



Levy Nuclear Plant Project

Listed Species Assessment

Crystal River Energy Complex Substation Expansion



March 2011

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1.0 INTRODUCTION

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 substation site. The purpose of the preliminary listed species assessments was to gather information regarding the existing habitat conditions within each transmission line ROW and substation site, document the occurrence of listed species, both plant and animal, 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 site, 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 Crystal River Energy Complex (CREC) Substation Expansion Site associated with the Levy-Crystal River (LCR) transmission line.

1.1 Crystal River Energy Complex Substation Expansion Site Description

The approximately 47-acre Crystal River Energy Complex (CREC) Substation Expansion Site is located north of the existing switchyard within the CREC in Citrus County (see Figure 1). The expansion area has been previously cleared and is currently maintained as an open grassed field with small areas of depressional wetlands. Illustrations of the CREC Substation Expansion Site on a USGS topographic map and on a habitat classification map are presented in Figures 2 and 3, respectively.

2.0 METHODOLOGY

Golder evaluated the likelihood of listed species occurrence within the CREC Substation Expansion 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 data within the CREC Substation Expansion 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.

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 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. These data were supplemented with field surveys to prepare maps illustrating the location of documented occurrences of listed species within the CREC Substation Expansion Site (Figure 4). In addition, a site-specific Element Occurrence Report from the FNAI was obtained, detailing known occurrences of listed species within and adjacent to the CREC Substation Expansion Site (see Appendix A). USFWS-designated consultation areas for species known to occur in Citrus and Hernando Counties were compiled and evaluated relative to the location of the CREC Substation Expansion Site (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 Citrus County, their habitat preferences, and regulatory status, which were then updated with results of field surveys and presence of suitable habitat to determine individual species' probability of occurrence within the CREC Substation Expansion Site (Table 2).

2.3 Preliminary Field Survey

A reconnaissance-level listed species survey was conducted within the CREC Substation Expansion Site concurrent with the jurisdictional wetland delineation field effort in October 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 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 CREC Substation Expansion Site is summarized in Table 1. The location and extent of vegetative communities and land use/land cover classifications are depicted on Figure 3.

The majority of the Site (approximately 42 acres) is previously cleared, open grassed lawn with overhead transmission facilities and parking areas. Wetland habitats compose approximately 4 acres within the Site, and include mixed forest wetlands, freshwater marshes and wet prairies.

There is less than one acre of surface waters within the Site. Surface waters are limited to ditches and reservoirs less than 10 acres in size.

3.2 Data Review

Based on the lack of suitable habitat as described in Beever (2006); Coile and Garland (2003); FNAI (2001); Humphrey (1992); Moler (1992); and Rodgers et al. (1992); the Site location within the species' geographic ranges, and the on-going operations at the CREC Complex, listed species have a low likelihood of occurrence within the CREC Substation Expansion Site (Table 2). However, freshwater marsh, wet prairie, small reservoirs and ditches may provide potential low quality foraging habitat for listed species of birds, including 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*). No listed plants are likely to occur within the wetland habitats within the CREC Substation Expansion Site. There are no upland habitats within the CREC Substation Expansion Site.

According to the FNAI GIS database and the FNAI element occurrence report (Appendix B), listed species occurrences within or immediately adjacent to the Site are limited to a manatee aggregation site within the CREC discharge canal (Figure 4), outside of the CREC Substation Expansion Site.

The FWC bald eagle nest database (<http://www.myfwc.com/eagle/eaglenests/nestlocator.aspx>) includes 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 is 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 following federally listed species are reported from Citrus County but are not expected to be observed within the CREC Substation Expansion Site due to lack of scrub habitat, mature pine forest, and marine or riverine habitat within the preferred ROW: Florida scrub-jay (*Aphelocoma coerulescens*), piping plover (*Charadrius melodus*), red-cockaded woodpecker (*Picoides borealis*), West Indian (Florida)

manatee (*Trichechus manatus latirostris*), loggerhead sea turtle (*Caretta caretta*), green sea turtle (*Chelonia mydas*), leatherback sea turtle (*Dermochelys coriacea*), Kemp's ridley sea turtle (*Lepidochelys kempi*), and Gulf sturgeon (*Acipenser oxyrhynchus desotoi*).

USFWS-designated consultation areas for the scrub jay and West Indian (Florida) manatee include portions of the CREC Substation Expansion Site (Appendix C). The consultation area for the red-cockaded woodpecker is located approximately 3 miles to the east of the CREC Substation Expansion Site. No impacts to the West Indian manatee will occur as a result of the CREC Substation expansion, as no suitable habitat occurs on Site and no in-water work will be necessary during substation expansion. The Florida scrub jay is unlikely to occur on the CREC Substation Expansion Site due to lack of suitable habitat, as described below.

Florida scrub-jays historically were distributed throughout the Florida peninsula in suitable scrub habitat in 39 of the 40 counties south of, and including, Levy, Gilchrist, Alachua, Clay, and Duval counties (Fitzpatrick et al., 1991). The distribution and status of the Florida scrub-jay across its entire range was updated during 1992 and 1993 (Fitzpatrick et al., 1994), with overall Florida population of scrub-jays divided into five subregions corresponding to the major sand deposits located on the peninsula. The Florida scrub-jay has extremely specific habitat requirements, occurring on well drained to excessively well-drained sandy soils supporting oak-dominated scrub, or xeric oak scrub. This community type is adapted to nutrient poor soils, periodic drought, high seasonal rainfall and frequent fires (Abrahamson, 1984). Xeric oak scrub on the Lake Wales Ridge is predominantly comprised of four species of stunted, low-growing oaks: sand live oak (*Quercus geminata*), Chapman oak, (*Q. chapmanii*), myrtle oak, (*Q. myrtifolia*), and scrub oak, (*Q. inopina*) (Myers, 1990). In optimal habitat for scrub-jays, these oaks are 1 to 3 m high, interspersed with 10 to 50 percent unvegetated, sandy openings, and a sand pine (*Pinus clausa*) canopy of less than 20 percent (Woolfenden and Fitzpatrick, 1990). As no areas of suitable xeric oak scrub habitat occur within the CREC Substation Expansion Site and no occurrences of scrub jay have been documented in the vicinity of the Site, it is unlikely that any scrub jays occur within the CREC Substation Expansion Site.

3.3 Preliminary Field Survey

No listed species were observed by Golder during the field survey conducted in October 2009. Listed species known to occur in Citrus County, their suitable habitat, presence of suitable habitat within the CREC Substation Expansion Site, 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 Birds

3.4.1 *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 a slate blue body. 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 CREC Substation Expansion Site.

3.4.2 *Snowy Egret*

The snowy egret is classified as a species of special concern by the FWC, but is not listed federally by the USFWS. The snowy egret is a medium sized, all-white wading bird with black legs and bright yellow feet. They occur in Florida in all seasons, nesting in both inland and coastal wetlands in 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 CREC Substation Expansion Site.

3.4.3 *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). They 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 CREC Substation Expansion Site.

3.4.4 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. They typically nest in Florida from March to August 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 CREC Substation Expansion Site.

3.4.5 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, creating 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 CREC Substation Expansion Site.

3.4.6 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 CREC Substation Expansion Site; according to the FWC bald eagle nest database, there are no nests within a one mile radius of the CREC Substation Expansion Site.

3.4.7 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 CREC Substation Expansion Site; the Site does not occur within any wood stork colony CFAs (Appendix C).

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 CREC Substation Expansion Site to support the permitting effort and federal and state requirements. 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, additional evaluations will be conducted within the CREC Substation Expansion Site prior to clearing and construction. The results of those additional evaluations will be provided to the USFWS and FWC, and coordination will occur with the agencies regarding appropriate impact mitigation methodologies, if necessary.

Based upon the results of the preliminary listed species assessment and proposed impacts associated with construction of the CREC Substation Expansion Site, additional evaluations are limited to the bald eagle, as described below:

4.1 Bald Eagle

Prior to clearing and construction, PEF will update the bald eagle nest location and status (active/inactive) information within and adjacent to the CREC Substation Expansion Site. During clearing and construction, PEF will avoid impacts to bald eagle nests where possible. If impacts cannot be avoided within the 660-foot nest buffer zone, construction activities will be conducted consistent with the FWC-approved Bald Eagle Management Guidelines, outlined in the FWC-approved Bald Eagle Management Plan, dated April 9, 2008, or any subsequent FWC-approved versions. In areas where bald eagle nests are present, efforts will be made to avoid construction activities during the nesting season (October 1 - May 15), or when eagles are present before October 1 or after May 15.

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, PEF will obtain the information required for an FWC Eagle Permit from the FWC, 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 will be followed, as applicable.

