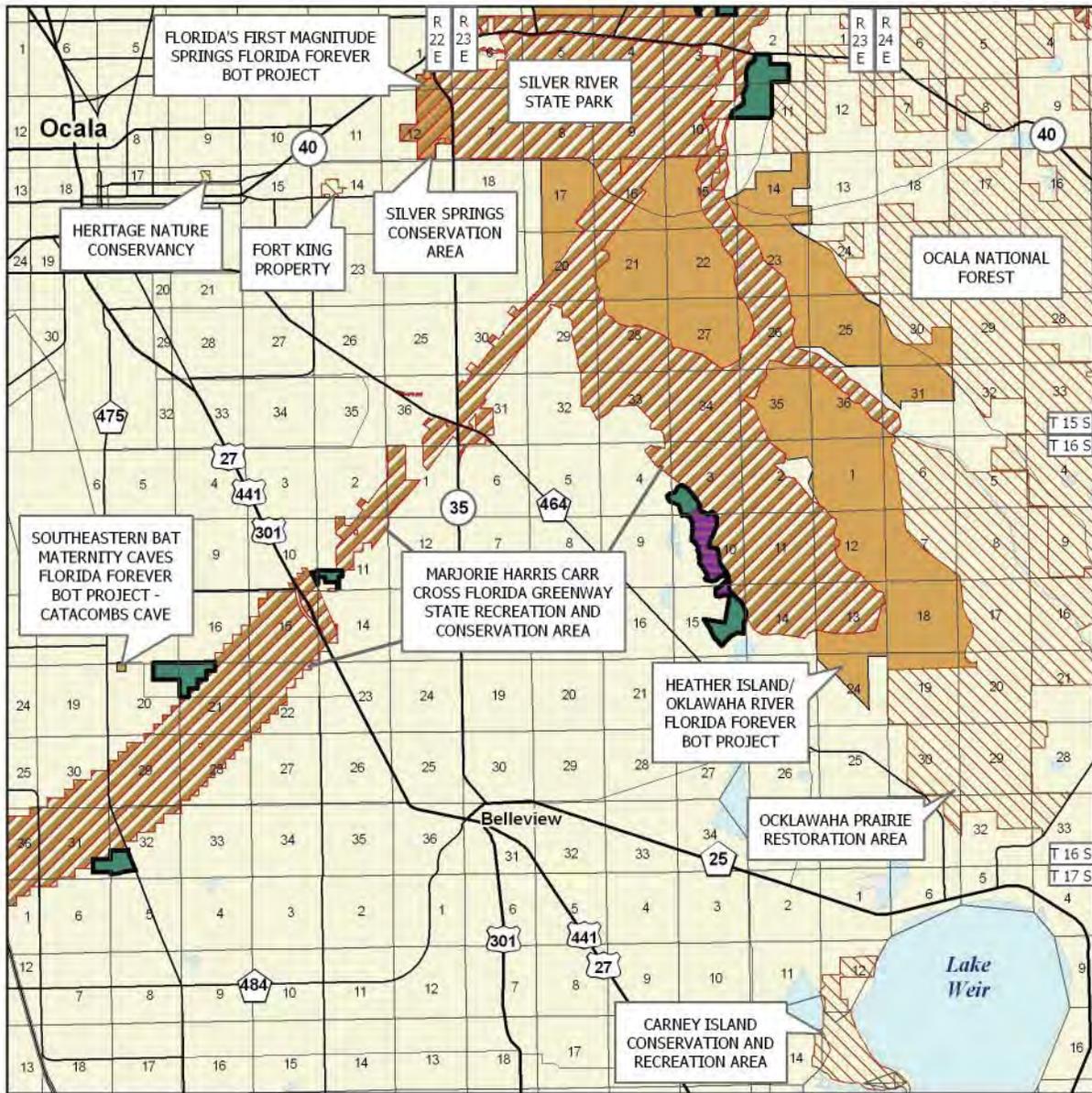
MARION COUNTY

-  Florida Forever BOT Boundary
-  Acquired
-  Essential Parcel(s) Remaining
-  Other Florida Forever BOT Projects
-  State Owned Lands
-  Other Conservation Lands



MARCH 2009

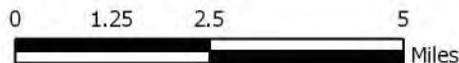
Etoniah/Cross Florida Greenway - Group A/Full Fee Group A/Less-Than-Fee



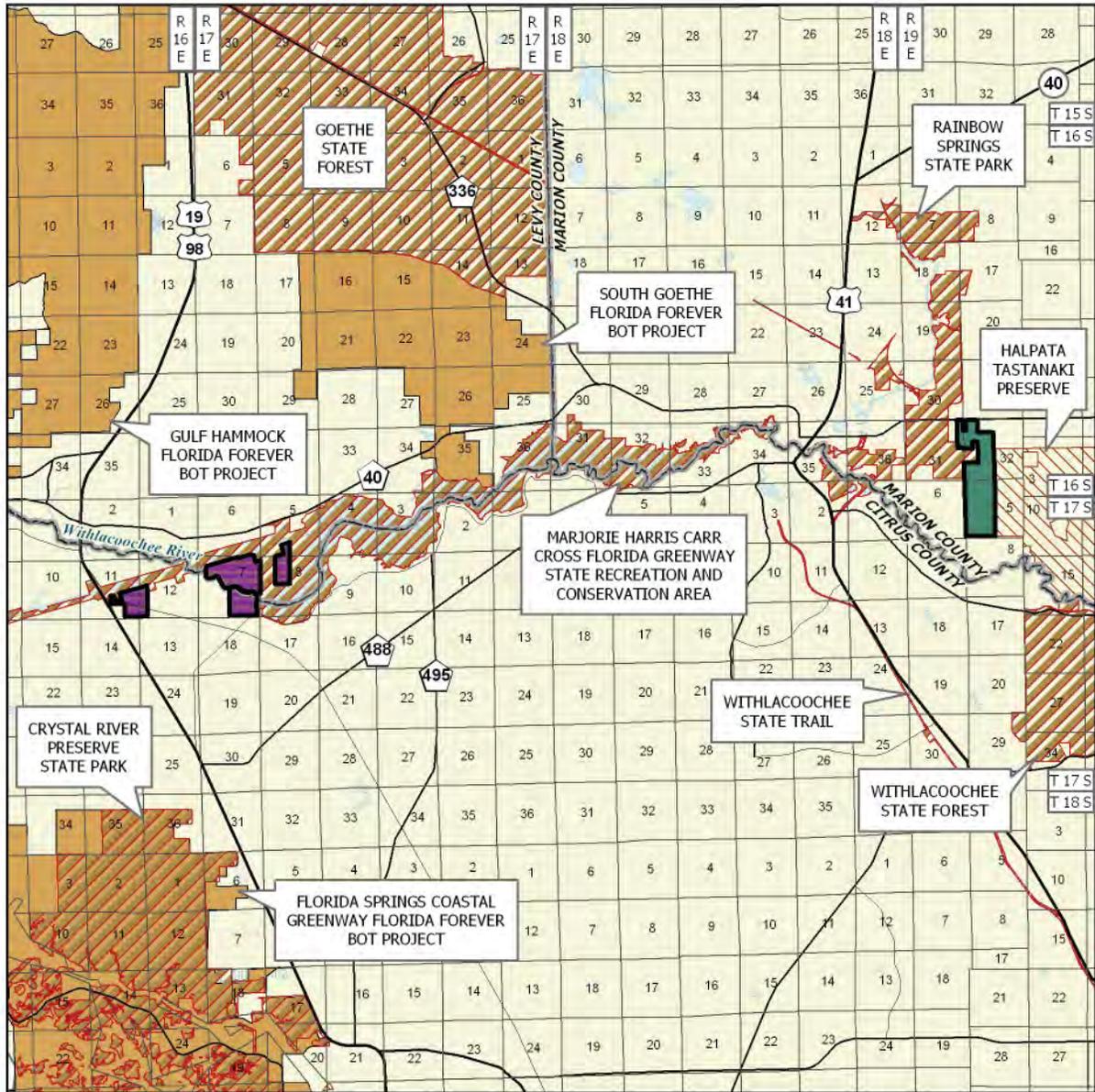
ETONIAH/CROSS FLORIDA GREENWAY: MAP 4 OF 5

MARION COUNTY

-  Florida Forever BOT Boundary
-  Acquired
-  Essential Parcel(s) Remaining
-  Other Florida Forever BOT Projects
-  State Owned Lands
-  Other Conservation Lands



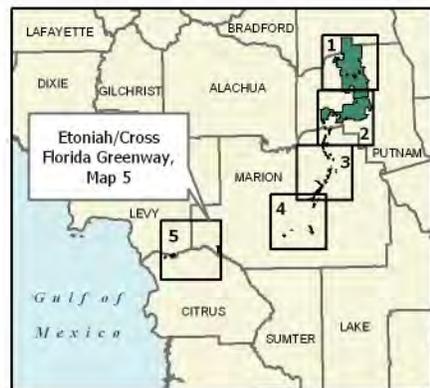
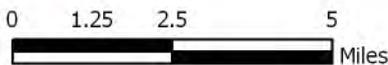
APRIL 2007



ETONIAH/CROSS FLORIDA GREENWAY: MAP 5 OF 5

MARION, LEVY, AND CITRUS COUNTIES

-  Florida Forever BOT Boundary
-  Acquired
-  Essential Parcel(s) Remaining
-  Other Florida Forever BOT Projects
-  State Owned Lands
-  Other Conservation Lands



JANUARY 2007

Etoniah/Cross Florida Greenway - Group A/Full Fee Group A/Less-Than-Fee

Coordination

The SJRWMD was the intermediary in the acquisition of the Manning tract and has provided information and expertise on several other tracts. The Office of Greenways and Trails used additions and inholding funds to acquire Inglis Island. The Division of State Lands will assume the lead on acquisition of the remaining tracts.

Management Policy Statement

The primary goals of management of the Etoniah/Cross Florida Greenway project are: to conserve and protect environmentally unique and irreplaceable lands that contain native, relatively unaltered flora and fauna representing a natural area unique to, or scarce within, a region of this state or a larger geographic area; to conserve and protect significant habitat for native species or endangered and threatened species; to conserve, protect, manage, or restore important ecosystems, landscapes, and forests, in order to enhance or protect significant surface water, coastal, recreational, timber, fish or wildlife resources which local or state regulatory programs cannot adequately protect; and to provide areas, including recreational trails, for natural-resource-based recreation.

Management Prospectus

Qualifications for state designation The large size, restorable pine plantations, and diversity of the Etoniah Creek portion of this project make it highly desirable for management as a state forest. The Cross Florida Greenway State Recreation and Conservation Area includes scenic and historic rivers, lakes, wetlands, and uplands. It is also near, or contiguous with, many other state-owned lands. The Cross Florida Greenway portion of this project, together with the lands already in the Greenway, has the configuration, location, and resources to qualify as a state recreation area.

Manager The DOF proposes to manage the 57,000-acre Etoniah Creek portion of the project and the OGT will manage the remaining lands in the vicinity of the old Cross Florida Barge Canal.

Conditions affecting intensity of management There are no known major disturbances in the Etoniah Creek portion that will require extraordinary attention, so management intensity is expected to be typical for a state forest. Lands in the Cross Florida Greenway portion are generally moderate-need tracts.

Timetable for implementing management and provisions for security and protection of infrastructure Once the core area of the Etoniah Creek portion is

acquired, the DOF will provide access to the public for low-intensity, non-facilities-related outdoor recreation. Initial activities will include securing the tract, providing public and fire management accesses, inventorying resources, and removing trash. The Division will provide access to the public while protecting sensitive resources. The tract's natural resources and threatened and endangered plants and animals will be inventoried to provide the basis for a management plan.

Long-range plans for the Etoniah Creek portion will generally be directed toward restoring disturbed areas to their original conditions, as far as possible, as well as protecting threatened and endangered species. An all-season burning program will use, whenever possible, existing roads, black lines, foam lines and natural breaks to contain fires. Timber management will mostly involve improvement thinning and regeneration harvests. Plantations will be thinned and, where appropriate, reforested with species found in natural ecosystems. Stands will not have a targeted rotation age. Infrastructure will primarily be located in disturbed areas and will be the minimum required for management and public access. The Division will promote environmental education. For the Greenway portion, activities within the first year after acquisition will primarily consist of site security, resource inventory, removal of trash, and resource-management planning. Long-range activities proposed include a multipurpose trail and facilities for public access.

Revenue-generating potential In the Etoniah Creek portion, the DOF sell timber as needed to improve or maintain desirable ecosystem conditions. These sales will provide a variable source of revenue, but the revenue-generating potential for this project is expected to be moderate. In the Greenway portion, no revenues are expected to be generated within the first three years after acquisition. However, as the Greenway is developed during its 20-year facility development plan, revenues will be derived from user fees, the sale of products from the lands (limerock berm and timber), and the sale of surplus lands.

Cooperators in management activities The DOF will cooperate with and seek the assistance of other state agencies, local government entities and interested parties as appropriate. Currently, properties along the Greenway are managed in partnership with Marion County, the Florida Game and Fresh Water Fish Commission, and private individuals for recreational purposes.

