

Survey for Rare Plants on  
Picayune Strand State Forest,  
Collier County, Florida:  
an FNAI Ecological Survey

Final Report

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## EXECUTIVE SUMMARY

As one of a series of ecological inventories of Florida's state forests, the Florida Natural Areas Inventory (FNAI) conducted a survey for rare plants that potentially occur at Picayune Strand State Forest (PSSF) in southwestern Collier County. PSSF occupies approximately 100 square miles in the southwestern corner of the Big Cypress Swamp on the west side of the Everglades. Although extensively fragmented by various paved roads and drainage canals, the forest continues to support a number of high-quality natural communities, including basin swamp, hydric hammock, marl prairie, mesic flatwoods, prairie hammock, slough, strand swamp, and wet flatwoods. These communities provide habitat for a number of listed plant species.

This survey focuses on occurrences of rare plant species listed by FNAI and the Florida Department of Agriculture and Consumer Services, and cursory observations on the surrounding natural communities. Additional attention was given to identifying potential land management problems such as locations of exotic pest plant populations. Field surveys were conducted in October 2000, March and May 2001. A total of twenty-one listed plant species have been documented from PSSF. Seven species of FNAI listed plants were observed on PSSF during this survey: *Campyloneurum costatum* (tailed strap fern), *Cheiroglossa palmata* (hand fern), *Elytraria caroliniensis* var. *angustifolia* (narrow-leaved Carolina scalystem), *Encyclia cochleata* (clamshell orchid), *Polyradicion lindenii* (= *Polyrrhiza lindenii*, ghost orchid), *Roystonea elata* (royal palm), and *Tillandsia pruinosa* (fuzzy-wuzzy airplant). Five additional species from the FNAI database historical records are reported from PSSF: *Asplenium serratum* (bird's nest fern), *Catopsis berteroniana* (powdery catopsis), *Cyrtopodium punctatum* (cowhorn orchid), *Epidendrum nocturnum* (night scented orchid), and *Ionopsis uticulariodes* (delicate ionopsis). Nine other Florida Department of Agriculture and Consumer Services listed species were observed: *Angadenia berteri* (pineland golden trumpet), *Epidendrum anceps* (dingy-flowered orchid), *Epidendrum rigidum* (rigid epidendrum), *Habenaria distans* (distans habenaria), *Myrcianthes fragrans* (twinberry stopper), *Tillandsia balbisiana* (inflated airplant), *Tillandsia fasciculata* (common airplant), *Tillandsia utriculata* (giant airplant), *Tillandsia variabilis* (= *T. valenzuelana*, soft-leaved wildpine). The eleven most common exotic pest plants observed were *Casuarina glauca* (suckering Australian pine), *Dioscorea bulbifera* (air potato), *Ficus microcarpa* (laurel fig), *Hibiscus tiliaceus* (mahoe), *Imperata cylindrica* (cogon grass), *Lantana camara* (lantana), *Leucaena leucocephala* (lead tree), *Lygodium microphyllum* (small-leaf climbing fern), *Melaleuca quinquenervia* (melaleuca), *Schinus terebinthifolius* (Brazilian pepper), and *Syzygium cuminii* (Java plum).

ArcView generated maps showing the locations of eight natural community types, twenty-one rare plant species, and eleven exotic pest plant species are provided. Plant species lists from selected areas at Picayune Strand State Forest are also included. This baseline distribution data on rare and exotic plant species can be used in the development of management strategies for the long-term preservation of the rare species and their habitats. It is hoped that this survey will assist PSSF personnel in improving management of the lands and natural resources under their stewardship.

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- Appendix 2. Locations of natural communities, rare plant species, and exotic pest plant species on Picayune Strand State Forest.
- Appendix 3. Plant species lists from selected areas at Picayune Strand State Forest.