5.0 SUMMARY

To support the permitting effort and the regulatory process, Golder has prepared an evaluation of listed species occurrence within the CREC Substation Expansion Site. In consultation with the FWC and USFWS, this listed species evaluation will facilitate the development of detailed listed species surveys to be conducted prior to clearing and construction, including specific locations and protocols.

The CREC Substation Expansion Site contains approximately 4 acres of wetlands and less than 1 acre of surface waters, which provide low-quality habitat for listed species due to their disturbed nature and the surrounding industrial activity associated with the Crystal River Energy Complex. However, wading birds may occasionally utilize wetland areas with the Site.

Based on the results of the assessment, detailed listed species surveys are not recommended.

Prior to clearing and construction, PEF will update the bald eagle nest location and status information within and adjacent to the CREC Substation Expansion 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, PEF will obtain the information required for an FWC Eagle Permit from the FWC, 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 will be followed, as applicable.

6.0 REFERENCES

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TABLES

TABLE 1

**Progress Energy Florida – Levy Nuclear Plant Project
Crystal River Energy Complex Substation Expansion**

Land Use/Land Cover Summary of the Crystal River Energy Complex Substation Expansion Site

FLUCFCS Code	Description	Acreage within Substation Site
511	Ditches	0.09
534	Reservoirs Less Than 10 Acres	0.46
630	Wetland Forested Mixed	2.88
641	Freshwater Marshes	0.44
643	Wet Prairies	0.55
831	Electric Power Facilities	42.44
TOTAL		46.86

TABLE 2

Florida Power Corporation d/b/a Progress Energy Florida, Inc.
Crystal River Energy Complex Substation Expansion

Protected Plants and Animals Potentially Occurring within the Crystal River Energy Complex Substation Expansion 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	No	Low	N	SSC	No
BIRDS						
<i>Ammodramus maritimus peninsulae</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	Unlikely	T	T	No
<i>Aramus guarana</i> Limpkin	Freshwater marshes, swamps, springs, spring runs, pond, river, and lake margins	Yes	Low	N	SSC	No
<i>Athene cunicularia floridana</i> Florida burrowing owl	Dry prairie, sandhill, pastures	No	Unlikely	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	Medium	N	SSC	No
<i>Egretta thula</i> Snowy egret	Wetlands, streams, lakes, and swamps, manmade impoundments, ditches	Yes	Medium	N	SSC	No
<i>Egretta tricolor</i> Tricolored heron	Wetlands, ditches, pond and lake edges, coastal areas	Yes	Medium	N	SSC	No
<i>Eudocimus albus</i> White ibis	Freshwater and brackish marshes, salt flats, forested wetlands, wet prairies, swales, man-made ditches	Yes	Medium	N	SSC	No
<i>Falco sparverius paulus</i> Southeastern American kestrel	Open pine habitats, woodland edges, prairies, pastures	No	Unlikely	N	T	No
<i>Grus canadensis pratensis</i> Florida sandhill crane	Prairies, freshwater marshes, and pastures	Yes	Medium	N	T	No

TABLE 2

Florida Power Corporation d/b/a Progress Energy Florida, Inc.
Crystal River Energy Complex Substation Expansion

Protected Plants and Animals Potentially Occurring within the Crystal River Energy Complex Substation Expansion Site
Citrus County, Florida

Species	Habitat of Occurrence	Habitat Present on Site (Y/N)	Likelihood of Occurrence on Site	Status		Observed
				USFWS	FWC	
<i>Haematopus palliatus</i> American oystercatcher	Large areas of beach, sandbar, mudflats, and shellfish beds for foraging. Sparsely vegetated, sandy areas for nesting	No	Unlikely	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	Unlikely	N	SSC	No
<i>Picoides borealis</i> Red-cockaded woodpecker	Mature pine woodlands	No	Unlikely	E	E	No
<i>Platalea ajaja</i> Roseate spoonbill	Tidal flats, coastal and freshwater marshes	Yes	Low	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	Low	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	Low	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	No	Unlikely	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	Unlikely	E	E	No

TABLE 2

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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	No	Unlikely	N	SSC	No
<i>Sorex longirostris eionis</i> Homosassa shrew	Moist areas, forested wetlands, riparian forests, fields, brushy areas; near Homosassa Springs area	Yes	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	Unlikely	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	No	Low	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	No	Unlikely	N	T	No
<i>Lampropeltis extenuata</i> Short-tailed snake	Sandhill, xeric hammock, sand pine scrub	No	Unlikely	N	T	No

TABLE 2

Florida Power Corporation d/b/a Progress Energy Florida, Inc.
Crystal River Energy Complex Substation Expansion

Protected Plants and Animals Potentially Occurring within the Crystal River Energy Complex Substation Expansion Site
Citrus County, Florida

Species	Habitat of Occurrence	Habitat Present on Site (Y/N)	Likelihood of Occurrence on Site	Status		Observed
				USFWS	FWC	
<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
<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	No	Unlikely	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	Unlikely	N	E	No
<i>Agrimonia incisa</i> Incised groove-bur	Sandhills and scrub	No	Unlikely	N	E	No
<i>Asplenium pumilum</i> Dwarf spleenwort	Shaded limestone boulders and ledges	No	Unlikely	N	E	No
<i>Asplenium verecundum</i> Modest spleenwort	Rockland hammocks, limestone outcrops, grottoes, sinkholes	No	Unlikely	N	E	No
<i>Blechnum occidentale</i> Sinkhole fern	Moist woodlands, hammocks, rocky creek banks, woodlands with open shade	No	Unlikely	N	E	No
<i>Centrosema arenicola</i> Sand butterfly pea	Sandhill, scrubby flatwoods, dry upland woods	No	Unlikely	N	E	No
<i>Cheilanthes microphylla</i> Southern lip fern	Crevices of limestone outcrops and shell mounds in partial to full sun	No	Unlikely	N	E	No
<i>Glandularia maritima</i> Coastal vervain	Disturbed sandy areas, back dunes, dune swales, and coastal hammocks	No	Unlikely	N	E	No
<i>Glandularia tampensis</i> Tampa vervain	Live oak-cabbage palm hammocks and pine-palmetto flatwoods	No	Unlikely	N	E	No

TABLE 2

Florida Power Corporation d/b/a Progress Energy Florida, Inc.
Crystal River Energy Complex Substation Expansion

Protected Plants and Animals Potentially Occurring within the Crystal River Energy Complex Substation Expansion Site
Citrus County, Florida