Etoniah/Cross Florida Greenway - Group A/Full Fee Group A/Less-Than-Fee

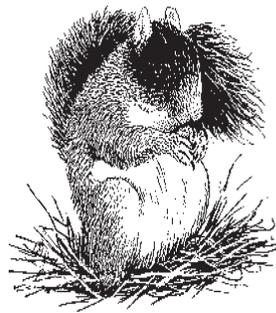
Full Fee:

Management Cost Summary/OGT

Category	Startup	Recurring
Source of Funds	LATF	LATF
Salary	\$36,380	\$36,380
OPS	\$72,660	\$72,660
Expense	\$62,301	\$46,362
OCO	\$3,167	\$0
FCO	\$100,000	\$0
TOTAL	\$274,508	\$185,402

Management Cost Summary/DOF

Category	1996/97	1997/98	1998/99
Source of Funds	CARL	CARL	CARL
Salary	\$45,337	\$56,489	\$58,183.67
OPS	\$0	\$3,000	\$7,650.00
Expense	\$11,225	\$22,825	\$58,203.75
OCO	\$43,320	\$50,500	\$128,775.00
FCO	\$0	\$0	\$0
TOTAL	\$99,882	\$132,814	\$252,812.42

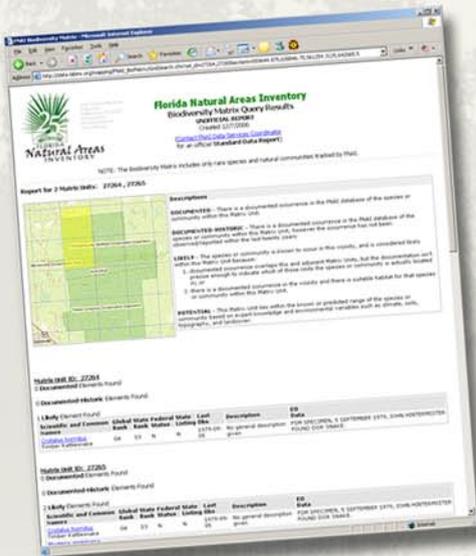


FOR IMMEDIATE RELEASE

FNAI's Biodiversity Matrix Online



The Biodiversity Matrix Map Server is a new **screening tool** from FNAI that provides **immediate, free access** to rare species occurrence information statewide. This tool allows you to zoom to your site of interest and create a report listing documented, likely, and potential occurrences of rare species and natural communities.



The FNAI Biodiversity Matrix offers **built-in interpretation** of the likelihood of species occurrence for each 1-square-mile Matrix Unit across the state. The report includes a site map and list of species and natural communities by occurrence status: Documented, Documented-Historic, Likely, and Potential.

Try it today:

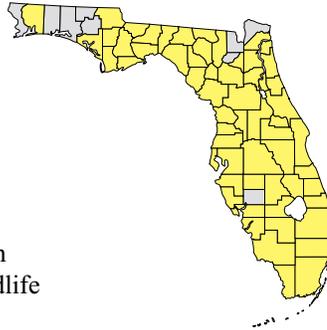
www.fnai.org/biointro.cfm

Please note: FNAI will continue to offer our Standard Data Report service as always. The Standard Data Report offers the most comprehensive information available on rare species, natural communities, conservation lands, and other natural resources.

APPENDIX B
LISTED SPECIES DESCRIPTIONS

LIMPKIN

Aramus guarauna



Order: Gruiformes
Family: Aramidae
FNAI Ranks: G5/S3
U.S. Status: None
FL Status: Species of Special Concern
U.S. Migratory Bird Treaty Act and state Wildlife Code prohibit take of birds, nests, or eggs.

Description: Large, long-billed, long-legged wader of swamps and marshes. Sports a deep brown color with white spotting and streaking. Bill is heavy and slightly decurved, allowing easy access to its preferred food, the apple snail (*Pomacea paludosa*). Call is an unmistakable loud, wild scream or wail.



© Karla Brandt

Similar Species: Long neck and bill of the limpkin help distinguish it from the slightly smaller, but similarly colored, immature night-herons (*Nycticorax* spp.). The immature white ibis (*Eudocimus albus*; see species account) has a long, decurved bill and long legs but is not brown all over with white flecking.

Habitat: Inhabits mangroves, freshwater marshes, swamps, springs and spring runs, and pond and river margins. Also lake margins in peninsular Florida and swales, strand swamps, sloughs, and impoundments in south Florida. May also forage in ruderal areas such as sugarcane fields and banks of irrigation canals. Wide range of nesting sites, including mounds of aquatic vegetation and marsh grasses, among cypress knees, and high in trees.

Seasonal Occurrence: Males generally appear to be resident where they breed, although there is some evidence of movement, possibly related to

LIMPKIN

Aramus guarauna

food availability. A partial migration was documented with color-banded birds from Wakulla Springs (Wakulla County) and Alexander Springs (Lake County); most females left their breeding territories, for parts unknown, in mid-summer and returned in mid-winter. Observations of large concentrations of limpkins are usually attributed to regional drought conditions. Nesting generally occurs late February - May in north Florida and late January - March in central Florida, and possibly earlier in south Florida.

Florida Distribution: Scattered sites in the panhandle and northern Florida, but generally widespread in central and southern Florida.

Range-wide Distribution: Resident in southeastern Georgia, Florida, Greater Antilles (rare or extirpated in Puerto Rico), and from southern Mexico to central Argentina.

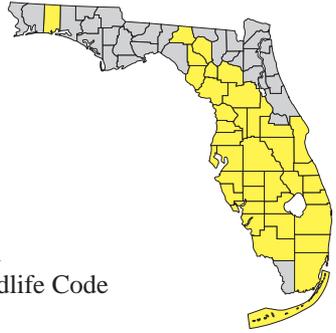
Conservation Status: Occur on numerous lands owned by federal, state, and private entities, although this is no insurance against threats. A large and presumably stable population at Wakulla Springs State Park (Wakulla County) has experienced recent declines, possibly because of deteriorating water quality. Pollution, hydrological disruptions, and an increase in invasive plants threaten the health of the apple snail population and hence the limpkin.

Protection and Management: Maintain natural hydrological regimes and protect suitable habitat from pollution, development activities, and proliferation of exotic plants. Institute regular surveys and monitoring programs for both limpkins and apple snails, particularly in light of continued degradation and loss of Florida's wetlands.

Selected References: Robertson and Woolfenden 1992, Rodgers et al. (eds.) 1996, Stevenson and Anderson 1994.

FLORIDA BURROWING OWL

Athene cunicularia floridana



Order: Strigiformes
Family: Strigidae
FNAI Ranks: G4T3/S3
U.S. Status: None
FL Status: Species of Special Concern
U.S. Migratory Bird Treaty Act and state Wildlife Code prohibit take of birds, nests, or eggs.



© Barry Mansell

Description: Small, ground-dwelling owl with long legs, white chin stripe, round head, and stubby tail. Adults are boldly spotted and barred with brown and white. Juveniles plainer above with less spotting, and buffy below with little or no brown barring. Will often dig their own burrow and, prior to egg laying, will line burrow and entrance with various materials (e.g., grass clumps, palm fronds). After eggs are laid, entrance chamber is further adorned with more decorative and visible objects, such as paper scraps, plastics, tin foil, mirrors, graduation tassels, cigarette butts, and other non-natural materials.

FLORIDA BURROWING OWL

Athene cunicularia floridana

Similar Species: Not likely to be confused with other owl species. Differs from western subspecies in having darker upper parts with less buffy brown, and whiter spotting.

Habitat: High, sparsely vegetated, sandy ground. Natural habitats include dry prairie and sandhill. Makes extensive use of ruderal areas such as pastures, airports, ball fields, parks, school grounds, university campuses, road right-of-ways, and vacant spaces in residential areas.

Seasonal Occurrence: Predominately nonmigratory; maintains home ranges and territories while nesting.

Florida Distribution: Largest populations occur in southwest and southeast Florida. Depending on habitat availability, small, patchily distributed populations occur in the Keys and along the interior ridges of Florida from Highlands County to Madison County. A single disjunct population occurs at Eglin Air Force Base in Okaloosa County.

Range-wide Distribution: Resident in Florida and the Bahamas.

Conservation Status: Human activities have increased range in Florida but have exposed owls to additional threats. Largest concentrations of owls now reside in ruderal grasslands and lawns of residential and industrial areas. One of the largest populations is in Cape Coral, a large development in Lee County. Intensive cultivation and development of grasslands pose major threats. Permits for legal “take” of burrows also of concern. Human harassment (generally by children), predation by domestic animals, and vehicle collisions take toll on urban/ruderal birds. Predation by fire ants is also implicated in owl mortality.

Protection and Management: Educate residents in developments and owners of industrial or farm lands where owls occur to help limit harassment. Maintain optimum condition of natural and ruderal sites where owls occur; will likely require fire in natural areas and mowing in ruderal ones. Establish buffer zones and development plans that consider the needs of the owl, which may allow them to persist under otherwise precarious circumstances. Studies in Cape Coral showed owls appeared to prefer sites with between 25 and 75 percent of developable lots occupied.

Selected References: Bowen 2000, Poole and Gill (eds.) 1993, Robertson and Woolfenden 1992, Rodgers et al. (eds.) 1996, Stevenson and Anderson 1994.

SAND BUTTERFLY PEA

Centrosema arenicola (Small) F.J. Herm.

Synonyms: *Bradburya arenicola* Small

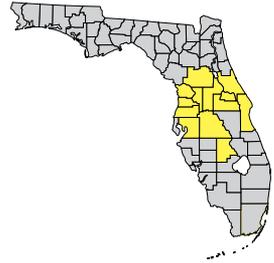
Centrosema floridanum (Britton) Lakela

Family: Fabaceae (pea)

FNAI Ranks: G2/S2

Legal Status: US—Mgmt Concern FL—Endangered

Wetland Status: US—UPL FL—UPL



FNAI

Field Description: Perennial **vine** with **stems** up to 10 feet long twining over bushes. **Leaves** with 3 oval or lance-shaped **leaflets** to 2 inches long, dark green, somewhat leathery. **Flowers** 1.5 inches wide, purplish-blue (rarely pink or white), twisted so that large, notched banner petal is lowest. **Calyx** with 4 triangular lobes, the lower lobe forked, the upper lobes much shorter than the lower. Two small **bracts** beneath the flower partially hide the calyx. **Fruit** a flattened pod, 4.8 inches long, linear, with a long curving beak.

Similar Species: Common butterfly pea (*Centrosema virginianum*) stems are less than 5 feet long; leaflets are longer (to 2.8 inches), narrow, and linear; lighter green, not leathery; calyx lobes are all narrowly pointed and about the same size.

Related Rare Species: See scrub pigeon-wing (*Clitoria fragrans*) in this guide. Pigeon-wing is an erect herb, not a vine; its flowers are similar to sand butterfly pea flowers, but the banner petal is not notched; pods lack the long beak; and bracts at the base of the flower are tiny, not covering the calyx.

Sand butterfly pea

Centrosema arenicola

Habitat: Sandhill, scrubby flatwoods, dry upland woods.

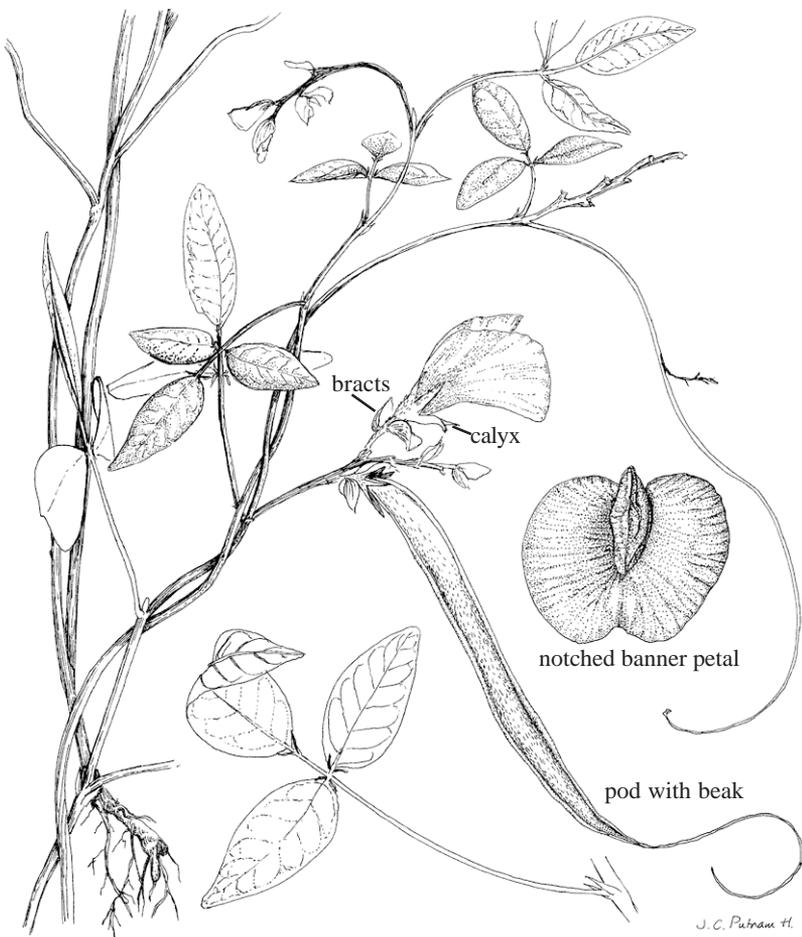
Best Survey Season: Flowers June–October. Each flower lasts one day.

Range-wide Distribution: Endemic to central FL.