## INTRODUCTION

The Florida Natural Areas Inventory (FNAI) was contracted in 2000 by the Florida Division of Forestry (DOF), Florida Department of Agriculture and Consumer Services, to conduct a limited ecological survey of Picayune Strand State Forest (PSSF). As The Nature Conservancy's Natural Heritage Program in Florida, FNAI maintains a statewide database on the status, distribution, and management of rare and endangered plant and animal taxa, exemplary natural communities, and managed areas in Florida. This survey focuses on occurrences of rare plant species listed by FNAI and the Florida Department of Agriculture and Consumer Services, and brief descriptions of the surrounding natural communities. Results of this survey can be used in the development of management strategies for the long-term preservation of these species and their habitats and will assist PSSF personnel in improving management of the lands and natural resources under its stewardship. Additional attention was given to identifying potential land management problems such as locations of exotic pest plant populations.

Picayune Strand State Forest is located about eight miles east of Naples, Collier County, Florida. Situated at the west side of the Big Cypress Swamp near the Gulf of Mexico in southwestern Collier County (Figure 1), PSSF lies within the Big Cypress Subregion of the South Florida Coastal Plain Ecoregion. At its widest points, the forest extends north-south for about 13 miles from Alligator Alley/Interstate 75 to the Tamiami Trail/U.S. Highway 41 and east-west for about 13 miles from the Fakahatchee State Preserve at the east border to near State Road 951 at the east edge of the Naples urban area. Collier-Seminole State Park and Ten Thousand Islands National Wildlife Refuge border the south end. Elevations range from about two feet at the tidal south end to about 13 feet at the north end. The forest consists of two adjacent Conservation and Recreation Lands (CARL) projects by the Florida Department of Environmental Protection: Golden Gate Estates South to the east and Belle Meade to the west. The Golden Gates Estates South was added to the acquisition list in 1985 as part of the Save Our Everglades CARL Project. The west half of the forest was placed on the CARL list as the Belle Meade project in 1992. Acquisition of land within the forest boundaries is incomplete because of the high number of land owners and is projected to continue for years into the future. When completed, the forest will encompass an area of about 100 square miles.

The entire forest area was logged during the 1940's and 1950's by the Lee Tidewater Logging Company. In the 1960's, the eastern half of the site was purchased by the Gulf American Corporation which then began developing the predominantly swamp area as the Golden Glades Estates residential subdivision. This was accomplished by digging an elaborate system of canals for drainage and building a grid of roads every quarter of a mile. The Gulf American Corporation later merged with General Acceptance Corporation and eventually went bankrupt. The subdivision had 17,000 landowners on 52,000 acres when the state began buying land in 1985 (DOF 1995). Few houses were ever built, but due to the very large number of landowners (lots average 2.5 acres), acquisition is ongoing even today.

In contrast, Belle Meade in the west half is relatively hydrologically intact. This area of extensive wetlands has no paved roads but does suffer from a locally severe infestation of the exotic pest plant *Melaleuca quinquenervia*. Land acquisition is also ongoing in this tract of multiple landowners.

Although fragmented by numerous roads and canals, PSSF continues to support occurrences of South Florida natural communities including basin swamp, hydric hammock, marl prairie, mesic flatwoods, prairie hammock, slough, strand swamp, and wet flatwoods. The goal of the current ecological survey is to investigate the possible presence of rare species of plants whose ranges approach the PSSF. Because most of these species inhabit swamps, and because of the limited nature of the study, we directed the majority of our survey effort toward the relatively undrained and road free south end.