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

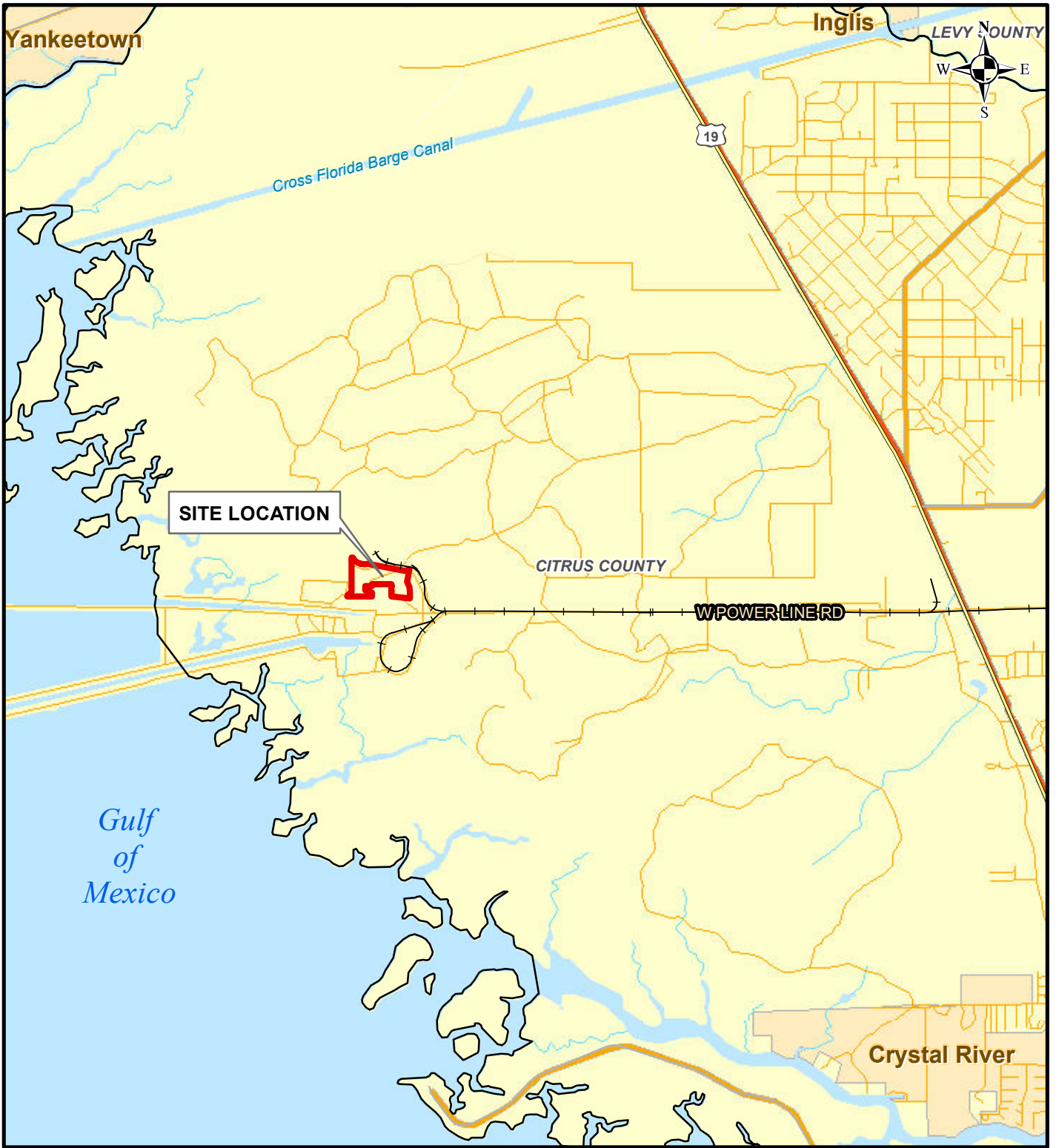
E = Endangered

SSC = Species of Special Concern





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

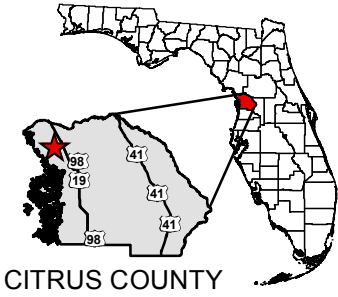
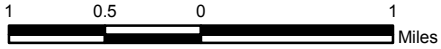
FIGURES

F:\PROJECTS\2010\PROJ103-89627_Levy_Project_-_USACE_Section_404_Permit_Support\1_-_Listed_Species_CREC_Substation\GIS\MXD\103-89627_001_Site_Location.mxd




LEGEND

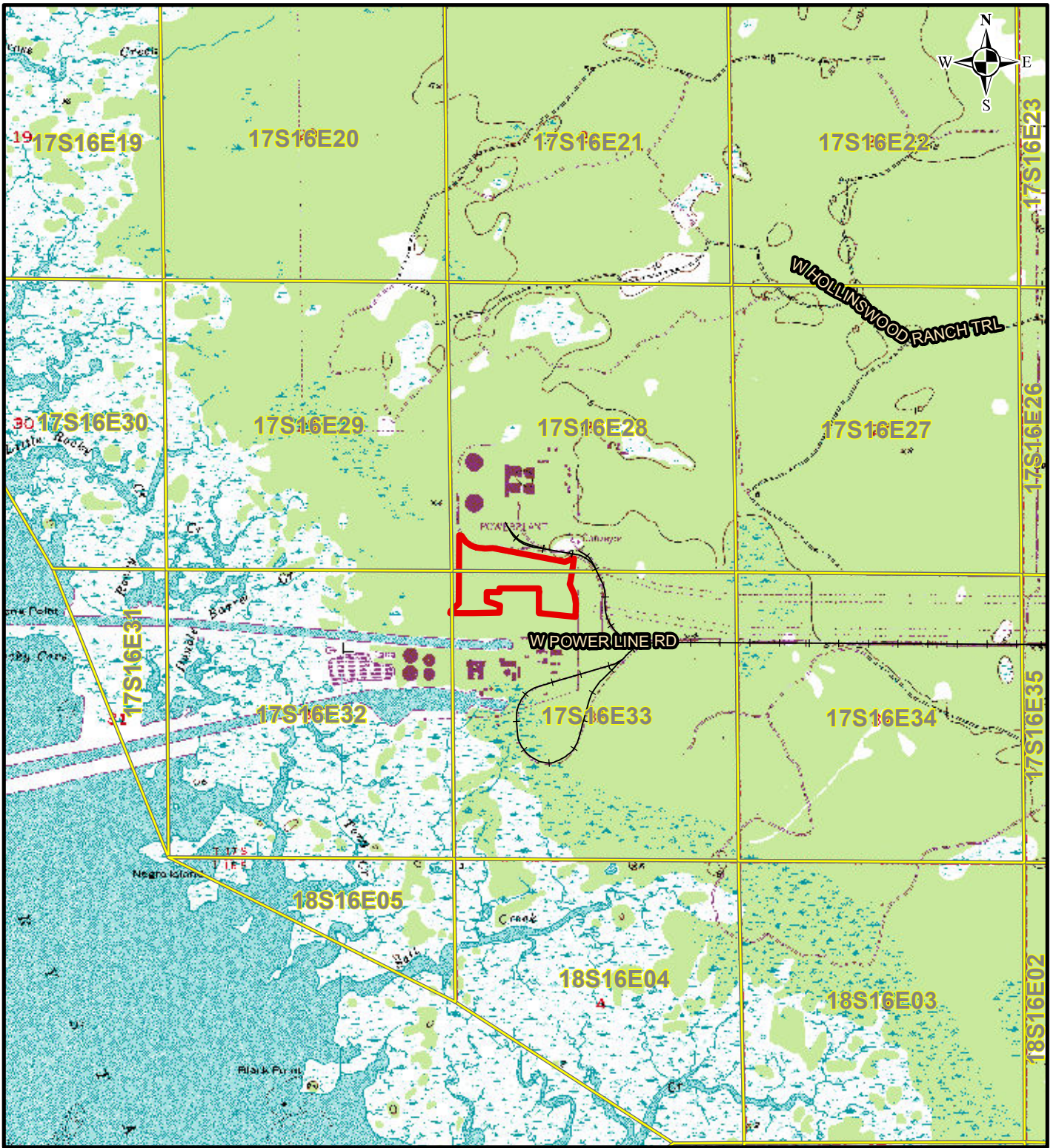
-  US Road
-  Railroad
-  Substation Expansion Area
-  County Boundary



REFERENCE

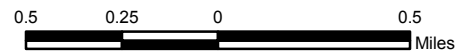
Substation Expansion Area: Progress Energy Florida, 2009; Roads: Florida Department of Transportation, 2010; Railroads: FDEP, 1992; County Boundaries: U.S. Census Bureau, 2000; BaseMap: StreetMap USA, 2007

PROGRESS ENERGY FLORIDA LEVY NUCLEAR PLANT				
CRYSTAL RIVER ENERGY COMPLEX SUBSTATION EXPANSION GENERAL LOCATION MAP				
	MXD File No.	103-89627_001	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	
			FIGURE 1	



LEGEND

- Substation Expansion Area
- Township-Range-Section



Legend

REFERENCE

Substation Expansion Area: Progress Energy Florida, 2009; Roads: Florida Department of Transportation, 2010; Railroads: FDEP, 1992; USGS Topographic Map: U.S. Geological Survey (USGS), 1990; Township-Range-Section: Florida Department of Environmental Protection, 1994

PROGRESS ENERGY FLORIDA LEVY NUCLEAR PLANT				
CRYSTAL RIVER ENERGY COMPLEX SUBSTATION EXPANSION USGS TOPOGRAPHIC MAP				
	MXD File No. 103-89627-002		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	

F:\PROJECTS\2010 PROJ\103-89627 Levy Project - USACE Section 404 Permit Support\1 - Listed Species CREC Substation\GIS\MXD\103-89627\003 FLUCCS.mxd