Conservation Status: Very few plants have been seen in the last two decades; only 1 population is protected.

Protection & Management: Purchase and protect sandhill and other dry upland habitats. Burn sandhills and flatwoods every 2 - 3 years. Conduct surveys for more plants.

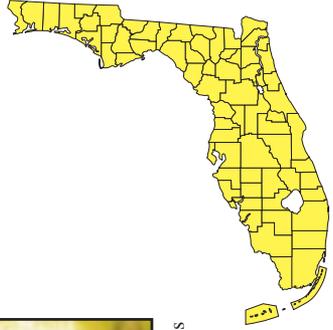
References: Coile 2000, Isely 1990, Small 1933, Wunderlin 1998, Wunderlin and Hansen 2000a.



EASTERN INDIGO SNAKE

Drymarchon corais couperi

Order: Squamata
Family: Colubridae
FNAI Ranks: G4T3/S3
U.S. Status: Threatened
FL Status: Threatened



© Dan Hipes



© Dan Hipes

Description: A very large, stout-bodied, shiny black snake reaching lengths as great as 8 ft. (244 cm). Black ventrally, but chin, throat, and sides of head may be reddish or (rarely) white. Scales typically smooth (no ridges), though adult males have keel on front half of some scales along back; anal scale undivided. Young similar to adults though often more reddish anteriorly, 17 - 24 in. (430 - 610 mm) at hatching. When encountered, often hisses, flattens neck vertically (from side to side), and vibrates tail, but rarely bites.

EASTERN INDIGO SNAKE *Drymarchon corais couperi*

Similar Species: Black racer (*Coluber constrictor*), which rarely exceeds 5 ft. (152 cm), is more slender, a duller sooty black usually with a white chin and throat, and has a divided anal scale. The mostly aquatic mud snake (*Farancia abacura*) is glossy black above and can grow to 6 ft. (183 cm), but has a reddish, rarely white, belly, with the coloration encroaching the sides, and a sharp-pointed tail tip.

Habitat: Broad range of habitats, from scrub and sandhill to wet prairies and mangrove swamps. In northern part of range, often winters in gopher tortoise burrows in sandy uplands but forages in more hydric habitats. Requires very large tracts to survive.

Seasonal Occurrence: Active nearly year-round in southern Florida but winters underground farther north. Lays eggs in May and June.

Florida Distribution: Statewide, including Upper and Lower Keys, but rare in panhandle.

Range-wide Distribution: Florida and southern Georgia; formerly extended from southern South Carolina to southeastern Mississippi.

Conservation Status: Rare in most areas, though species has been recorded from many public lands statewide; however, whether most of these support viable populations is uncertain. Major threats are habitat loss, degradation, and fragmentation, with associated highway mortality. Other threats include gassing of tortoise burrows for rattlesnakes, collection for pets, and deliberate persecution, all of which are illegal.

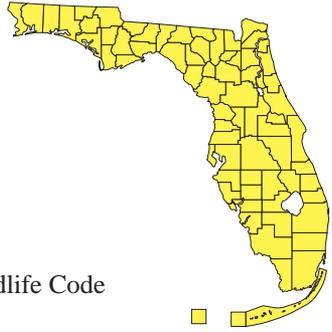
Protection and Management: Protect very large tracts (> 5000 acres = 2025 ha) of appropriate natural habitat unfragmented by roads; use prescribed fire as needed. Maintain gopher tortoise populations and dead stumps to provide natural subterranean refugia. Enforce bans on tortoise burrow gassing and on collection or molestation of snake. Avoid construction of roads through unfragmented habitat. Educate public to avoid wanton destruction of large snakes.

Selected References: Ashton and Ashton 1988b, Conant and Collins 1991, Ernst and Barbour 1989, Georgia DNR 1999, Lazell 1989, Moler (ed.) 1992, Mount 1975, Tenant 1997.

LITTLE BLUE HERON

Egretta caerulea

Order: Ciconiiformes
Family: Ardeidae
FNAI Ranks: G5/S4
U.S. Status: None
FL Status: Species of Special Concern
U.S. Migratory Bird Treaty Act and state Wildlife Code prohibit take of birds, nests, or eggs.



© Tom Vezo



immature © Jerry Lee Gingerich, DVM

Description: Medium-sized heron, with purplish to maroon-brown head and neck; small white patch on throat and upper neck; and slate-blue body. Bill is black towards tip, especially during breeding season, with the other exposed areas on the head appearing dark gray to cobalt blue. Legs are grayish to green, becoming black in breeding season. Immature birds are mostly white with pale slate-gray tips on primary wing feathers. Legs of young birds are yellowish-green. Immature birds move into adult plumage during first spring and

may be boldly white/blue, looking like tie-dyed shirts. Immature birds retain yellowish legs during second year.

Similar Species: Plumage and eye of reddish egret (*Egretta rufescens*; see species account) are lighter in color, and base of bill is pinkish. Reddish egret has distinctive foraging behavior. Snowy egret (*E. thula*; see species account) and cattle egret (*Bubulcus ibis*) may look like juvenile little blues,

LITTLE BLUE HERON

Egretta caerulea

but little blue has dark primary tips. Bill of snowy egret (*E. thula*) is solid black; snowy may have yellowish stripe up back of leg.

Habitat: Feeds in shallow freshwater, brackish, and saltwater habitats. Largest nesting colonies occur in coastal areas, but prefers foraging in freshwater lakes, marshes, swamps, and streams. Nests in a variety of woody vegetation types, including cypress, willow, maple, black mangrove, and cabbage palm. Usually breeds in mixed-species colonies in flooded vegetation or on islands.

Seasonal Occurrence: Mostly resident throughout year, but numbers in north Florida in winter are lower than numbers during spring, summer, and fall; becoming less abundant in Florida Keys.

Florida Distribution: Most recent population estimate is approximately 17,000 birds distributed among 240+ breeding colonies. Colonies are found nearly statewide, except rare in western panhandle and southern Florida Keys.

Range-wide Distribution: Breeds from Kansas, Missouri, and Tennessee to coastal Maine and south to Peru and central Brazil; range extends west to southern California and Sonora; winter range includes these areas and north to coastal Virginia; may wander to Canada after breeding season.

Conservation Status: Because the little blue heron lacks the showy plumes found on many other herons and egrets, this species did not suffer as much during the plume-hunting trade a century ago. Primary threats are alteration of natural hydroperiods in wetlands used for foraging and exposure to pesticides and heavy metal contamination. Population trends are downward, and breeding colonies have become smaller and more numerous. Illegal killings may occur since this species regularly forages at commercial fish farms and hatcheries. Long-term studies are needed on the possible adverse effects of cattle egrets, environmental contamination, and other threats.

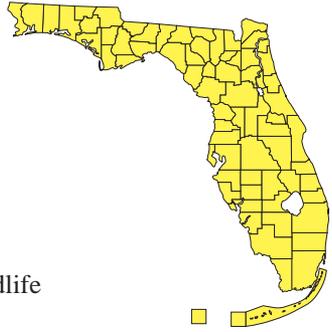
Protection and Management: Protect breeding and foraging habitats through establishment of preserves and regulation of wetlands. Restore and maintain natural hydroperiods in degraded wetland areas. The Florida Fish and Wildlife Conservation Commission and the Department of Environmental Protection have developed setback distances around wading bird colonies of 330 ft. (100 m) to prevent human disturbance.

Selected References: Poole and Gill (eds.) 1995, Robertson and Woolfenden 1992, Rodgers and Smith 1995, Rodgers et al. (eds.) 1996, Runde et al. 1991, Stevenson and Anderson 1994.

SNOWY EGRET

Egretta thula

Order: Ciconiiformes
Family: Ardeidae
FNAI Ranks: G5/S3
U.S. Status: None
FL Status: Species of Special Concern
U.S. Migratory Bird Treaty Act and state Wildlife
Code prohibit take of birds, nests, or eggs.



© Tom Vezo

snowy egret. Little blue heron also has a bi-colored bill, not the solid black bill found on the snowy egret. Great egret (*Ardea alba*) has solid black legs and orangish bill; white morph of the reddish egret (*E. rufescens*; see species account) has two-toned bill and grayish legs; cattle egret (*Bubulcus ibis*) has orangish legs and bill.

Habitat: Nests both inland and in coastal wetlands with nests placed in many types of woody shrubs, especially mangroves and willows. Almost all nesting is over shallow waters or on islands that are separated from

Description: Medium-sized, all-white wading bird that has a “slight” appearance in comparison to other wading birds. Bill is black with a bright yellow, fleshy base, and the yellow extends back to the lores and eyes. Legs are black in adults; feet are bright yellow as though wearing gloves. Immatures have greenish legs that sometimes have a yellow streak on the back. Breeding-season adults have prominent plumes on shoulders, neck, and head.

Similar Species: Most often confused with juvenile little blue heron (*Egretta caerulea*; see species account), which is white with greenish-gray legs; however, tips of wing feathers are dusky, not pure white as in

SNOWY EGRET

Egretta thula

shoreline by extensive open water. Feeds in many types of permanently and seasonally flooded wetlands, streams, lakes, and swamps, and in man-made impoundments and ditches. Usually prefers calm waters. A wide variety of wetland types must be available within 5 - 7 mi. (8 - 11 km) to support breeding colonies. Breeding success is tied to water-level fluctuations.

Seasonal Occurrence: Occurs in Florida in all seasons, but generally less common in winter, especially in western panhandle and northern counties.

Florida Distribution: Generally found throughout peninsular Florida; becoming less common inland in northern tier of counties (north of Alachua County) and in the western panhandle. Typically more common along coast throughout its range. Breeding documented for 43 Florida counties but more variable in western Florida panhandle and in some northern counties in the interior (north of Alachua County). Also rare or absent in southern Keys.

Range-wide Distribution: Northern limits of summer range extend from northern California to southern Montana, central Kansas, and Tennessee, east to Atlantic coast, and then north to coastal Maine; occurs south to southern Chile and central Argentina; winters in North America from northern California to Arizona, along the northern Gulf coast, and along Atlantic coast to South Carolina.

Conservation Status: Since the 1950s, numbers in Florida have been declining, possibly faster than declines of other herons and egrets. In 1989, this species was found in only 22 percent of the colonies where it formerly occurred. Persistent patterns of wetland destruction and alteration are probably eliminating large areas of essential habitat. Most impacts appear to affect quality of foraging habitat rather than areas immediately surrounding nesting colonies.

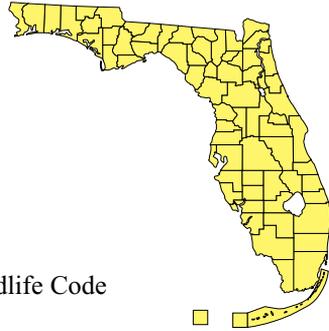
Protection and Management: Prevent rapid changes in water depth in managed wetlands that will likely adversely affect quality of foraging. Restore and maintain natural hydroperiods in degraded wetland areas. Protect breeding and foraging habitats through establishment of preserves and regulation of wetlands. The Florida Fish and Wildlife Conservation Commission and the Department of Environmental Protection have developed setback distances around wading bird colonies of 330 ft. (100 m) to prevent human disturbance.

Selected References: Poole and Gill (eds.) 2000, Robertson and Woolfenden 1992, Rodgers and Smith 1995, Rodgers et al. (eds.) 1996, Runde et al. 1991, Stevenson and Anderson 1994.

TRICOLORED HERON

Egretta tricolor

Order: Ciconiiformes
Family: Ardeidae
FNAI Ranks: G5/S4
U.S. Status: None
FL Status: Species of Special Concern
U.S. Migratory Bird Treaty Act and state Wildlife Code prohibit take of birds, nests, or eggs.



© Karla Brandt

Description: Medium-sized heron with a slender neck. Body color appears two-toned with dark slate coloration on head, neck, and body that contrasts with white rump, belly, and undertail. A reddish-brown and white streak extends along the front of the neck. During breeding season, adults have white head plumes and rufous to whitish shoulders. Young birds (<1 year) have more reddish-brown on head, neck, and mantle; otherwise similar to adults.

Similar Species: Little blue heron (*Egretta caerulea*; see species account) and reddish egret (*E. rufescens*; see species account) have solid dark colors; great blue heron (*Ardea herodias*) is larger and has white streak down neck but dark belly and underparts. Great blue heron also has a dark swath that extends back from eye and contrasts with lighter colored top of head.

Habitat: Most nesting colonies occur on mangrove islands or in willow thickets in fresh water, but nesting sites include other woody thickets on islands or over standing water. Prefers coastal environments. Feeds in a variety of permanently and seasonally flooded wetlands, mangrove swamps, tidal creeks, ditches, and edges of ponds and lakes. Seasonal variation in water levels are particularly critical to nesting success, so alteration of wetlands used during breeding season can have negative consequences.

TRICOLORED HERON

Egretta tricolor

Seasonal Occurrence: Permanent resident and found throughout Florida in all seasons, except rare in winter in western Panhandle. Also somewhat less common inland in recent years, particularly during winter.

Florida Distribution: Most numerous along coast. Generally becoming less numerous in northern tier of counties (Alachua County northward). Nesting in panhandle and northern interior more variable and restricted leading to few inland reports in panhandle.

Range-wide Distribution: Occurs during breeding season from California to Texas and along northern Gulf coast; along Atlantic coast to Maine; south to central Brazil; leaves northern portion of range in winter.