## METHODS

### Preliminary Methods

Scientific literature, technical reports, on-site natural resources staff, and aerial photography were consulted in order to identify sites on Picayune Strand State Forest that have potential for listed plant species. FNAI staff gathered existing information on PSSF including previously reported locations for on site and nearby natural communities and special plants. The proposed perimeter forest boundaries were delineated on eight U.S.G.S. 7.5 minute 1:24000 scale topographic quadrangle maps. From south to north and starting in the southwest corner, they are: Belle Meade 2608116, Belle Meade NW 2608126, Royal Palm Hammock 2508185, Belle Meade SE 2608115, Belle Meade NE 2608125, Weavers Station 2508184, Deep Lake SW 2608114, and Catherine Island 2608124. The Florida Department of Transportation black and white aerial photographs used during the survey were flown on 1989-04-02 and are in the scale 1"=2000'. The photograph numbers covering the forest are arranged in south to north flight lines and start in the southwest corner: PD 3616-6-16 to 6-20, PD 3616-7-17 to 7-23, PD 3616-8-09 to 8-15, PD 3616-9-09 to 9-16, PD 3616-10-10 to 10-18, PD 3616-11-10 to 11-20, and PD 3616-12-13 to 12-21. The photos were used to navigate, identify natural community types and their boundaries, and detect areas of artificial disturbance. Sonja Durrwachter, DOF Senior Forester at Picayune Strand State Forest, was interviewed on site about current and historical conditions, including information on past fires. She provided copies of DOQQ aerial images with current boundaries of the entire forest and selected areas of interest. Durrwachter also provided us an orientation tour of the forest.

Table 1 is a slate of listed plant species potentially occurring on PSSF. It is based on known occurrences in the FNAI database plus additional state listed species for Collier County. The table includes information on the plants' potential habitat, FNAI rank, federal and state status, and best season for survey. These data were gathered from the *Matrix of Habitats and Distribution by County of Rare/Endangered Species in Florida* (Florida Natural Areas Inventory, 1990, et seq. 1997), FNAI's *Field Guide to the Rare Plants of Florida* (Chafin 2000), and from the Florida Department of

Agriculture and Consumer Services' *Notes on Florida's Endangered and Threatened Plants* (Coile 2000). The FNAI database also furnished location and occurrence information for listed plant species that had been documented on and nearby PSSF prior to this project.

### Field Survey Methods

Vehicle and pedestrian field surveys for listed plant species were conducted in many parts of Picayune Strand State Forest in 2000 on October 10-12, 24-27, and in 2001 on March 13-16, and May 21-24. Due to the large size of the forest, surveys focused on the highest quality sections with the greatest likelihood of supporting populations of listed plants. These areas were identified by examination of aerial photographs, U.S.G.S. topographic quadrangle maps, historic records in the FNAI database, and discussions with the local land manager. In the selected areas, the field surveyors walked through the one or more natural communities to gain an understanding of the relative dominance of the vegetation and compile plant species lists. cursory observations on natural community conditions were recorded for areas visited. When an occurrence of a target plant species was located, data were gathered on the size and range of the population and the natural community where the species was found. The location of the species was recorded with a Trimble Pathfinder Plus Global Positioning System (GPS) unit and noted on the appropriate U.S.G.S. 7.5 minute topographic quadrangle map. Plant identifications were primarily made using *Guide to the Vascular Plants of Florida* (Wunderlin 1998), *A Flora of Tropical Florida* (Long and Lakela 1971), *The Native Orchids of Florida* (Luer 1972), and *Orchids and Other Air Plants of the Everglades National Park* (Craighead 1963). The natural community types were classified using the system presented in the *Guide to the Natural Communities of Florida* (Florida Natural Areas Inventory and Department of Natural Resources, 1990). Field data also included species lists of all plants identified for each natural community. The plant scientific names given throughout this report generally follow Wunderlin (1998).

Table 1. Listed plant species potentially occurring on Picayune Strand State Forest. Explanation sheet for ranks and legal status is included in Appendix 1.