LEGEND

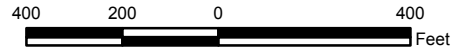
Substation Expansion Area

LAND USE/LAND COVER CODES

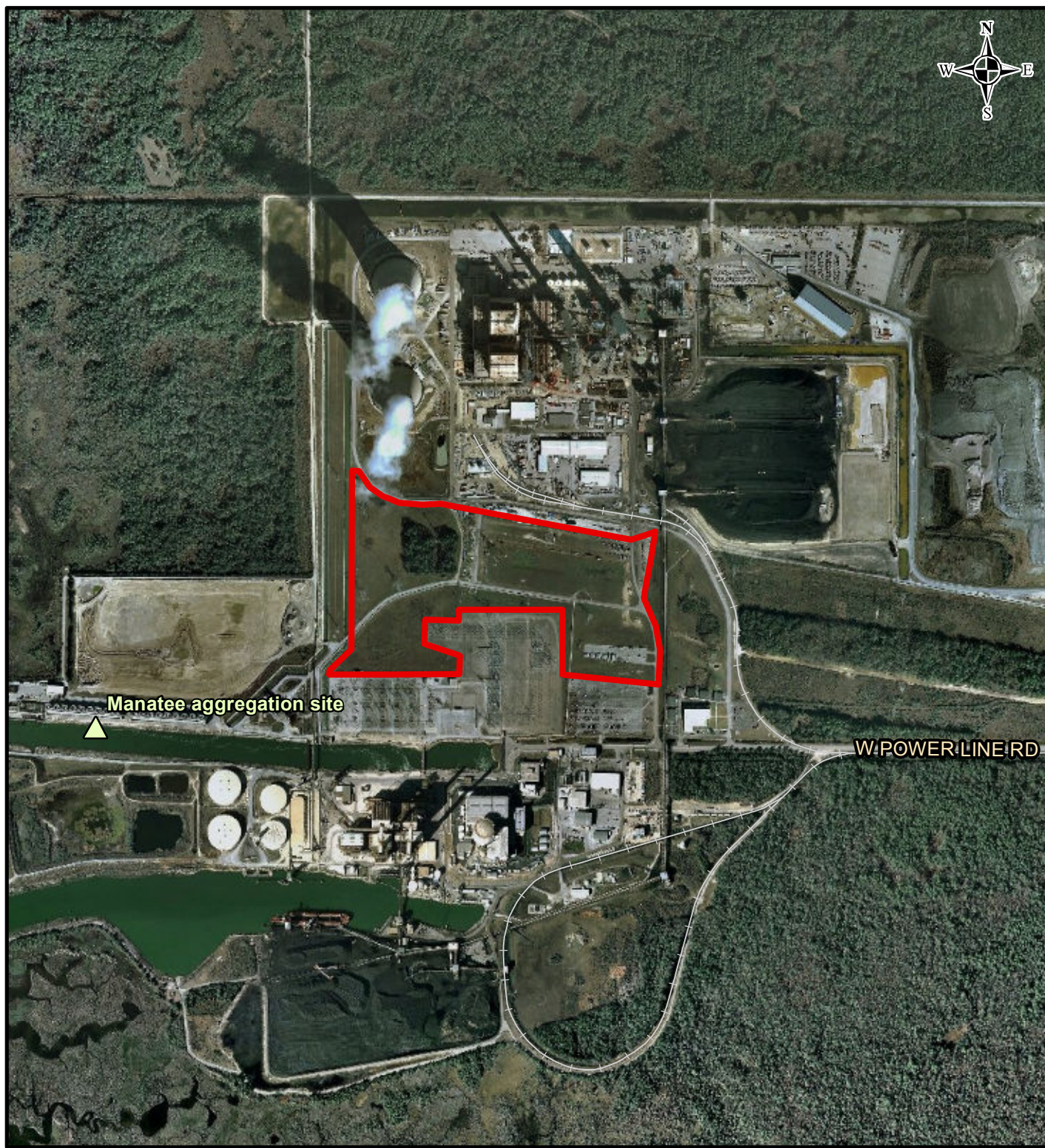
- | | |
|---|---|
| 212, UNIMPROVED PASTURES | 641, FRESHWATER MARSHES |
| 511, DITCHES | 643, WET PRAIRIES |
| 534, RESERVOIRS <10 ACRES | 812, RAILROADS |
| 615, STREAM AND LAKE SWAMPS (BOTTOMLAND) | 816, CANALS AND LOCKS |
| 630, WETLAND FORESTED MIXED | 831, ELECTRIC POWER FACILITIES |
| 631, WETLAND SCRUB | |

REFERENCE

Substation Expansion Area: Progress Energy Florida, 2009; Roads: Florida Department of Transportation, 2010; Railroads: FDEP, 1992; FLUCCS Data: SWFWMD, 2007, Golder edited 2009; Aerials: Progress Energy, 2009

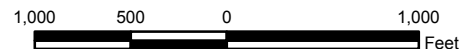


PROGRESS ENERGY FLORIDA LEVY NUCLEAR PLANT																
CRYSTAL RIVER ENERGY COMPLEX SUBSTATION EXPANSION HABITAT CLASSIFICATION MAP																
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MXD File No. 103-89627-003	SCALE AS SHOWN	REV. 0														
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GIS JG 03/11/2011																
CHECK SR 03/11/2011																
REVIEW KB 03/11/2011																
FIGURE 3																



LEGEND

- Substation Expansion Area
- ▲ Florida Natural Areas Inventory Occurrence



NOTE: No portion of the Crystal River Energy Complex line lies within Wood Stork Core Foraging Areas.

PROGRESS ENERGY FLORIDA
 LEVY NUCLEAR PLANT
**CRYSTAL RIVER ENERGY COMPLEX
 SUBSTATION EXPANSION
 LISTED SPECIES MAP**

REFERENCE

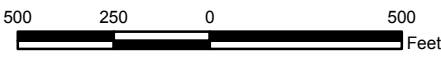
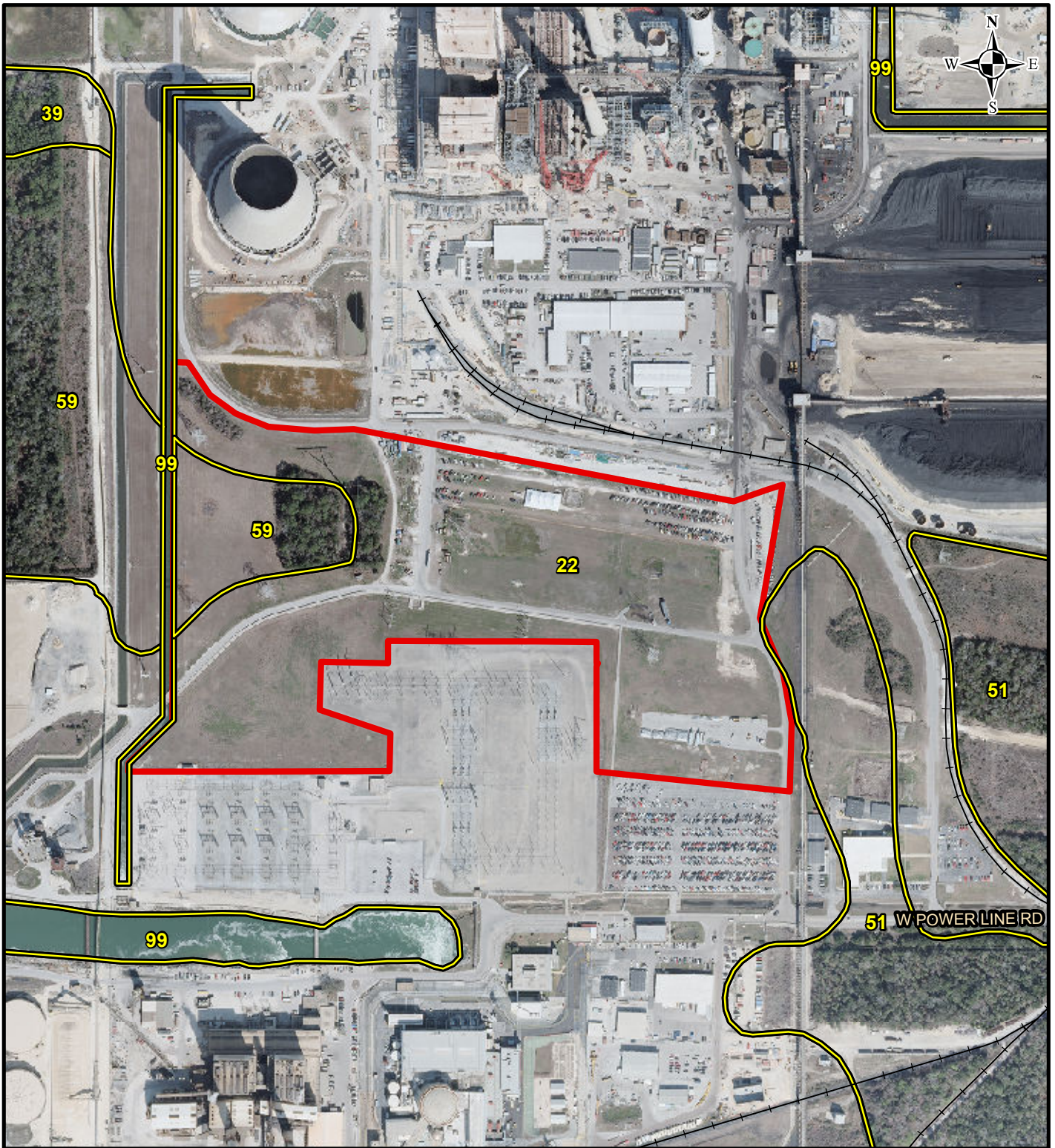
Substation Expansion Area: Progress Energy Florida, 2009; Roads: Florida Department of Transportation, 2010; Railroads: FDEP, 1992; Wood Stork Colony Data: U.S. Fish & Wildlife Service, 2009; Aerials: ESRI, 2009



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DESIGN JG 03/11/2011		
GIS JG 03/11/2011		
CHECK SR 03/11/2011		
REVIEW KB 03/11/2011		