Conservation Status: Once described as the most abundant heron in the state, but now much less common in interior. Long-term population trends are uncertain, but apparently declining. Need information on marked individuals to document in more detail the species' movement and wetland utilization patterns.

Protection and Management: Approximately 25 percent of nesting colonies occur in disturbed water impoundments or dredge-material islands, so management opportunities exist. Create new nesting sites or stabilize established sites through management. Survey and monitor to document population trends.

Selected References: Poole and Gill (eds.) 1997, Robertson and Woolfenden 1992, Rodgers et al. (eds.) 1996, Runde et al. 1991, Stevenson and Anderson 1994.



© Karla Brandt

WHITE IBIS

Eudocimus albus



Order: Ciconiiformes
Family: Threskiornithidae
FNAI Ranks: G5/S4
U.S. Status: None
FL Status: Species of Special Concern
U.S. Migratory Bird Treaty Act and state Wildlife Code prohibit take of birds, nests, or eggs.



© Karla Brandt

© Karla Brandt



Description: Medium-sized wading bird with long, downward-curving bill. Adults white except for black tips on wings and pink to reddish coloration on exposed flesh around face, bill, and legs. Young birds are dark brown on wings, neck, head, and tail, but noticeable white patches occur on back and belly. Juveniles begin to acquire adult coloration near end of first year but retain some brown feathers on head and neck until third year.

Similar Species: Glossy ibis (*Plegadis falcinellus*) also has a downward-curving bill but is uniformly dark. Adult glossy ibis has purplish coloration, and young birds are uniformly brown. An immature glossy ibis could be mistaken for a juvenile white ibis, but glossy ibis lacks the white patch on the back (best seen during flight) and belly is dark, not white. Bills of all egrets and herons are straight, not curved.

Habitat: Found in a wide variety of habitats, including freshwater and brackish marshes, salt flats and salt marsh meadows, many types of forested wetlands, wet prairies, swales, seasonally inundated fields, and man-made ditches. Adults prefer foraging in freshwater areas when feeding young. Young birds do not grow when fed a salty diet or when access to fresh water

WHITE IBIS

Eudocimus albus

is limited. Forage by feeling with their bills and may forage effectively in turbid waters. Nests are placed on a variety trees, shrubs, and vines, and tend to be closer to ground than other colonial nesting wading birds.

Seasonal Occurrence: May be found throughout Florida during all seasons, but numbers in north Florida are smaller and diminish sharply in winter. Numbers also vary depending on local water levels and conditions. Spring and fall movements can be spectacular, with hundreds of individuals observed moving in long, V-shaped lines. Much of movement pattern seems nomadic; large-scale movements occur in other seasons in response to changing water levels. Dates of spring movements can be mid-February, and fall movements may begin in July and peak in September and October. In non-breeding season, Florida probably supports much of population that breeds to north in Georgia and North and South Carolina.

Florida Distribution: Found throughout Florida, but breeding season distributions more closely restricted to breeding colonies. Breeding sites rare in panhandle and may be less common in Keys. Seem to be nomadic when selecting annual nesting sites, so numbers can vary considerably from year to year.

Range-wide Distribution: Breeds from California south through Central America along Pacific coast; from northern South America through Caribbean and Antilles and north Gulf coast (with inland nesting in northern South America and southeastern U.S.); northward along Atlantic coast to Virginia.

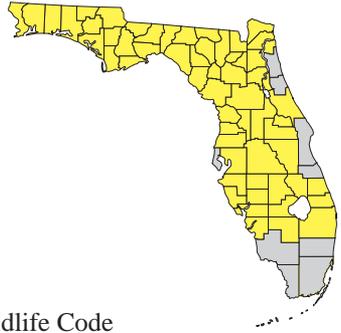
Conservation Status: Population declines in Florida appear to have been pronounced over the past decades (around 50 percent from 1970 to 1990). However, declines in Florida have been offset to some degree by increasing numbers in other nearby states. Range-wide declines in Florida and neighboring states are believed to be occurring, but these can be difficult to document in the absence of thorough surveys.

Protection and Management: Protect colonial nesting sites from human disturbance. Florida Fish and Wildlife Conservation Commission and Department of Environmental Protection have developed setback distances around wading bird colonies of 330 ft. (100 m) to prevent such disturbance. These guidelines may serve to protect individual colonies, but primary long-term threat is degradation of wetlands through destruction, alteration, pollution, salinization, and other forms of disturbance. Large-scale restoration efforts in the Everglades, Lake Okeechobee, Kissimmee River, and elsewhere should prove beneficial.

Selected References: Poole and Gill (eds.) 1992, Robertson and Woolfenden 1992, Rodgers and Smith 1995, Rodgers et al. (eds.) 1996, Runde et al. 1991, Stevenson and Anderson 1994.

SOUTHEASTERN AMERICAN KESTREL

Falco sparverius paulus



Order: Falconiformes

Family: Falconidae

FNAI Ranks: G5T4/S3

U.S. Status: None

FL Status: Threatened

U.S. Migratory Bird Treaty Act and state Wildlife Code prohibit take of birds, nests, or eggs.



© Tom Vezo

Description: Smallest falcon in U.S. and similar in size to the familiar mourning dove (*Zenaida macroura*). Sexes distinctive: male has blue-gray wings, while female is larger and has more uniformly rufous back and wings. Both sexes have a mustached black-and-white facial pattern with strong perpendicular lines extending below eye and near ear, and a black band at base of rufous tail. Falcons in general have long, pointed wings and long tails, similar to doves. The alarm call, given frequently in flight, is *killy, killy, killy*.

Similar Species: The merlin (*Falco columbaris*), another falcon found in Florida, is larger and lacks the rufous back and tail found on kestrels. The sharp-shinned hawk (*Accipiter striatus*) has rounded wings and also lacks the rufous tail and back. Both the merlin and sharp-shinned hawk also are generally not found in Florida in summer (May - early September).

SOUTHEASTERN AMERICAN *Falco sparverius paulus* KESTREL

Habitat: Found in open pine habitats, woodland edges, prairies, and pastures throughout much of Florida. Availability of suitable nesting sites is key during breeding season. Nest sites are tall dead trees or utility poles generally with an unobstructed view of surroundings. Sandhill habitats seem to be preferred, but may also occur in flatwoods settings. Open patches of grass or bare ground are needed in flatwoods settings, since thick palmettos prevent detection of prey.

Seasonal Occurrence: Found throughout Florida year-round, but seasonal occurrence is complicated by arrival of northern migrants in winter. The subspecies that breeds in Florida is listed, but northern migrants are not listed. Northern migrants generally arrive in September and depart by March, but there are records outside these dates. All birds found in the breeding season (April through early September) should be treated as the listed subspecies.

Florida Distribution: Wintering birds found throughout Florida (including the Keys), but the breeding subspecies is non-migratory and most common in peninsular Florida, rare in the panhandle. Breeding subspecies appears to be extirpated from former nesting areas in south Florida (Miami-Dade County).

Range-wide Distribution: Found throughout most of North and South America, but the listed subspecies is restricted to the southeastern U.S., occurring from Louisiana east to South Carolina and south through the Florida peninsula.

Conservation Status: Population trends cannot be determined from available survey programs. Natural nesting and foraging habitats have certainly declined, as sandhill and open flatwoods habitats are converted to intensive agricultural lands and residential development. Pasture lands may be used by the breeding species but often lack snags used for nesting sites.

Protection and Management: A key habitat feature necessary for breeding is a suitable cavity tree. Cavity trees are usually excavated in large pines and, less frequently, oaks by various woodpeckers. Manage for dead tree snags on public lands. Nest-box programs have been used to augment populations in many areas. Protect large blocks of natural habitats; open fields and pastures also are needed to provide adequate foraging habitat.

Selected References: Loftin 1992, Robertson and Woolfenden 1992, Rodgers et al. (eds.) 1996, Stevenson and Anderson 1994, Stys 1993, Wood et al. 1988.

TAMPA MOCK VERVAIN

Glandularia tampensis (Nash) Small

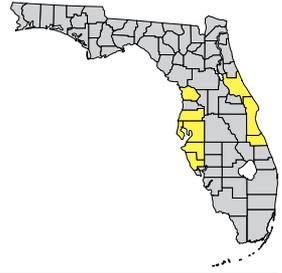
Synonym: *Verbena tampensis* Nash

Family: Verbenaceae (vervain)

FNAI Ranks: G1/S1

Legal Status: US—none FL—Endangered

Wetland Status: US—FACW FL—UPL



Billy B. Boothe

Field Description: Perennial **herb** with 4-sided, sprawling **stems** to 2 feet long. **Leaves** 1.5 - 2.5 inches long, margins coarsely toothed although sometimes entire below the middle; leaf tips broadly pointed; upper leaf surface dark green, lower surface pale green; base of leaf narrowing to form wings on the **leaf stalk**; leaf stalk 0.5 - 1 inch long. **Flower** blue-purple, 5-lobed, tube and each lobe approximately 0.5 inch long. **Calyx** with straight, stiff hairs but **no glands**; calyx lobes with bristly tips.

Similar Species: Rose vervain (*Glandularia canadensis*) has glands on the calyx, rose-purple flowers, and leaves with blunt tips. Moss verbena (*Glandularia pulchella*, synonym: *Verbena tenuisecta*), a roadside weed from South America, has similar flowers but finely dissected leaves.

Related Rare Species: Coastal vervain (*Glandularia maritima*), state-endangered, resembles Tampa vervain; its flowers are lavender with an orange throat; leaves are more succulent and irregularly lobed and toothed, and have shorter leafstalks; its calyx has stalked glands and pointed but not bristle-tipped lobes (see drawing). It occurs primarily on the SE FL coast.

Tampa mock vervain

Glandularia tampensis

Habitat: Tampa mock vervain: live oak–cabbage palm hammocks and pine–palmetto flatwoods. Coastal mock vervain: back dunes, dune swales, and coastal hammocks. Both occur in disturbed, sandy areas.

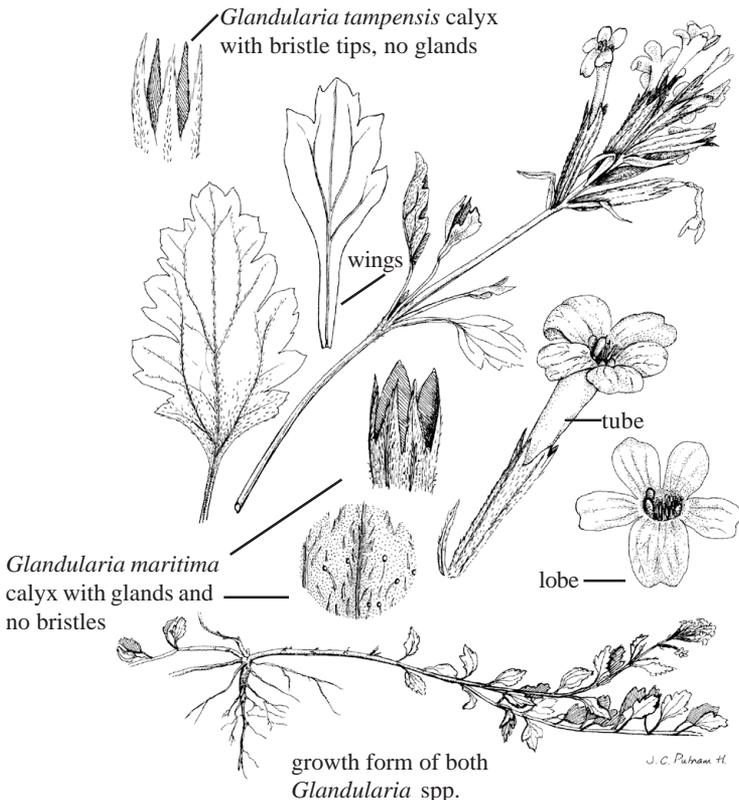
Best Survey Season: Both species flower primarily in the spring and intermittently all year.

Range-wide Distribution: Both Tampa mock vervain and coastal mock vervain are endemic to peninsular FL.

Conservation Status: Tampa mock vervain has been seen in only one conservation area in the last 20 years; its habitat has been severely reduced by development and silviculture. Coastal mock vervain is locally abundant in several parks and preserves areas on the SE coast.

Protection & Management: Protect coastal habitats from development. Use occasional ground fire in mesic and xeric hammocks and frequent fire in flatwoods. Eradicate exotic pest plants.

References: Coile 2000, IRC 1999, Kral 1983, Small 1933, Umber 1979, Wunderlin 1998, Wunderlin and Hansen 2000a.



GOPHER TORTOISE

Gopherus polyphemus



Order: Testudines
Family: Testudinidae
FNAI Ranks: G3/S3
U.S. Status: None in Florida; Threatened in Louisiana, Mississippi, and western Alabama
FL Status: Species of Special Concern
Florida prohibits take, possession, sale, or purchase of tortoises or their parts except by permit.



juvenile
© Dan Hipes

© Dan Hipes

Description: A medium-sized turtle (to 10 in. = 254 mm) fully adapted for life on land. Upper shell brown and relatively flat above; lower shell yellowish, without hinge, and projecting forward, especially in male; skin brown to dark gray. Forelimbs greatly expanded for digging; hind limbs reduced, stumpy, lacking any form of webbing between toes. Lower shell of male somewhat concave. Young: scales of carapace often with yellow centers, skin yellowish to tan; approximately 2 in. (51 mm) shell length at hatching.