Scientific Name Common Name	Plant type and family	Potential Habitat on PSSF and best survey season	FNAI Global/ State Ranks	Federal Status	State Status
<i>Acrostichum aureum</i> golden leather fern	fern Adiantaceae	coastal hammocks, tidal marsh	G5/S3	N	LT
<i>Aeschynomene pratensis</i> meadow jointvetch	herb Fabaceae	marl prairie, swamps, wet flatwoods; all year	G5T2/S2	N	LE
<i>Andropogon arctatus</i> pine-woods	grass Poaceae	flatwoods fall	G3/S3	N	LT

Scientific Name Common Name	Plant type and family	Potential Habitat on PSSF and best survey season	FNAI Global/ State Ranks	Federal Status	State Status
bluestem					
<i>Asplenium auritum</i> auricled spleenwort	epiphytic fern Aspleniaceae	mesic hammock, strand swamp; all year	G5/S2	N	LE
<i>Asplenium serratum</i> bird's nest spleenwort	epiphytic fern Aspleniaceae	swamps and hammocks all year	G4/S1	N	LE
<i>Bulbophyllum pachyrrachis</i> rat-tail orchid	epiphytic orchid Orchidaceae	strand swamp Nov-Jan	G4?/SX	N	LE
<i>Burmannia flava</i> Fakahatchee burmannia	herb Burmanniaceae	wet flatwoods Jan	G5/S1	N	LE
<i>Calopogon multiflorus</i> many-flowered grass-pink	terrestrial orchid Orchidaceae	wet flatwoods Mar-Jul	G3/S2S3	N	LE
<i>Campylocentrum pachyrrhizum</i> leafless orchid	epiphytic orchid Orchidaceae	strand swamp Sept-Oct	G4?/S1	MC	LE
<i>Campyloneurum angustifolium</i> narrow-leaved strap fern	epiphytic fern Polypodiaceae	strand swamp all year	G4G5/S1	N	LE
<i>Campyloneurum costatum</i> tailed strap fern	epiphytic fern Polypodiaceae	strand swamp all year	G5/S2	N	LE
<i>Catopsis berteroniana</i> powdery catopsis	epiphytic bromeliad Bromeliaceae	tidal swamp, rockland hammock, pine rockland all year	G5?/S1S2	N	LE
<i>Catopsis floribunda</i> many-flowered catopsis	epiphytic bromeliad Bromeliaceae	rockland hammock, strand swamp Sep-Nov	G3/S1	N	LE
<i>Catopsis nutans</i> nodding catopsis	epiphytic bromeliad Bromeliaceae	strand swamp Aug-Oct	G5?/S1	N	LE
<i>Cheilanthes</i>	epiphytic fern	rockland hammock	G5/S3	N	LE

Scientific Name Common Name	Plant type and family	Potential Habitat on PSSF and best survey season	FNAI Global/ State Ranks	Federal Status	State Status
<i>microphylla</i> southern lip fern	Polypodiaceae	all year			
<i>Cheiroglossa palmata</i> hand fern	epiphytic fern Ophioglossaceae	hydric hammock all year	G5/S2	N	LE
<i>Colubrina arborescens</i> greenheart	shrub, tree Rhamnaceae	hammock all year	N	N	LE
<i>Cranichis muscosa</i> moss orchid	terrestrial orchid Orchidaceae	rockland hammock Jan-Feb	G4G5/SX	N	LE
<i>Crossopetalum rhacoma</i> rhacoma	shrub Celastraceae	pine rocklands all year	G5/S3	N	LT
<i>Ctenitis sloanei</i> Florida tree fern	terrestrial fern Dryopteridaceae	strand swamp, rockland hammock; all year	G5/S2	N	LE
<i>Ctenitis submarginalis</i> brown hair comb fern	terrestrial fern Dryopteridaceae	strand swamp, rockland hammock; all year	N	N	LE
<i>Cyrtopodium punctatum</i> cow-horned orchid	epiphytic orchid Orchidaceae	marl prairie, strand swamp; all year	G5/S1	N	LE
<i>Elytraria caroliniensis</i> var. <i>angustifolia</i> narrow-leaved scalystem	herb Acanthaceae	wet flatwoods all year	G4T2/S2	MC	N
<i>Encyclia boothiana</i> var. <i>erythronioides</i> dollar orchid	epiphytic orchid Orchidaceae	hammocks, estuarine tidal swamp Jun-Sep	G4T4 /S1	MC	LE
<i>Encyclia cochleata</i> clamshell orchid	epiphytic orchid Orchidaceae	dome and strand swamp all year	G4/S2	N	LE
<i>Encyclia pygmaea</i> dwarf encyclia	epiphytic orchid Orchidaceae	strand swamp Oct-Feb	G4G5/S1	N	LE
<i>Epidendrum anceps</i>	epiphytic orchid Orchidaceae	strand swamp Jan- Jul, all year	N	N	LE