FIGURE 4

F:\PROJECTS\2010 PROJ\103-89627 Levy Project - USACE Section 404 Permit Support\1 - Listed Species CREC Substation\GIS\MXD\103-89627\005 Soils.mxd



LEGEND

- Substation Expansion Area
- Soil Boundary

NOTE

See Figure 5 Soil Identification Table for Soil Definitions

REFERENCE

Substation Expansion Area: Progress Energy Florida, 2009; Roads: Florida Department of Transportation, 2010; Railroads: FDEP, 1992; Soils: SWFWMD, 2006; Aerials: Progress Energy Florida, 2009

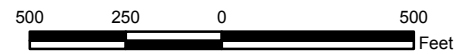
PROGRESS ENERGY FLORIDA LEVY NUCLEAR PLANT			
CRYSTAL RIVER ENERGY COMPLEX SUBSTATION EXPANSION SOILS MAP			
	MXD File No. 103-89627\005	SCALE AS SHOWN	REV. 0
	DESIGN JG 03/11/2011		
	GIS JG 03/11/2011		
	CHECK SR 03/11/2011		
	REVIEW KB 03/11/2011		
			FIGURE 5

FIGURE 5
CRYSTAL RIVER ENERGY COMPLEX
SUBSTATION EXPANSION SOIL IDENTIFICATION TABLE

SOIL ID	DESCRIPTION	COUNTY
22	Quartzsaments, 0 to 5 percent slopes	Citrus
39	Hallandale-Rock outcrop complex, rarely flooded	Citrus
51	Boca-Pineda, limestone substratum complex	Citrus
59	Boca fine sand, depressional	Citrus
99	Water	Citrus



LEGEND



NOTE

There were no "Desirable" nor "Acceptable" soil types in the project area. The closest Acceptable Gopher Tortoise soil is located 3.11 miles northeast of the project site.

REFERENCE

Substation Expansion Area: Progress Energy Florida, 2009; Roads: Florida Department of Transportation, 2010; Railroads: FDEP, 1992; Soils: SWFWMD, 2006; Aerials: Progress Energy Florida, 2009

PROGRESS ENERGY FLORIDA
LEVY NUCLEAR PLANT

**CRYSTAL RIVER ENERGY COMPLEX
SUBSTATION EXPANSION
GOPHER TORTOISE SUITABLE SOILS MAP**



MXD File No. 103-89627-006	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		

FIGURE 6

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 CRYSTAL RIVER ENERGY COMPLEX SUBSTATION EXPANSION AREA, EXTRACTED FROM THE LEVY-CRYSTAL RIVER 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

November 30, 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: Proposed Citrus Substation – Crystal River Energy Complex
Date Received: November 24, 2009
Location: Citrus County

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 map and element occurrence table). 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 Report). 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.

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.

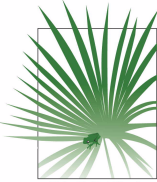
Thank you for your use of FNAI services. If I can be of further assistance, please give me a call at (850) 224-8207.

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

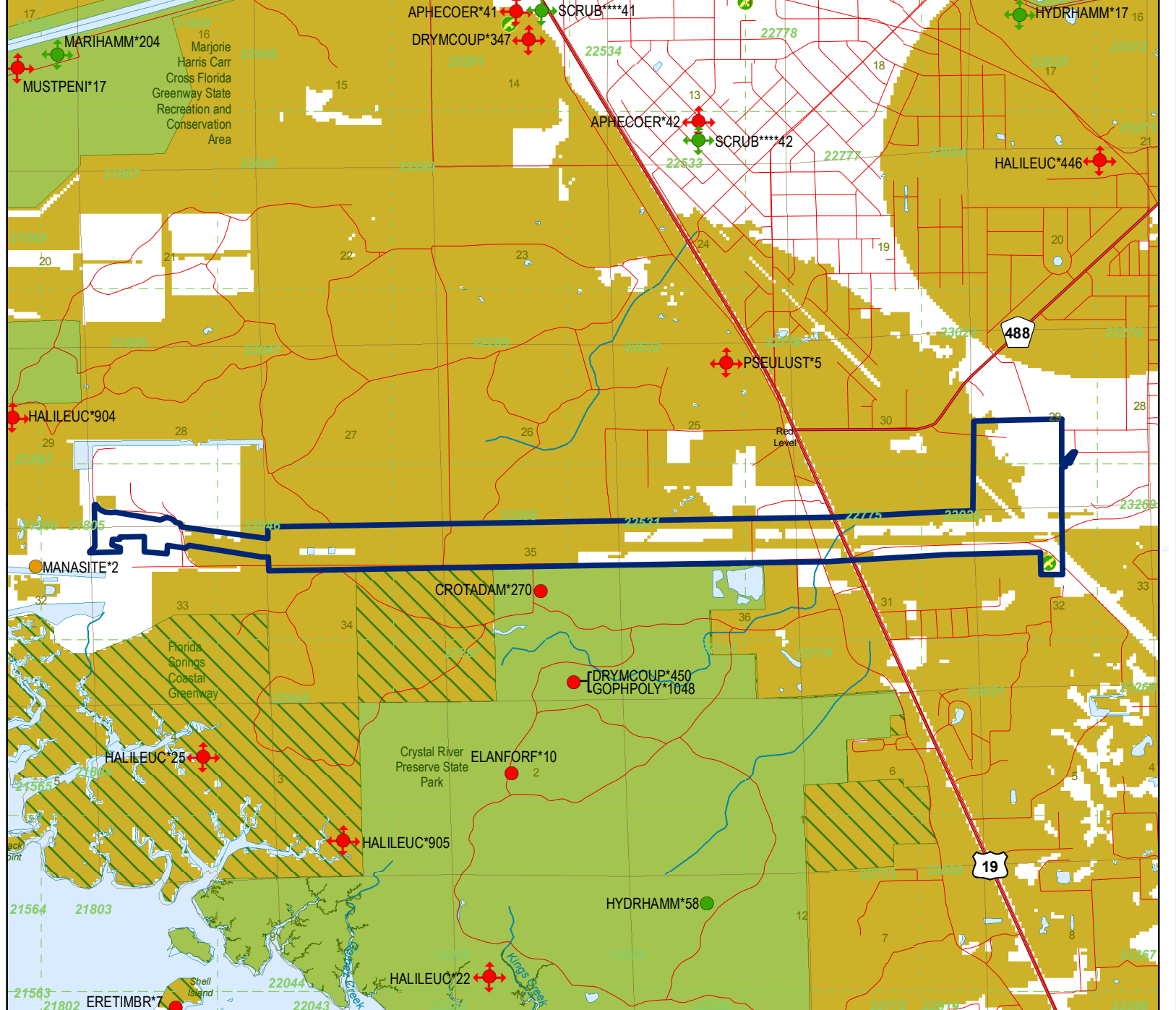


NOTE
Map should not be interpreted without accompanying documents.

Proposed Citrus Substation - Crystal River Energy Complex

Site boundaries are approximate.

Citrus County



Map produced by ACN
Map Date: 30 NOV 2009

ELEMENT OCCURRENCES DOCUMENTED ON OR NEAR Proposed Citrus Substation - Crystal River Energy Complex

Map Label	Scientific Name	Common Name	Global State Federal State Observation				Date	Description	EO Comments
			Rank	Rank	Status	Listing			
APHECOER*42	Aphelocoma coerulescens	Florida Scrub-jay	G2	S2	LT	LT	1981-02-21	GRASSY PALMETTO SCRUB	1981-02-21: 11 SCRUB JAYS
MARIHAMM*204	Maritime hammock		G3	S2	N	N	2004	SMALL REMNANT SURROUNDED BY ESTUARINE TIDAL MARSH.	2004: Update to last obs date was based on interpretation of aerial photography (previous value was 1991-10-10) (U05FNA02FLUS). REMNANT DOMINATED BY SABAL PALMETTO WITH PINUS ELLIOTTII, QUERCUS VIRGINIANA, JUNIPERUS SILICICOLA, DICHROMENA COLORATA, MYRIC
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
ERETIMBR*7	Eretmochelys imbricata	Hawksbill	G3	S1	LE	LE	1997-04-02	Coastal hammock island.	1997-04-02: One adult turtle found dead, decomposing (U97MAI01FLUS).
HYDRHAMM*58	Hydric hammock		G4	S4	N	N	1997-04-07	This hammock is deep in the woods. Crystal River marshes and swamps are its south and west border. The north and east edges are flatwoods and sandhills, also within the preserve.	1997-04-07: Completely canopied by mature trees reaching over 100 feet; understory and ground layer fairly open from lack of light; succession dominated by light gaps; enormous, clearly old growth. Hammock is interspersed with shallow running streams and
MANASITE*2	Manatee Aggregation Site		GNR	SNR	N	N	1988	WARM-WATER EFFLUENT INTO GULF OF MEXICO (CRYSTAL BAY).	UP TO 5 MANATEES UTILIZE THIS AREA FOR SHORT PERIODS OF COOL WEATHER; MOST HEAVILY IN SPRING AS INDIVIDUALS DISPERSE NORTHWARD FROM CRYSTAL RIVER.
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