Similar Species: The only other native land turtle in Florida, the box turtle (*Terrapene carolina*), is distinguished by its smaller size (to 8 in. =

GOPHER TORTOISE

Gopherus polyphemus

203 mm), less stout feet, moveable hinge on lower shell, and often but not always by black and yellow upper shell. Tortoise burrows, which are useful in determining species' presence, typically have lower, flatter profile than more rounded burrows of armadillos; this reflects differences in cross-sectional shapes of the two animals.

Habitat: Typically found in dry upland habitats, including sandhills, scrub, xeric oak hammock, and dry pine flatwoods; also commonly uses disturbed habitats such as pastures, oldfields, and road shoulders. Tortoises excavate deep burrows for refuge from predators, weather, and fire; more than 300 other species of animals have been recorded sharing these burrows.

Seasonal Occurrence: Above-ground activity is greatly reduced during cold weather, with tortoises in northern Florida remaining below ground for months. Nonetheless, burrows are relatively conspicuous year-round.

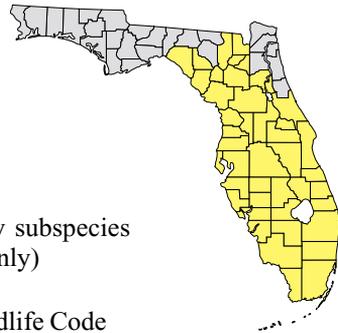
Florida Distribution: State-wide except absent from the Everglades and Keys.

Range-wide Distribution: Lower Southeastern Coastal Plain, extending from southern South Carolina southward through lower Georgia and Florida and westward through southern Alabama, Mississippi, and extreme southeastern Louisiana.

Conservation Status: Despite its widespread occurrence throughout Florida, there is considerable concern about the declining abundance of this species. Much of its native habitat has been lost to agriculture, citriculture, forestry, mining, and urban and residential development. Although protected populations occur on many state, federal, and private conservation lands, recent development of a severe respiratory disease threatens even those.

Protection and Management: Manage large, undivided tracts of upland habitat to maintain native vegetative conditions; this generally requires periodic prescribed fire beneath trees to reduce brush and favor growth of grasses and forbs. Avoid building roads and houses in xeric uplands. Because of risk of introducing tortoises infected with respiratory disease to uncontaminated populations, tortoises should not be relocated except under strictly controlled programs.

FLORIDA SANDHILL CRANE
Grus canadensis pratensis



Order: Gruiformes
Family: Gruidae
FNAI Ranks: G5T2T3/S2S3
U.S. Status: Endangered (nonmigratory subspecies in Cuba and Mississippi only)
FL Status: Threatened
U.S. Migratory Bird Treaty Act and state Wildlife Code prohibit take of birds, nests, or eggs.



© Karla Brandt

Description: A tall, long-necked, long-legged bird with a clump of feathers that droops over the rump. Adult is gray overall, with a whitish chin, cheek, and upper throat, and dull red skin on the crown and lores (lacking in immatures); feathers may have brownish-red staining resulting from preening with muddy bill. Immature has pale to tawny feathers on head and neck and a gray body with brownish-red mottling. Flies with neck extended. Their distinctive rolling call can be heard from far away.

Similar Species: Indistinguishable from greater sandhill crane (*Grus canadensis tabida*), which winters in Florida. Greater sandhill crane generally arrives in Florida in October and leaves in March, so the date observed or definite evidence of reproduction may be used to differentiate the two. Great blue heron (*Ardea herodias*) is sometimes mistakenly

FLORIDA SANDHILL CRANE *Grus canadensis pratensis*

identified as a crane. This heron lacks the bald, red crown of the sandhill and flies with its neck tucked in, typical of herons and egrets. Whooping crane (*G. americana*) is white.

Habitat: Prairies, freshwater marshes, and pasture lands. Avoids forests and deep marshes but uses transition zones and edges between these and prairies or pasture lands. Will frequent agricultural areas like feed lots and crop fields, and also golf courses and other open lawns, especially in winter and early spring. Nest is a mound of herbaceous plant material in shallow water or on the ground in marshy areas. Favors wetlands dominated by pickerelweed and maidencane.

Seasonal Occurrence: Nonmigratory. Very sedentary, although may forage widely. Large influx of northern migratory subspecies in winter (October - March).

Florida Distribution: Most of peninsular Florida within appropriate habitat, though not as common south of Lake Okeechobee. Rarely reported west of Taylor County.

Range-wide Distribution: Florida range plus extreme southeastern Georgia (Okefenokee Swamp).

Conservation Status: Population estimate in 1975 of approximately 4,000 birds (25 percent are nonbreeding subadults) is still considered accurate. Habitat availability will become more and more of concern as Florida continues to lose open rangeland and native prairie to development and more intensive agricultural uses (e.g., citrus, row crops). Nesting success in human-altered areas is well below that of native areas. Shallow wetlands used by cranes are easily affected by drainage of adjacent uplands even if they are not directly disturbed. Florida sandhill cranes are found on federal and state lands and on local government lands (e.g., wellfields).

Protection and Management: Because of large home-range requirements, public lands do not protect large populations of cranes. Acquire land, through fee-simple acquisition and conservation easements on suitable ranchlands, in areas that bolster existing protected populations. Periodic fire important to retard invasion of woody vegetation in crane habitat. Filling drainage ditches to restore natural hydrological conditions important in some areas.

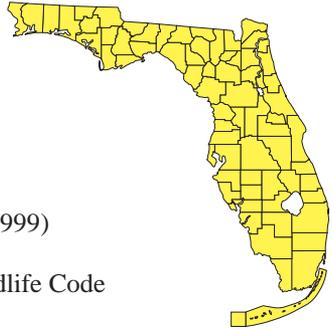
Selected References: Poole and Gill (eds.) 1992, Robertson and Woolfenden 1992, Rodgers et al. (eds.) 1996, Stevenson and Anderson 1994, Toland 1999a.

BALD EAGLE

Haliaeetus leucocephalus

Order: Falconiformes
Family: Accipitridae
FNAI Ranks: G4/S3
U.S. Status: Threatened
(proposed for delisting in 1999)
FL Status: Threatened

U.S. Migratory Bird Treaty Act and state Wildlife Code prohibit take of birds, nests, or eggs.



© Tom Vezo



immature

© Barry Mansell

Description: Adult has white head, white tail, and large, bright yellow bill; other plumage is dark. Immatures dark with variable amounts of light splotching on body, wings, and tail; head and bill are dark. In flight wings are broad and wide and held horizontally, presenting a flat profile when soaring and gliding. Flies with slow, powerful wing-beats.

Similar Species: At a distance, in flight, eagle's size and lack of white in wings should help differentiate it from the crested caracara (*Caracara cheriway*; see species account), which also has a white head. Flattened aspect of the eagle's wings is unlike the teetering, V-shaped flight of the turkey vulture (*Cathartes aura*).

Habitat: Most commonly includes areas close to coastal areas, bays, rivers, lakes, or other bodies of water that provide concentrations of food sources, including fish, waterfowl, and wading birds. Usually nests in tall trees (mostly live pines) that provide clear views of surrounding area. In Florida Bay, where there are few predators and few tall emergent trees, eagles nest in crowns of mangroves and even on the ground.

BALD EAGLE

Haliaeetus leucocephalus

Seasonal Occurrence: In extreme southern Florida, most adults are resident, but most birds in northern and central Florida migrate north out of state after breeding season (late May - July). Juveniles and younger birds mostly migrate north in summer and may range as far as Canada. Also, in winter, some birds from northern populations migrate to northern Florida.

Florida Distribution: Florida has largest breeding population of any state outside Alaska. Breeds throughout most of peninsular Florida and Keys, mainly along coast in eastern panhandle, and is rare in western panhandle. Greatest concentrations of nesting eagles occur around Lake Kissimmee in Polk and Osceola counties, around Lake George in Putnam, Volusia, and Lake counties, lakes Jessup, Monroe, and Harney in Seminole and Volusia counties, along Gulf coast north of Tampa, and Florida Bay and southwest peninsula area.

Range-wide Distribution: North America. Breeding range extends from Alaska, across Canada, south to Baja California, the Gulf coast and Florida Keys, although very local in the Great Basin and prairie and plains regions in interior U.S., where range has expanded to include Nebraska and Kansas. Non-breeding range is generally throughout breeding range except in far north, most commonly from southern Alaska and southern Canada southward.

Conservation Status: Original population in Florida could be found throughout state and likely numbered well over 1,000 pairs. Population declined sharply after late 1940s, reaching a low of 120 active nests in 1973, and by 1978 was considered rare as a breeder. Use of pesticide DDT and related compounds and development of coastal habitat are probably chief causes of decline. Numbers have steadily increased, especially since 1989. In 1993, 667 active territories were reported, and in 1999, 996 active nests were recorded. Major threats include habitat loss because of development and commercial timber harvest; pollutants and decreasing food supply are also of concern.

Protection and Management: Monitored annually by Fish and Wildlife Conservation Commission (FFWCC). Continue acquisition of breeding territories and protection of foraging and roosting sites. Incorporate information known about buffer zones around nesting areas into state and local development regulations to help mitigate losses as Florida's human population continues to expand. Monitor pesticides and other environmental contaminants that affect reproduction and food supply.

Selected References: FFWCC 2001, Kale (ed.) 1978, Poole and Gill (eds.) 2000, Robertson and Woolfenden 1992, Rodgers et. al. (eds.) 1996, Stevenson and Anderson 1994.

FLORIDA PYGMY-PIPES

Monotropis reynoldsiae (A. Gray) A. Heller

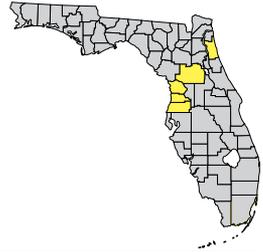
Synonyms: *Schweintizia reynoldsiae* A. Gray

Family: Ericaceae (heath)

FNAI Ranks: G1Q/S1

Legal Status: US—none FL—Endangered

Wetland Status: US—UPL FL—UPL



Alfred R. Schotz

Field Description: Perennial **herb**, lacking chlorophyll, parasitic on underground fungi that are associated with roots of trees. **Stems** 1.5 - 5 inches tall, fleshy; dull white, purplish, or brown; stems usually in clusters, at first curved, becoming erect with age. **Leaves** scale-like, less than 0.25 inch long, spiraled around the stem, same color as stem. **Flowers** several, at top of stem, nodding, white or lavender, slightly fragrant; **petals** united into a bell-shaped tube; **sepals** short, about half the length of flower. **Fruit** a small, dark pink berry.

Similar Species (drawing, upper right): Common pygmy-pipes (*Monotropis odorata*) have long sepals, about the same length as the purple flower. Indian-pipes (*Monotropa uniflora*) have white stems with a single white flower at the top; the petals are not united into tube.

Related Rare Species: Pine-sap (*Monotropa hypopithys*), state-endangered, has yellow, pink, or red stems with several flowers at the top of the stem; petals are not united into a tube and fall soon after opening.

Florida pygmy-pipes

Monotropis reynoldsiae

Habitat: Upland mixed hardwood forest, mesic and xeric hammock, sand pine and oak scrub.

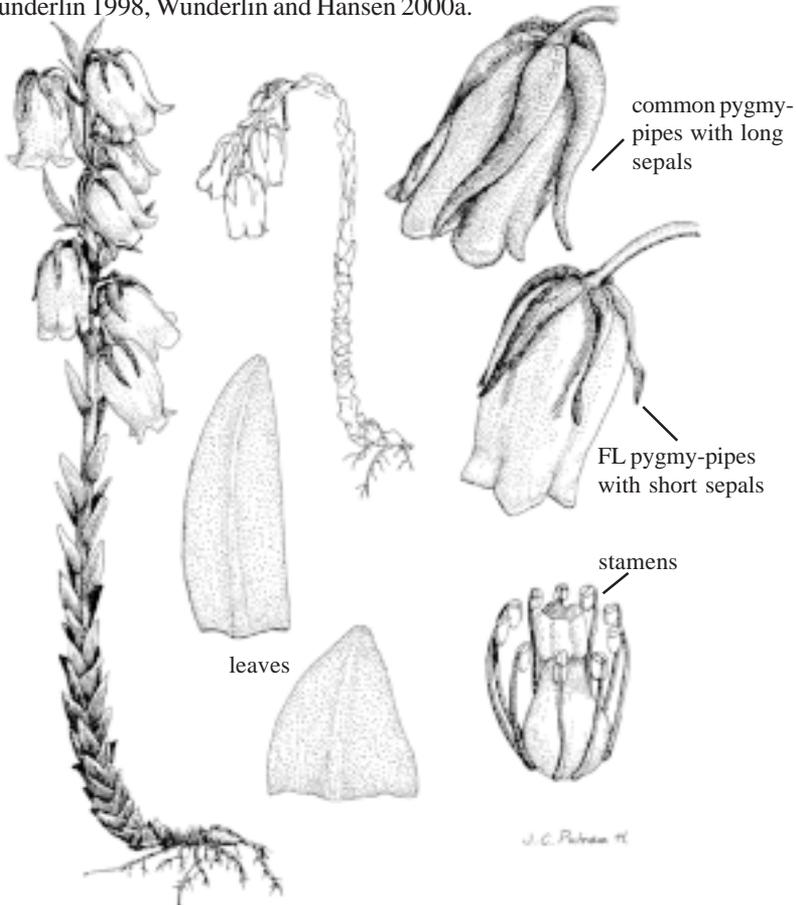
Best Survey Season: Flowers January–February.