Scientific Name Common Name	Plant type and family	Potential Habitat on PSSF and best survey season	FNAI Global/ State Ranks	Federal Status	State Status
dingy-flowered epidendrum					
<i>Epidendrum blancheanum</i> Acuna's epidendrum	epiphytic orchid Orchidaceae	strand swamp May-Jun	G3G5/SH	N	LE
<i>Epidendrum difforme</i> (= <i>E. floridense</i> ) umbelbed epidendrum	epiphytic orchid Orchidaceae	strand swamp Aug-Nov, all year	N	N	LE
<i>Epidendrum nocturnum</i> night-scented orchid	epiphytic orchid Orchidaceae	dome and strand swamp all year	G4G5/S2	N	LE
<i>Epidendrum rigidum</i> rigid epidendrum	epiphytic orchid Orchidaceae	strand swamp Oct-May	N	N	LE
<i>Epidendrum strobiliferum</i> pendant epidendrum	epiphytic orchid Orchidaceae	strand swamp Oct-Nov, all year	G4/S1	N	LE
<i>Forestiera segregata</i> var. <i>pinetorum</i> Florida pinewood privet	shrub Oleaceae	hammocks, pinelands Mar-May	G4T2/S2	N	N
<i>Glandularia maritima</i> coastal vervain	herb Verbenaceae	pine rocklands all year	G3/S3	MC	LE
<i>Glandularia tampensis</i> Tampa vervain	herb Verbenaceae	flatwoods, hydric hammock; Jan-Jun	G1/S1	N	LE
<i>Gossypium hirsutum</i> wild cotton	herb or shrub Malvaceae	hammocks all year	G4G5/S3	N	LE
<i>Guzmania monostachia</i> Fuch's bromeliad	epiphytic bromeliad Bromeliaceae	strand swamp all year	G4G5/S1S2	N	LE

Scientific Name Common Name	Plant type and family	Potential Habitat on PSSF and best survey season	FNAI Global/ State Ranks	Federal Status	State Status
<i>Gymnopogon chapmanianus</i> Chapman's skeletongrass	grass Poaceae	flatwoods Sep-Nov	G3/S3	N	N
<i>Habenaria distans</i> distans habenaria	terrestrial orchid Orchidaceae	hydric hammock, strand swamp; Aug-Sep	N	N	LE
<i>Huperzia dichotoma</i> hanging clubmoss	epiphyte Lycopodiaceae	strand swamp all year	G5/S1	N	LE
<i>Ionopsis utricularioides</i> delicate ionopsis	epiphytic orchid Orchidaceae	strand swamp Jan-Apr	G4G5/S1	N	LE
<i>Jacquemontia curtissii</i> pineland jacquemontia	vine Convolvulaceae	marl prairie, flatwoods all year	G2/S2	MC	LT
<i>Lepanthopsis melanantha</i> tiny orchid	epiphytic orchid Orchidaceae	strand swamp all year	G4/SH	N	LE
<i>Linum carteri</i> var. <i>smallii</i> Carter's large-flowered flax	herb Linaceae	marl prairie Mar-May	G2T2/S2	N	LE
<i>Maxillaria crassifolia</i> hidden orchid	epiphytic orchid Orchidaceae	strand swamp Sep-Jan	G4G5/S1	N	LE
<i>Microgramma heterophylla</i> climbing vine fern	epiphytic fern Polypodiaceae	rockland hammock all year	G4G5/S2	N	LE
<i>Myrcianthes fragrans</i> twinberry	shrub or tree Myrtaceae	hammocks all year	N	N	LT
<i>Oncidium undulatum</i> mule ear orchid	epiphytic orchid Orchidaceae	mangrove swamp, strand swamp; Dec-Jun	G4G5/S1	N	LE
<i>Passiflora pallens</i> pale passionflower	vine Passifloraceae	strand swamp all year	G3G4/S2	N	LE