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ELEMENT OCCURRENCES DOCUMENTED ON OR NEAR Proposed Citrus Substation - Crystal River Energy Complex



Map Label	Scientific Name	Common Name	Global State Federal State Observation				Date	Description	EO Comments
			Rank	Rank	Status	Listing			
MUSTPENI*17	Mustela frenata peninsulæ	Florida Long-tailed Weasel	G5T3	S3	N	N	1975-03-23	Coastal hammock.	1975-03-23: S.P. Christman, DEP, observation. Observed for several minutes as emerged from holes in hollow logs and ground in "peek-a-boo" fashion. See Fla. Game and Fresh Water Fish Comm., Cross Florida Barge Canal Restudy Rep. -Wildl. Study. Vol. IV, Ap
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).
HALILEUC*904	Haliaeetus leucocephalus	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: Produced 2 young; 1993: Produced 2 young; 1992: No data; 1991: Active, productivity unknown; 1990: Produced 1 young; 198
HALILEUC*22	Haliaeetus leucocephalus	Bald Eagle	G5	S3	PS	N	1991	No general description given	Nest status 1999-2003: Inactive - 2003; Unknown/not assessed - 2002, 2001, 2000, 1999; Status 1995-98: Inactive - 1998, 1997, 1996, 1995; (U03FWC01FLUS). Previous data (note different format) NEST: 1995: GONE; 1994: INACTIVE; 1993: INACTIVE; 1992: NO DAT



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			Rank	Rank	Status	Listing			
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.
HALILEUC*905	<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: Produced 1 young; 1993: Produced 1 young; 1992: No data; 1991: Produced 1 young; 1990: No data; 1989: Produced 1 young;
HALILEUC*25	<i>Haliaeetus leucocephalus</i>	Bald Eagle	G5	S3	PS	N	1991	No general description given	Nest status 1999-2003: Inactive - 2003; Unknown/not assessed - 2002, 2001, 2000, 1999; Status 1995-98: Inactive - 1998, 1997, 1996, 1995; (U03FWC01FLUS). Previous data (note different format) NEST: 1995-93: GONE; 1992: NO DATA; 1991: ACTIVE, PRODUCTIVITY
PSEULUST*5	<i>Pseudobranchius striatus 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).



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Matrix Unit ID: 21805					
Likely					
<i>Drymarchon couperi</i>	Eastern Indigo Snake	G3	S3	LT	LT
<i>Manatee aggregation site</i>		GNR	SNR	N	N
<i>Ursus americanus floridanus</i>	Florida Black Bear	G5T2	S2	N	LT*
Potential					
<i>Acipenser oxyrinchus desotoi</i>	Gulf Sturgeon	G3T2	S2	LT	LS
<i>Ammodramus maritimus peninsulæ</i>	Scott's Seaside Sparrow	G4T3Q	S3	N	LS
<i>Asplenium heteroresiliens</i>	Wagner's Spleenwort	GNA	S1	N	N
<i>Caretta caretta</i>	Loggerhead	G3	S3	LT	LT
<i>Chelonia mydas</i>	Green Turtle	G3	S2	LE	LE
<i>Cistothorus palustris marianæ</i>	Marian's Marsh Wren	G5T3	S3	N	LS
<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>Mustela frenata peninsulæ</i>	Florida Long-tailed Weasel	G5T3	S3	N	N
<i>Myotis austroriparius</i>	Southeastern Bat	G3G4	S3	N	N
<i>Neovison vison halilimnetes</i>	Gulf Salt Marsh Mink	G5T3	S3	N	N
<i>Nerodia clarkii clarkii</i>	Gulf Salt Marsh Snake	G4T4	S3?	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>Rallus longirostris scottii</i>	Florida Clapper Rail	G5T3?	S3?	N	N
<i>Spigelia loganioides</i>	Pinkroot	G2Q	S2	N	LE
<i>Trichechus manatus</i>	Manatee	G2	S2	LE	LE
Matrix Unit ID: 22046					
Likely					
<i>Drymarchon couperi</i>	Eastern Indigo Snake	G3	S3	LT	LT
Mesic flatwoods		G4	S4	N	N
<i>Ursus americanus floridanus</i>	Florida Black Bear	G5T2	S2	N	LT*
Potential					
<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>Mustela frenata peninsulæ</i>	Florida Long-tailed Weasel	G5T3	S3	N	N
<i>Myotis austroriparius</i>	Southeastern Bat	G3G4	S3	N	N
<i>Neovison vison halilimnetes</i>	Gulf Salt Marsh Mink	G5T3	S3	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

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Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Listing
<i>Spigelia loganioides</i>	Pinkroot	G2Q	S2	N	LE
Matrix Unit ID: 22288					
Documented					
<i>Crotalus adamanteus</i>	Eastern Diamondback Rattlesnake	G4	S3	N	N
Likely					
<i>Drymarchon couperi</i>	Eastern Indigo Snake	G3	S3	LT	LT
<i>Ursus americanus floridanus</i>	Florida Black Bear	G5T2	S2	N	LT*
Potential					
<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>Mustela frenata peninsulæ</i>	Florida Long-tailed Weasel	G5T3	S3	N	N
<i>Myotis austroriparius</i>	Southeastern Bat	G3G4	S3	N	N
<i>Neovison vison halilimnetes</i>	Gulf Salt Marsh Mink	G5T3	S3	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
Matrix Unit ID: 22531					
Likely					
<i>Drymarchon couperi</i>	Eastern Indigo Snake	G3	S3	LT	LT
Mesic flatwoods		G4	S4	N	N
<i>Ursus americanus floridanus</i>	Florida Black Bear	G5T2	S2	N	LT*
Potential					
<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>Neovison vison halilimnetes</i>	Gulf Salt Marsh Mink	G5T3	S3	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>Pseudobranchius striatus lustricolus</i>	Gulf Hammock Dwarf Siren	G5T1	S1	N	N
<i>Sciurus niger shermani</i>	Sherman's Fox Squirrel	G5T3	S3	N	LS

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<i>Spigelia loganioides</i>	Pinkroot	G2Q	S2	N	LE
<i>Stilosoma extenuatum</i>	Short-tailed Snake	G3	S3	N	LT
Matrix Unit ID: 22775					
Likely					
<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
<i>Ursus americanus floridanus</i>	Florida Black Bear	G5T2	S2	N	LT*
Potential					
<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>Phyllanthus leibmannianus ssp. platylepis</i>	Pinewood Dainties	G4T2	S2	N	LE
<i>Podomys floridanus</i>	Florida Mouse	G3	S3	N	LS
<i>Pseudobranchius striatus lustricolus</i>	Gulf Hammock Dwarf Siren	G5T1	S1	N	N
<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: 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

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<i>Phyllanthus leibmannianus</i> ssp. <i>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</i> ssp. <i>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

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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>

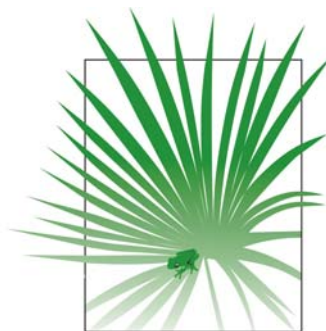
LE Listed as Endangered Plants in the Preservation of Native Flora of Florida Act. Defined as species of plants native to the state that are in imminent danger of extinction within the state, the survival of which is unlikely if the causes of a decline in the number of plants continue, and includes all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



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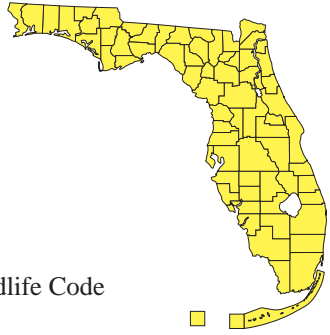
Please note: FNAI will continue to offer our Standard Data Report service as always. The Standard Data Report offers the most comprehensive information available on rare species, natural communities, conservation lands, and other natural resources.

APPENDIX B
LISTED SPECIES DESCRIPTIONS

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.



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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.

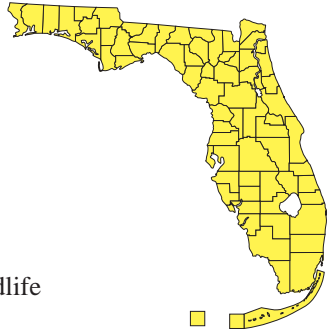
Protection and Management: Protect breeding and foraging habitats through establishment of preserves and regulation of wetlands. Restore and maintain natural hydroperiods in degraded wetland areas. The Florida Fish and Wildlife Conservation Commission and the Department of Environmental Protection have 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.