Range-wide Distribution: Endemic to central FL.

Conservation Status: Only 6 populations are currently known, most on conservation lands.

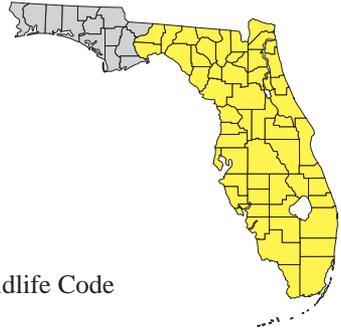
Protection & Management: Avoid logging and other ground disturbing activities in mesic forests and scrub. Protect plants from trampling and off-road-vehicles.

References: Coile 2000, Epstein 1994, Ward 1979, Wunderlin et al. 1980c, Wunderlin 1998, Wunderlin and Hansen 2000a.



WOOD STORK

Mycteria americana



Order: Ciconiiformes
Family: Ciconiidae
FNAI Ranks: G4/S2
U.S. Status: Endangered
FL Status: Endangered

U.S. Migratory Bird Treaty Act and state Wildlife Code prohibit take of birds, nests, or eggs.



immatures
© Barry Mansell

© Barry Mansell

Description: Very large, white wader with black in wings and a short black tail. Soars with neck and legs extended, displaying its long, broad wings; black flight feathers contrast with white along length of wings. Legs are dark and feet are beige. Adults have bare, scaly, dark-gray heads and necks and long, heavy, decurved bills. Head and neck of immature storks have grayish brown feathering, and their bills are yellowish.

Similar Species: American white pelicans (*Pelecanus erythrorhynchos*) have a similar wing pattern and also soar but have short legs, white tail, and do not fly with necks extended. White ibis (*Eudocimus albus*; see species account) is much smaller and only has black on wing tips. Great egret (*Ardea alba*) lacks black on wings.

Habitat: Nests colonially in a variety of inundated forested wetlands, including cypress strands and domes, mixed hardwood swamps, sloughs,

WOOD STORK

Mycteria americana

and mangroves. Increasingly nesting in artificial habitats (e.g., impoundments and dredged areas with native or exotic vegetation) in north and central Florida. Forages mainly in shallow water in freshwater marshes, swamps, lagoons, ponds, tidal creeks, flooded pastures and ditches, where they are attracted to falling water levels that concentrate food sources (mainly fish).

Seasonal Occurrence: Post-breeding dispersal carries large numbers from more southern locales to more northern parts of range; in winter, northern birds move south. Annual and long-term use of nesting sites is very dependent on feeding conditions, which may be affected dramatically by altered hydrologic patterns. Colonies may form late November - early March in south Florida and February - March in central and northern Florida.

Florida Distribution: Locally rare to abundant in the peninsula and Big Bend, but generally rare or lacking in panhandle and the Florida Keys. Uncommon to rare in winter in north.

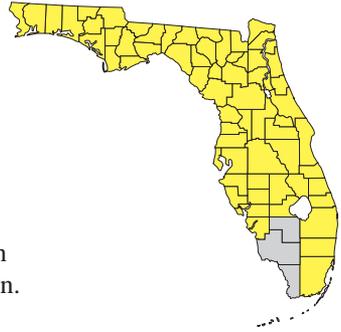
Range-wide Distribution: In U.S., breeds locally in South Carolina, Georgia, and Florida (formerly west to Texas). South, locally in lowlands from Mexico and northern Central America to South America (to western Ecuador, eastern Peru, Bolivia, northern Argentina), and rarely in Cuba and the Dominican Republic. Winters throughout breeding range except in South Carolina and Georgia.

Conservation Status: Many known breeding sites occur within public and private conservation lands. Dramatic decline in the large colonies (>500 individuals) formerly found in south Florida, and trend toward fewer birds distributed among smaller, more numerous colonies in central and northern Florida. Very sensitive to manipulation of water regimes and loss of wetland habitat, which affect both nesting sites and feeding areas.

Protection and Management: Survey colony sites and important feeding areas regularly. Essential to protect wetland areas, closely monitor water quality, and manage hydrologic patterns that consider the needs of the wood stork.

Selected References: Poole and Gill (eds.) 1999, Robertson and Woolfenden 1992, Rodgers et al. (eds.) 1996, Runde et al. 1991, Stevenson and Anderson 1994.

FLORIDA PINE SNAKE
Pituophis melanoleucus mugitus



Order: Squamata
Family: Colubridae
FNAI Ranks: G4T3?/S3
U.S. Status: None
FL Status: Species of Special Concern
State possession limit of one snake per person.



© Dan Hipes



© Dale R. Jackson



© Dan Hipes

Description: A large, stocky, tan or rusty colored snake with an indistinct pattern of large blotches on a lighter background; blotches more distinct posteriorly; venter white. May be dark brown in far western panhandle, where it intergrades with another subspecies. Body muscular, with keeled scales and undivided anal scale. Head relatively small, snout somewhat

FLORIDA PINE SNAKE *Pituophis melanoleucus mugitus*

pointed, four prefrontal scales, rostral scale extending upward between internasal scales. Adults 4 - 7 ft. (122 - 213 cm) or longer; young 15 - 24 in. (380 - 610 mm) at hatching. May hiss loudly and vibrate tail when encountered.

Similar Species: Most Florida snakes have only two prefrontal scales, and the rostral scale does not split the two internasals. Blotches of red rat snakes (*Elaphe guttata*) are smaller, more numerous (nearly 40), and more distinct. Eastern coachwhip (*Masticophis flagellum*) is more slender, usually darker anteriorly, lacks blotches, and has smooth scales and divided anal scale.

Habitat: Habitats with relatively open canopies and dry sandy soils, in which it burrows. Especially sandhill and former sandhill, including oldfields and pastures, but also sand pine scrub and scrubby flatwoods. Often coexists with pocket gophers and gopher tortoises.

Seasonal Occurrence: Spends most of time below ground; occasional surface activity from spring through fall, especially May - October. Eggs laid June - August; hatch in September and October.

Florida Distribution: Most of panhandle and peninsula south to Lake Okeechobee, extending southward along eastern ridge to Dade County, but absent from Keys. Possibly extirpated from some of more heavily developed counties such as Pinellas.

Range-wide Distribution: Southern South Carolina, southern Georgia, and most of Florida.

Conservation Status: Occurs on many state and federal lands in Florida. Threats include collection for pets (now restricted); highway mortality; and habitat loss and fragmentation from development, intensive agriculture, and mining.

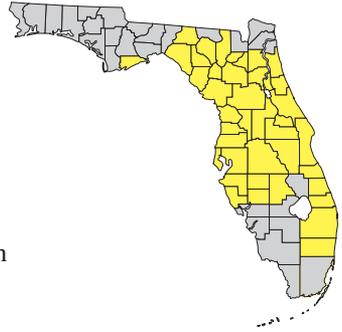
Protection and Management: Maintain large, unfragmented blocks of xeric natural communities; can tolerate some habitat degradation. Manage habitats with fire to prevent succession to closed canopy forests.

Selected References: Ashton and Ashton 1988b, Conant and Collins 1991, Ernst and Barbour 1989, Franz 1986, Moler (ed.) 1992, Mount 1975, Tenant 1997.

FLORIDA MOUSE

Podomys floridanus

Order: Rodentia
Family: Cricetidae
FNAI Ranks: G3/S3
U.S. Status: None
FL Status: Species of Special Concern



© James Layne



Podomys foot
© Dan Hipes



Peromyscus gossypinus
foot
© Dan Hipes

Description: A large mouse (7.3 - 8 in. = 179 - 203 mm), brownish to tawny above and whitish below. Flanks are often chestnut or orangish. Hind feet are large (0.86 - 1.1 in. = 23 - 28 mm), generally with five pads (plantar tubercles). Tail (3.12 - 3.8 in. = 80 - 95 mm) is indistinctly bicolored: gray-brown above, whitish below. Often has a faint skunk-like odor.

FLORIDA MOUSE

Podomys floridanus

Similar Species: Distinguished from all other mice within its range by the presence of five plantar tubercles on the hind feet versus six or seven in *Peromyscus* spp. Oldfield mouse (*Peromyscus polionotus*) is generally smaller (4.7 - 6.0 in. = 122 - 153 mm) with a proportionally shorter tail (1.6 - 2.4 in. = 40 - 60 mm) that is sharply bicolored. Cotton mouse (*Peromyscus gossypinus*) is slightly smaller, but overlaps in body measurements to the degree that the number of plantar tubercles is the best distinguishing characteristic.

Habitat: Xeric upland communities with sandy soils, including scrub, sandhill, and ruderal sites where they inhabit burrows of the gopher tortoise (*Gopherus polyphemus*; see species account). In the absence of gopher tortoises, Florida mice will dig their own burrows or use those of oldfield mice.

Seasonal Occurrence: Active year-round except on especially cold nights.

Florida Distribution: Occurs from north-central Florida south to Highlands and Sarasota counties and along the Atlantic coast from St. Johns County south to Miami-Dade County.

Range-wide Distribution: Same as Florida distribution.

Conservation Status: Protected on several conservation lands throughout central Florida. Largest populations may occur within Ocala National Forest and the scrubs along Lake Wales Ridge.

Protection and Management: Preserve areas supporting sandhill and scrub. Use prescribed fire to maintain openings in scrub and encourage the growth of grasses and forbs important for food and cover. Protect populations of gopher tortoises.

Selected References: Brown 1997, Humphrey (ed.) 1992, Layne 1990, Lazell 1989, Whitaker 1996.

GIANT ORCHID

Pteroglossaspis ecristata (Fernald) Rolfe

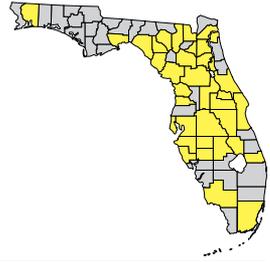
Synonym: *Eulophia ecristata* (Fernald) Ames

Family: Orchidaceae (orchid)

FNAI Ranks: G2/S2

Legal Status: US—Mgmt Concern FL—Threatened

Wetland Status: US—none FL—UPL



Dan Hipes

Field Description: Perennial **herb** with 2 - 4 **basal leaves** 6 - 28 inches long and 0.5 - 1.5 inches wide, erect, pleated, with 3 - 5 strong veins. **Flower stalk** 1 - 5.5 feet tall, leafless except for a few bracts, with a terminal spike of 5 - 30 flowers. **Flowers** twisted in toward the stalk, with a stiff floral bract, 2.5 inches long, beneath each flower. **Sepals and petals** yellow-green, folded forward over the lip; **lip** 3-lobed, without a crest, the prominent central lobe maroon with green margins. **Fruit** a rounded capsule, pointed upwards.

Similar Species: In flower, giant orchid resembles no other species. Its leaves resemble those of other orchids, such as grasspink (*Calopogon tuberosus*), wild coco (*Eulophia alta*), a S FL wetland species, and pinepink (*Bletia purpurea*), found mostly in pine rocklands and cypress swamps. Giant orchid leaves resemble those of saw palmetto seedlings, but are softer.

Related Rare Species: Over 70 orchid species are listed as threatened or endangered in FL.

Giant orchid

Pteroglossaspis ecristata

Habitat: Sandhill, scrub, pine flatwoods, pine rocklands.

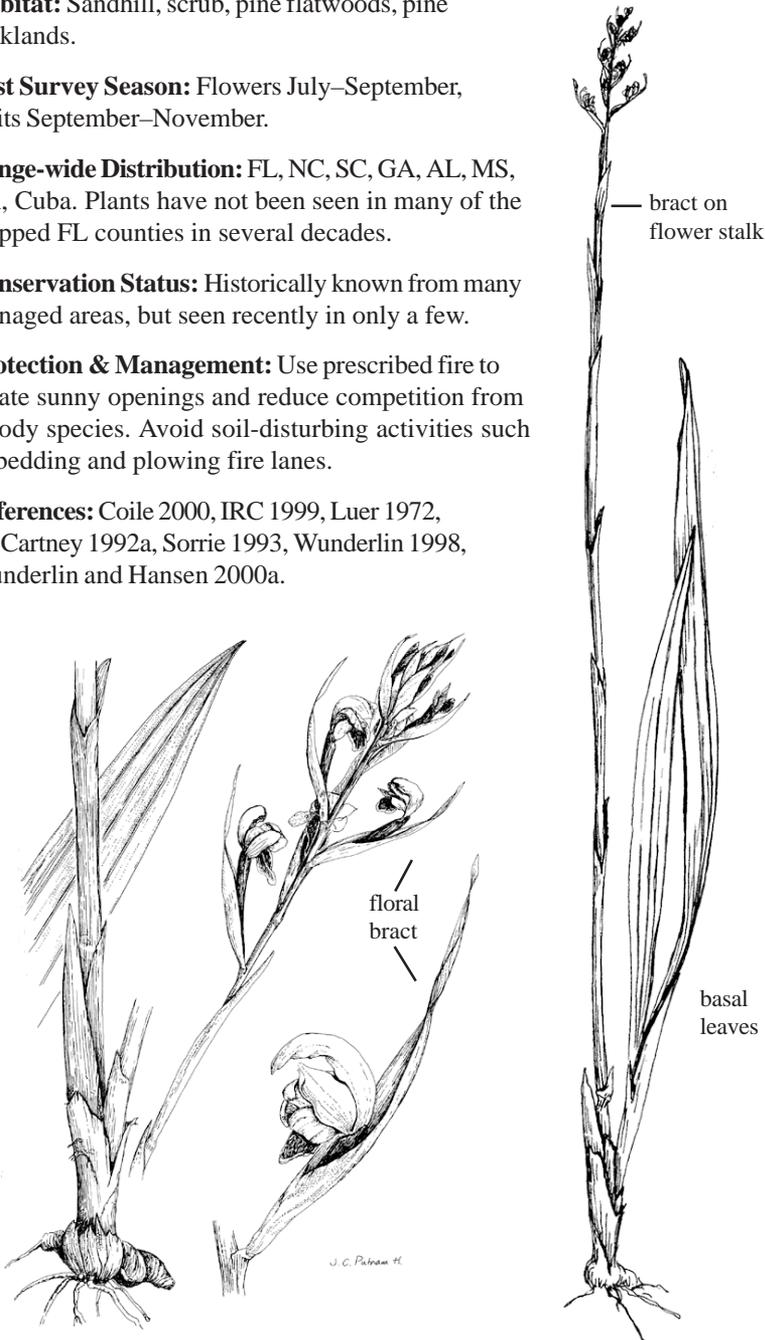
Best Survey Season: Flowers July–September, fruits September–November.