Scientific Name Common Name	Plant type and family	Potential Habitat on PSSF and best survey season	FNAI Global/ State Ranks	Federal Status	State Status
<i>Pecluma ptilodon</i> swamp plume polypody	epiphytic fern Polypodiaceae	hammock, strand swamp all year	G5/S2	N	LE
<i>Peperomia glabella</i> cypress peperomia	epiphytic herb Piperaceae	hammock, slough Dec-Mar	G4G5/SX	N	LE
<i>Peperomia humilis</i> terrestrial peperomia	terrestrial or epiphytic herb Piperaceae	swamp, hydric hammock all year	G5/S2	N	LE
<i>Peperomia obtusifolia</i> blunt-leaved peperomia	epiphytic herb Piperaceae	strand swamp all year	G5/S2	MC	LE
<i>Pleurothallis gelida</i> frost-flower orchid	epiphytic orchid Orchidaceae	strand swamp Dec-Apr	G4/S2	N	LE
<i>Polyradicion lindenii</i> (= <i>Polyrrhiza lindenii</i> ) ghost orchid	epiphytic orchid Orchidaceae	strand swamp May-Sep	G2G4/S2	N	LE
<i>Pteris bahamensis</i> Bahama brake	fern Pteridaceae	pine rockland, edge of hammocks; all year	G4/S3	N	LT
<i>Pteroglossaspis ecristata</i> wild coco	terrestrial orchid Orchidaceae	flatwoods Jul-Sep	G2/S2	MC	LT
<i>Roystonea elata</i> Florida royal palm	palm tree Arecaceae	strand swamp all year	G2G4Q/S2	MC	LE
<i>Sacoila lanceolata</i> var. <i>paludicola</i> Fahkahatchee ladies'-tresses	terrestrial orchid Orchidaceae	swamp, hydric hammock, wet flatwoods Mar-Jul	G4T1/S1	MC	LT
<i>Spiranthes torta</i> southern ladies'-tresses	terrestrial orchid Orchidaceae	pine rockland, marl prairie; May-June	G4?/S1	N	LE
<i>Thelypteris grandis</i> stately maiden fern	fern Thelypteridaceae	strand swamp all year	N	N	LE
<i>Thelypteris reptans</i>	fern	rockland hammock	G5/S1	N	LE

Scientific Name Common Name	Plant type and family	Potential Habitat on PSSF and best survey season	FNAI Global/ State Ranks	Federal Status	State Status
creeping fern	Thelypteridaceae	all year			
<i>Thelypteris reticulata</i> lattice-vein fern	fern Thelypteridaceae	strand swamp, hydric hammock; all year	N	N	LE
<i>Thelypteris serrata</i> toothed lattice-vein fern	fern Thelypteridaceae	strand swamp, slough all year	G4/S1	N	LE
<i>Tillandsia balbisiiana</i> inflated wildpine	epiphytic bromeliad Bromeliaceae	hammock, swamp Sep-Nov	N	N	LT
<i>Tillandsia fasciculata</i> common wildpine	epiphytic bromeliad Bromeliaceae	hammock, swamp Jun-Nov	N	N	LE
<i>Tillandsia flexuosa</i> banded wildpine	epiphytic bromeliad Bromeliaceae	hammock, swamp Mar- Aug	G5/S3	N	LT
<i>Tillandsia pruinosa</i> fuzzy-wuzzy airplant	epiphytic bromeliad Bromeliaceae	strand swamp all year	G4/S1	N	LE
<i>Tillandsia utriculata</i> giant wildpine	epiphytic bromeliad Bromeliaceae	hammock, swamp Jun-Nov	N	N	LE
<i>Tillandsia variabilis</i> (= <i>T. valenzuelana</i> ) soft-leaved wildpine	epiphytic bromeliad Bromeliaceae	hammock, swamp Sep-Nov	N	N	LT
<i>Tripsacum floridanum</i> Florida gama grass	grass Poaceae	pine rockland Jan-Jul	G2/S2	N	LT
<i>Vanilla phaeantha</i> brown-flowered vanilla	vine orchid Orchidaceae	strand and dome swamp May-Jul	G4/S2	N	LE
<i>Vernonia blodgettii</i> Blodgett's ironweed	herb Asteraceae	flatwoods Jun-Nov	G3/S3	N	N
<i>Zephyranthes</i>	herb	wet flatwoods	G2G3/SH	N	LT