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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.

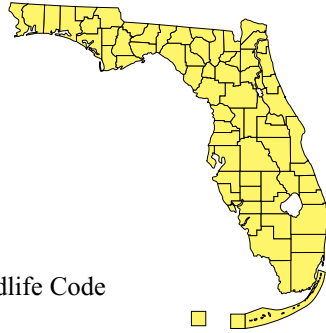
Protection and Management: Prevent rapid changes in water depth in managed wetlands that will likely adversely affect quality of foraging. Restore and maintain natural hydroperiods in degraded wetland areas. Protect breeding and foraging habitats through establishment of preserves and regulation of wetlands. 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.



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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.

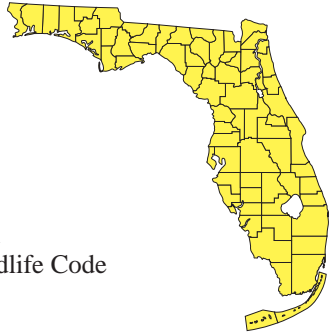


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WHITE IBIS

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.



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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.

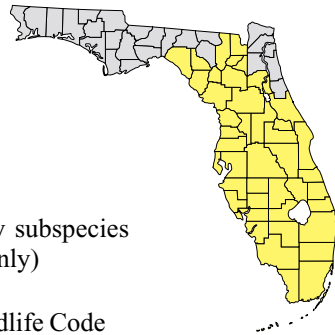
Range-wide Distribution: Breeds from California south through Central America along Pacific coast; from northern South America through Caribbean and Antilles and north Gulf coast (with inland nesting in northern South America and southeastern U.S.); northward along Atlantic coast to Virginia.

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.

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.



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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.

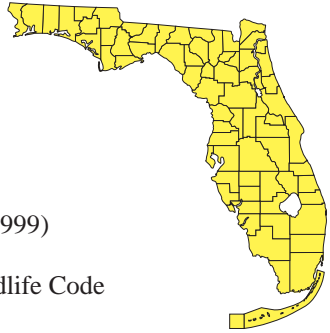
Selected References: Poole and Gill (eds.) 1992, Robertson and Woolfenden 1992, Rodgers et al. (eds.) 1996, Stevenson and Anderson 1994, Toland 1999a.

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.



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immature

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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.

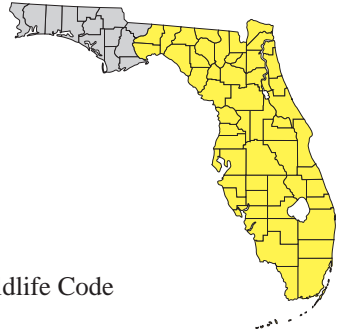
Conservation Status: Original population in Florida could be found throughout state and likely numbered well over 1,000 pairs. Population declined sharply after late 1940s, reaching a low of 120 active nests in 1973, and by 1978 was considered rare as a breeder. Use of pesticide DDT and related compounds 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.

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
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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.

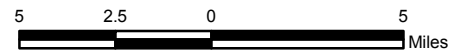
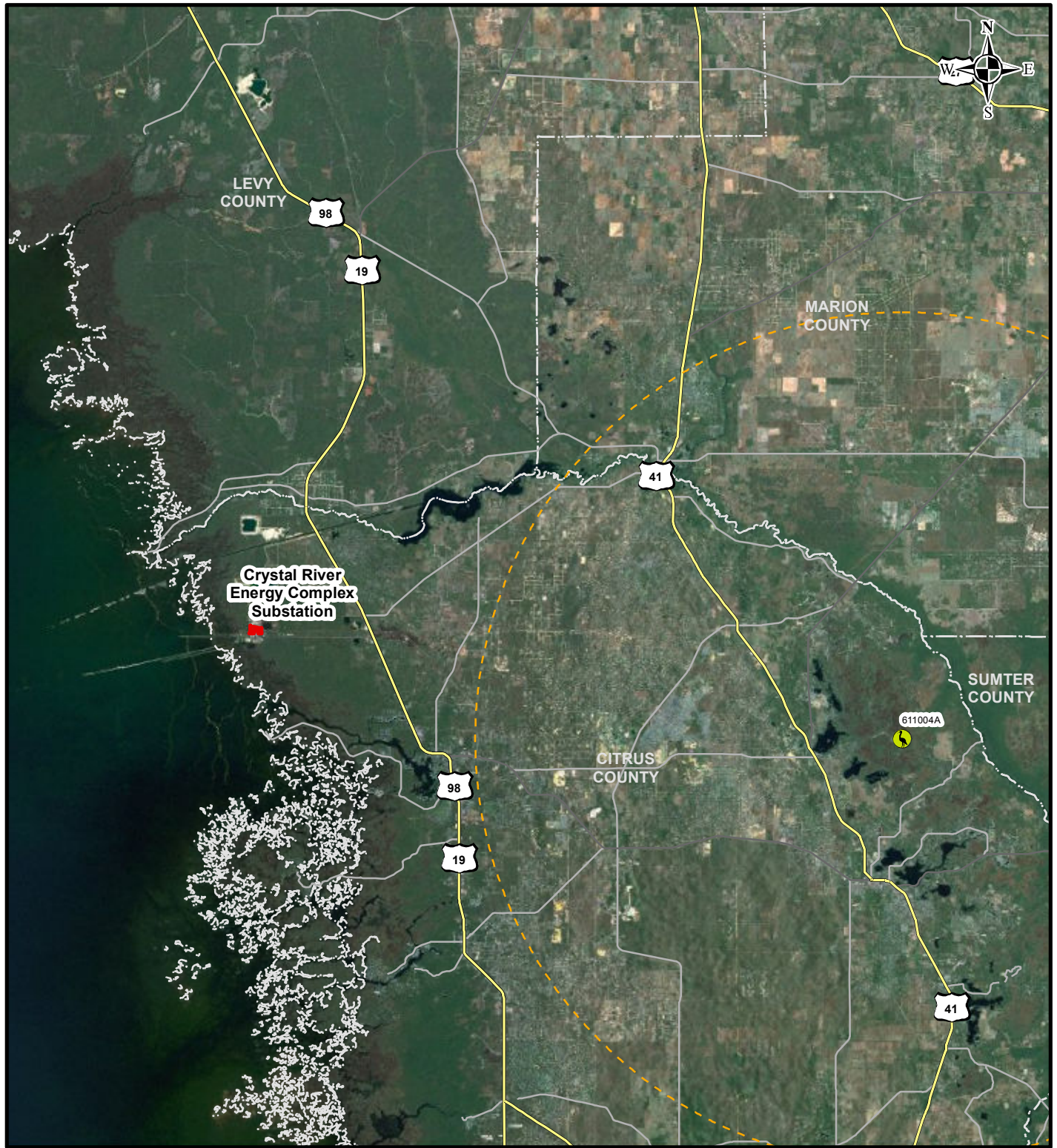
Range-wide Distribution: In U.S., breeds locally in South Carolina, Georgia, and Florida (formerly west to Texas). South, locally in lowlands from Mexico and northern Central America to South America (to western Ecuador, eastern Peru, Bolivia, northern Argentina), and rarely in Cuba and the Dominican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