Range-wide Distribution: FL, NC, SC, GA, AL, MS, LA, Cuba. Plants have not been seen in many of the mapped FL counties in several decades.

Conservation Status: Historically known from many managed areas, but seen recently in only a few.

Protection & Management: Use prescribed fire to create sunny openings and reduce competition from woody species. Avoid soil-disturbing activities such as bedding and plowing fire lanes.

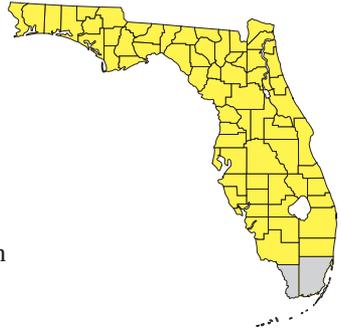
References: Coile 2000, IRC 1999, Luer 1972, McCartney 1992a, Sorrie 1993, Wunderlin 1998, Wunderlin and Hansen 2000a.



GOPHER FROG

Rana capito (formerly *R. areolata*)

Order:	Anura
Family:	Ranidae
FNAI Ranks:	G3G4/S3
U.S. Status:	None
FL Status:	Species of Special Concern



© Dan Hipes

Description: A medium-sized, boldly spotted frog with a chunky appearance: body short and plump, head large with somewhat rounded snout, legs relatively short. Back with somewhat warty skin and prominent, often bronze-colored longitudinal ridge on each side behind eye. Dorsal pattern of irregularly shaped dark spots on background that may be cream, gray, or brown. Chin and throat spotted, belly usually unmarked posteriorly. Adults 2.5 - 4 in. (63 - 102 mm) (excluding legs). Call resembles a deep snore. Tadpole large, to 3.5 in. (89 mm), globose, olive green, with large black spots on sides of tail.

Similar Species: Leopard frog (*Rana sphenoccephala*), which may share breeding ponds with gopher frog, has large, dark brown spots on a green to

GOPHER FROG

Rana capito

brown background; however, body is more slender, snout very pointed, and throat and chin plain white. Tadpoles of the two species are very similar. Southern toad (*Bufo terrestris*) has dry, very warty skin, no raised ridges along edges of back, a pair of large raised glands behind eyes, and blunt snout. Spadefoot toad (*Scaphiopus holbrookii*) has vertical black pupils in golden eyes, dry skin, and a pair of hourglass-like lines rather than spots on back. All treefrogs have enlarged pads on toes.

Habitat: Dry, sandy uplands, chiefly sandhill and scrub, that include isolated wetlands or large ponds within about 1 mi. (1.7 km). Occasional in dry pine flatwoods, xeric hammock, and disturbed examples of above. Breeds chiefly in seasonally flooded, temporary ponds, but also in some permanent waters. Nocturnal, normally spending daytime in stumpholes, tunnels, or burrows, especially those of gopher tortoise (*Gopherus polyphemus*).

Seasonal Occurrence: Migrates to ponds for breeding from October through April, though may also breed during summer in central and southern Florida.

Florida Distribution: Most of state excluding Everglades and Keys; potential but not documented for some counties indicated on map. Two subspecies: dusky gopher frog (*R. c. sevosa*) in western panhandle, Florida gopher frog (*R. c. aesopus*) in peninsula and eastern panhandle.

Range-wide Distribution: Southeastern Gulf and Atlantic Coastal Plains, from North Carolina to eastern Louisiana.

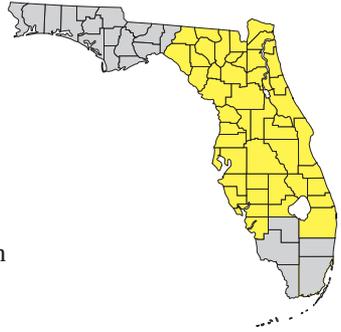
Conservation Status: Many protected conservation lands in Florida support gopher frogs, although attention to managing and protecting breeding habitat and migratory pathways is often insufficient.

Protection and Management: Maintain large tracts of native vegetation in sandy, upland habitats that include wetlands. Allow fires to burn through dry wetland basins in addition to uplands. Manage uplands for gopher tortoises. See recommendations for striped newt (*Notophthalmus perstriatus*).

Selected References: Ashton and Ashton 1988a, Bartlett and Bartlett 1999, Conant and Collins 1991, Franz 1986, Franz and Smith 1999, Moler (ed.) 1992, Mount 1975.

SHERMAN'S FOX SQUIRREL

Sciurus niger shermani



Order:	Rodentia
Family:	Sciuridae
FNAI Ranks:	G5T3/S3
U.S. Status:	None
FL Status:	Species of Special Concern



© Jerry Lee Gingerich, DVM

Description: A large (23 - 28 in. = 600 - 700 mm) tree squirrel with highly variable dorsal fur color ranging from nearly all black (uncommon) to silver, with variations of black over silver and silver over black. Underside is tan. Head is generally black; ears and muzzle are often white. Tail is long, nearly the length of the head and torso. Nests are usually in oak trees and are constructed of oak leaves and Spanish moss.

Similar Species: Gray squirrel (*Sciurus carolinensis*) is smaller (less than 19 in. = 500 mm).

Habitat: Sandhills (high pine), pine flatwoods, and pastures and other open, ruderal habitats with scattered pines and oaks. Depends on a variety of oak trees for seasonal food and nest material. Longleaf pine cones and seeds are important foods.

SHERMAN'S FOX SQUIRREL *Sciurus niger shermani*

Seasonal Occurrence: Active year-round.

Florida Distribution: Subspecies range was originally defined as running from the Aucilla River east to Nassau County and south to the Caloosahatchee River in southwestern Florida and to Miami-Dade County along the east coast. Some researchers extend the range westward to the Apalachicola River. Southern fox squirrel (*S. n. niger*) occurs throughout most of the panhandle; mangrove fox squirrel (*S. n. avicennia*) occurs southwest of Lake Okeechobee.

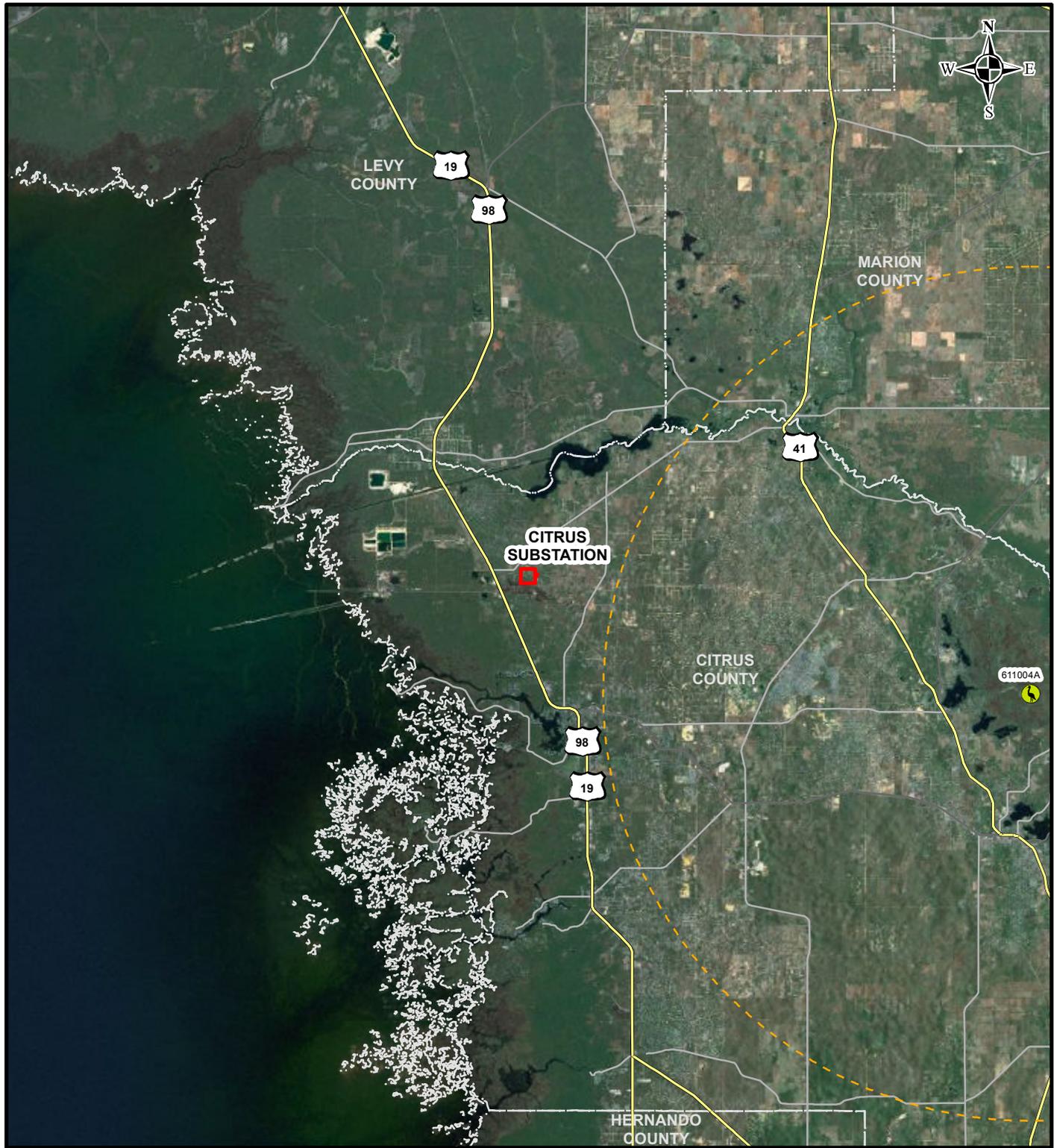
Range-wide Distribution: Peninsular Florida (excluding southwestern portion) north to central Georgia.

Conservation Status: Although present in several conservation areas, Sherman's fox squirrel has been eliminated from much of its former habitat as a result of conversion to pine plantation, row crops, or development.

Protection and Management: Preserve longleaf pine/wiregrass communities, particularly sandhills. Burn habitat every two to five years (April - July if possible) to control shrubby vegetation and maintain park-like conditions.

Selected References: Brown 1997, Hall 1981, Humphrey (ed.) 1992, Whitaker 1996.