APPENDIX C
LISTED SPECIES CONSULTATION AREAS




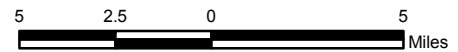
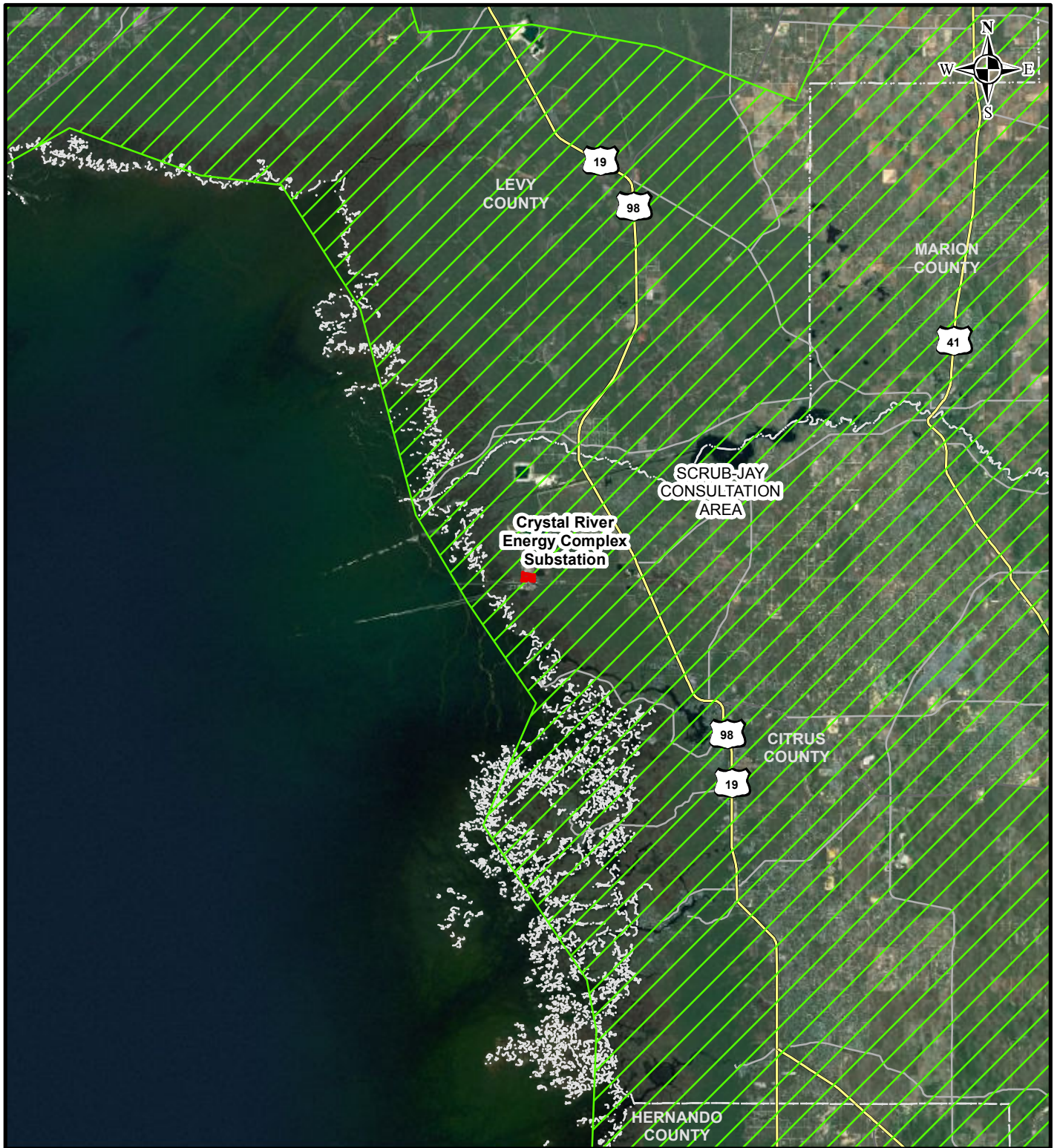
LEGEND

-  Florida Wood Stork Nesting Colony
-  Substation Expansion Area
-  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			
CRYSTAL RIVER ENERGY COMPLEX SUBSTATION EXPANSION WOOD STORK NESTING COLONIES & FORAGE AREAS			
	MXD File No. 103-89627\007	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		



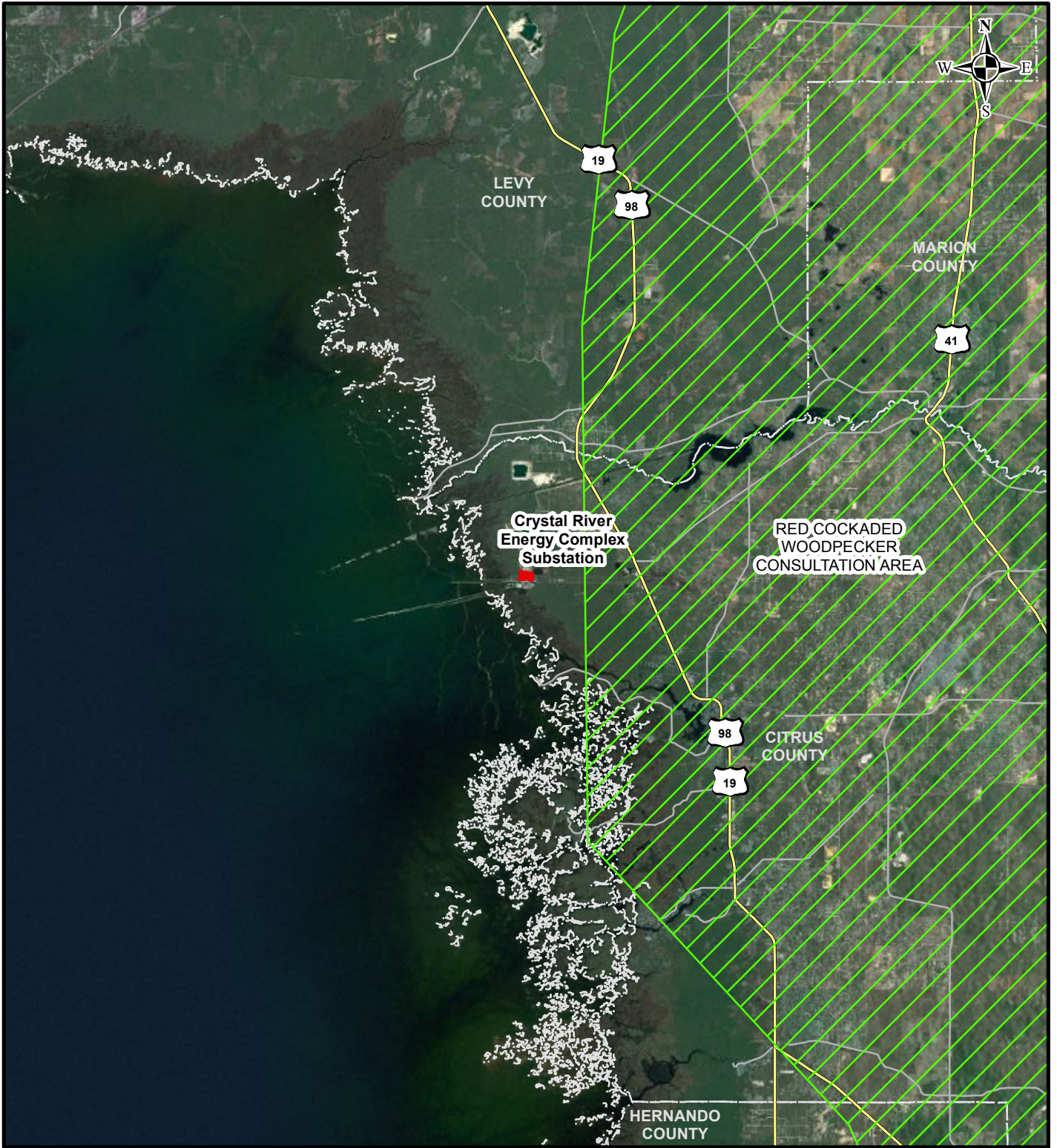
LEGEND

- Substation Expansion Area
- County Boundary
- Scrub Jay Consultation Area
- US Road
- State Road
- County Road

REFERENCE

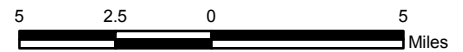
Substations and Right-of-Way: Progress Energy Florida & Golder Associates Inc., 2009; Roads: Florida Department of Transportation, 2010; Snail Kite Consultation Area: U.S. Fish and Wildlife Service, 2003; County Boundaries: U.S. Census Bureau, 2000; Aerial: i-cubed, 2009

PROGRESS ENERGY FLORIDA LEVY NUCLEAR PLANT			
CRYSTAL RIVER ENERGY COMPLEX SUBSTATION EXPANSION SCRUB JAY CONSULTATION AREA			
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	DESIGN	JG	03/11/2011
	GIS	JG	03/11/2011
	CHECK	SR	03/11/2011
	REVIEW	KB	03/11/2011
APPENDIX C FIGURE 2			



LEGEND

- Substation Expansion Area
- US Road
- Red Cockaded Woodpecker Consultation Area
- State Road
- County Boundary
- County Road



REFERENCE

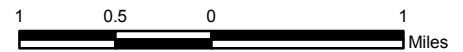
Substations and Right-of-Way; Progress Energy Florida & Golder Associates Inc., 2009; Roads: Florida Department of Transportation, 2010; Red Cockaded Woodpecker Consultation Area: U.S. Fish and Wildlife Service, 2003; County Boundaries: U.S. Census Bureau, 2000; Aerial: i-cubed, 2009

PROGRESS ENERGY FLORIDA LEVY NUCLEAR PLANT			
CRYSTAL RIVER ENERGY COMPLEX SUBSTATION EXPANSION RED COCKADED WOODPECKER CONSULTATION AREA			
	MXD File No. 103-89627\009	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

- Substation Expansion Area
- US Road
- West Indian Manatee Consultation Area
- County Road
- County Boundary



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			
CRYSTAL RIVER ENERGY COMPLEX SUBSTATION EXPANSION WEST INDIAN MANATEE CONSULTATION AREA			
	MXD File No. 103-89627_010		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