APPENDIX C
LISTED SPECIES CONSULTATION AREAS



LEGEND

-  Florida Wood Stork Nesting Colony
-  Property Boundary
-  Wood Stork Forage Area
-  County Boundary
-  US Road
-  State Road
-  County Road



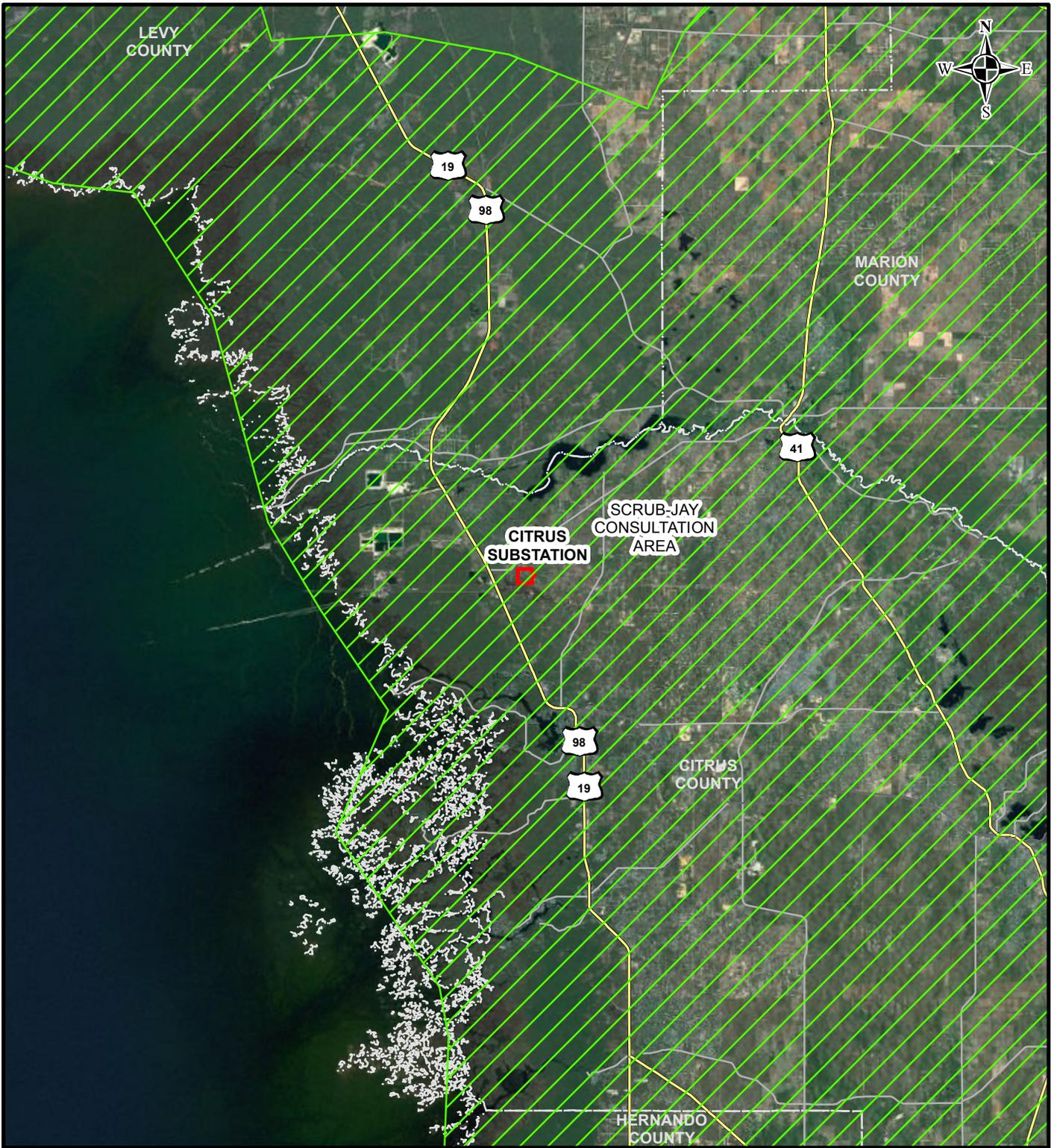
REFERENCE

Substations and Right-of-Way: Progress Energy Florida & Golder Associates Inc., 2009; Roads: Florida Department of Transportation, 2010; Florida Wood Stork Nesting Colonies and Forage Areas: US Fish & Wildlife Service, 2010; County Boundaries: U.S. Census Bureau, 2000; Aerial: i-cubed, 2009

**PROGRESS ENERGY FLORIDA
LEVY NUCLEAR PLANT**

**CITRUS SUBSTATION
WOOD STORK NESTING COLONIES & FORAGE AREAS**

	MXD File No. 103-89627H007		SCALE AS SHOWN	REV. 0
	DESIGN	JG	03/11/2011	APPENDIX C FIGURE 1
	GIS	JG	03/11/2011	
	CHECK	SR	03/11/2011	
	REVIEW	KB	03/11/2011	



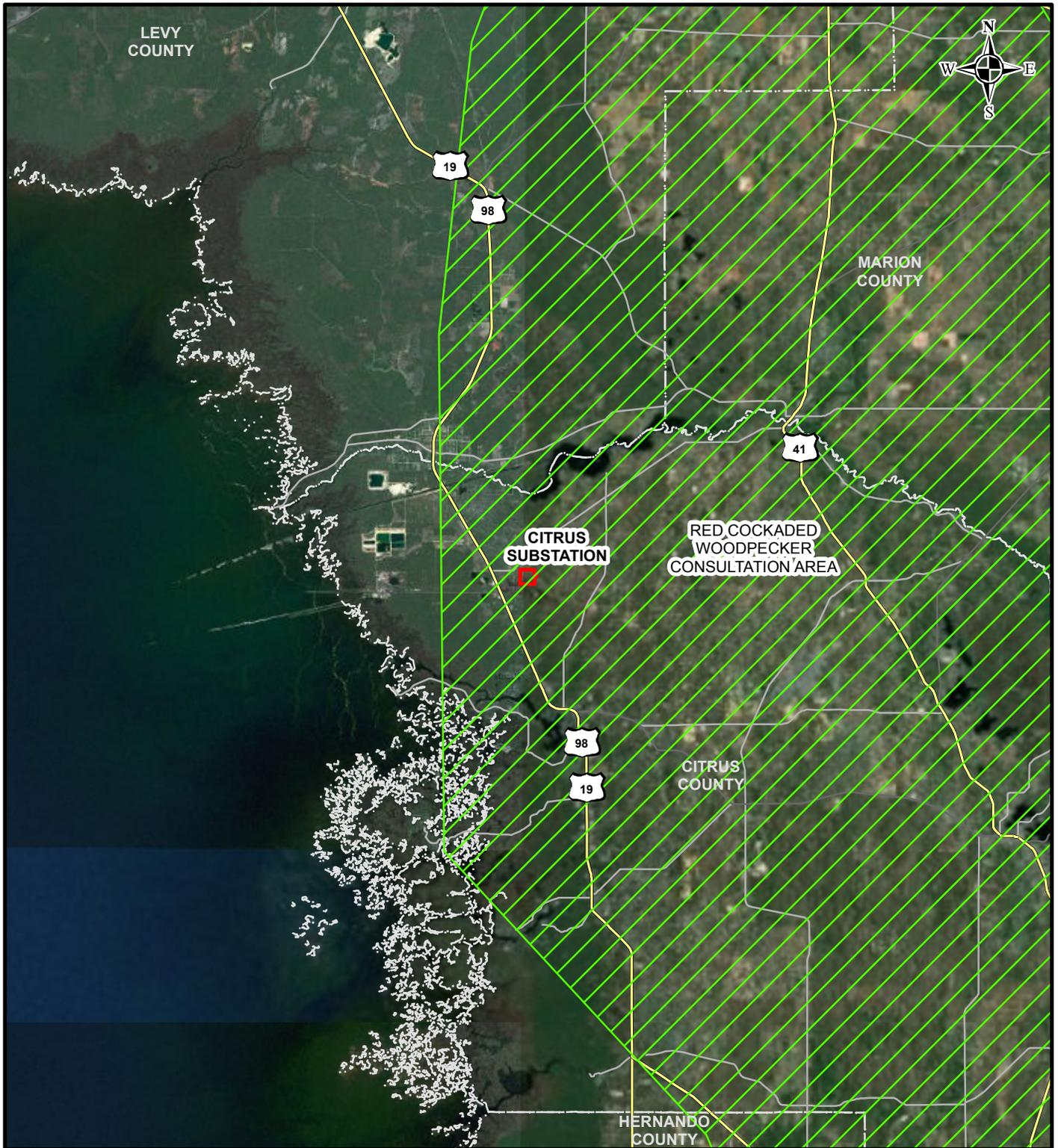
LEGEND

- Property Boundary
- Scrub Jay Consultation Area
- County Boundary
- US Road
- State Road
- County Road

REFERENCE

Substations and Right-of-Way: Progress Energy Florida & Golder Associates Inc., 2009; Roads: Florida Department of Transportation, 2010; Snail Kite Consultation Area: U.S. Fish and Wildlife Service, 2003; County Boundaries: U.S. Census Bureau, 2000; Aerial: i-cubed, 2009

PROGRESS ENERGY FLORIDA LEVY NUCLEAR PLANT			
CITRUS SUBSTATION SCRUB JAY CONSULTATION AREA			
	MXD File No. 103-89627H008		SCALE AS SHOWN
	DESIGN	JG	03/11/2011
	GIS	JG	03/11/2011
	CHECK	JG	03/11/2011
	REVIEW	KB	03/11/2011
APPENDIX C FIGURE 2			REV. 0



LEGEND

- Property Boundary
- US Road
- Red Cockaded Woodpecker Consultation Area
- State Road
- County Boundary
- County Road



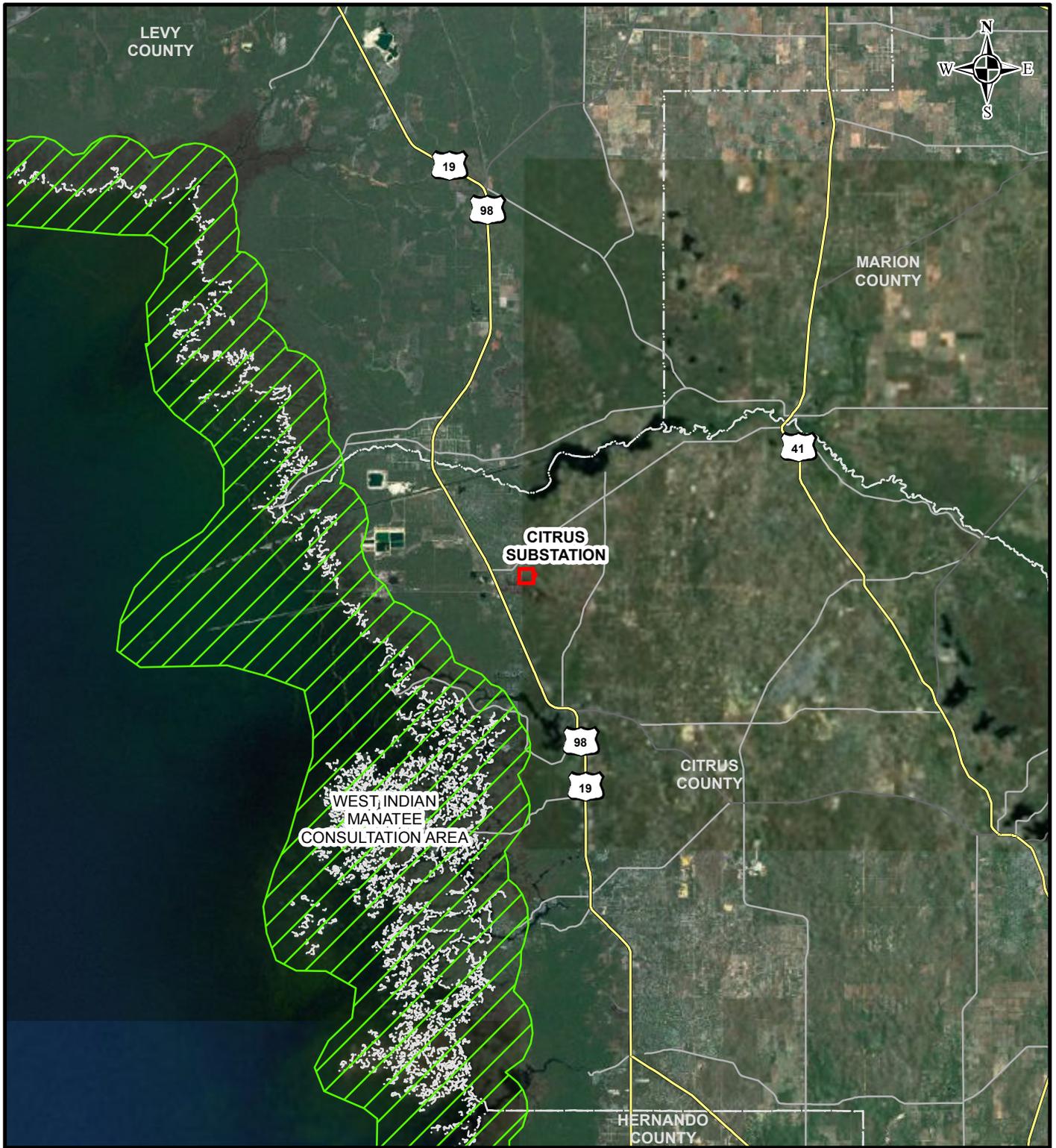
REFERENCE

Substations and Right-of-Way; Progress Energy Florida & Golder Associates Inc., 2009; Roads: Florida Department of Transportation, 2010; Red Cockaded Woodpecker Consultation Area: U.S. Fish and Wildlife Service, 2003; County Boundaries: U.S. Census Bureau, 2000; Aerial: i-cubed, 2009

**PROGRESS ENERGY FLORIDA
LEVY NUCLEAR PLANT**

**CITRUS SUBSTATION
RED COCKADED WOODPECKER CONSULTATION AREA**

	MXD File No. 103-89627H009		SCALE AS SHOWN	REV. 0
	DESIGN	JG	03/11/2011	APPENDIX C FIGURE 3
	GIS	JG	03/11/2011	
	CHECK	SR	03/11/2011	
	REVIEW	KB	03/11/2011	



LEGEND

- Property Boundary
- West Indian Manatee Consultation Area
- County Boundary
- US Road
- State Road
- County Road

REFERENCE

Substations and Right-of-Way: Progress Energy Florida & Golder Associates Inc., 2009; Roads: Florida Department of Transportation, 2010; West Indian Manatee Consultation Area: U.S. Fish and Wildlife Service, 2003; County Boundaries: U.S. Census Bureau, 2000; Aerial: i-cubed, 2009

PROGRESS ENERGY FLORIDA LEVY NUCLEAR PLANT			
CITRUS SUBSTATION WEST INDIAN MANATEE CONSULTATION AREA			
	MXD File No. 103-89627H010		SCALE AS SHOWN
	DESIGN	JG	03/11/2011
	GIS	JG	03/11/2011
	CHECK	SR	03/11/2011
	REVIEW	KB	03/11/2011
APPENDIX C FIGURE 4			REV. 0