Scientific Name Common Name	Plant type and family	Potential Habitat on PSSF and best survey season	FNAI Global/ State Ranks	Federal Status	State Status
<i>simpsonii</i> rain lily	Amaryllidaceae	Jan-Jun			

## RESULTS and DISCUSSION

The results are organized into three sections. The first part consists of brief ecological assessments of selected natural communities and surveyed areas. The second details the observed listed plant species and includes a table summarizing the plant ranks, status, and locations on PSSF. The third lists exotic pest plants encountered and their locations.

Picayune Strand State Forest is still undergoing acquisition with many parcels remaining in private ownership. Due to this fragmented ownership and lack of surveyed boundary lines, it is frequently difficult to know when state land boundaries are crossed. South Florida was suffering from a prolonged drought during the surveys. Wetland areas that would normally be under water were completely dry in the spring of 2001. Even the less hydrologically impacted south end that held water during the fall 2000 surveys had completely dried out by the last visit in May 2001. These conditions allowed for easier access but made it more difficult to locate some listed species (such as orchids) which may have not been flowering due to the drought. Although animals were not part of the survey, it is noteworthy that signs of *Ursus americanus floridanus* (Florida black bear) were observed regularly in the south end of PSSF.

### Natural Communities

Picayune Strand State Forest is a diverse landscape with a mosaic of many natural community types including basin swamp, hydric hammock, marl prairie, mesic flatwoods, prairie hammock, slough, strand swamp, wet flatwoods, and others. Most of the natural communities suffer from the long term hydrology changes due to drainage by the canal system. Wildfire (often arson) has also adversely affected some sections of the unnaturally dry wetlands. The following are descriptions of the typical vegetation found in the predominant natural communities in Picayune Strand State Forest. Management considerations are briefly discussed for each community. The locations of selected natural communities were plotted using ArcView and are shown on the GIS-generated maps in Appendix 2.

**Basin swamp** occurs in the north central part of the Belle Meade tract. The swamp is characterized by abundant stunted *Taxodium ascendens* (pond cypress), occasional *Pinus elliotii* (slash pine), scattered shrubs such as *Myrica cerifera* (wax myrtle) and young *Sabal palmetto* (cabbage palm), and a graminoid groundcover with *Amphicarpum muhlenbergianum* (blue maidencane), *Cladium jamaicense* (saw grass), and *Blechnum serrulatum* (sawtooth fern). Epiphytes are common on the trees, especially

*Tillandsia fasciculata* (cardinal airplant). The sandy soil is inundated for much of the year and normally dries out in the winter. The exotic pest plant *Melaleuca quinquenervia* forms dense thickets in many areas and threatens to overrun the entire section. DOF is combating this weed with herbicide treatments and biological control. Scouting for outlying colonies of *Melaleuca* should be done routinely and any found plants should be a priority for eradication.

Another area of basin swamp lies west of the southwest corner of the road grid and just north of Collier Seminole State Park. This relatively undisturbed swamp is dominated by *Taxodium ascendens* [pond cypress, 4 to 10 inch diameter at breast height (dbh) and 30 to 40 feet tall]. *Tillandsia fasciculata* is a common epiphyte on the cypress trees. Although this appears to be excellent habitat for *Cyrtopodium punctatum* (cowhorn orchid), no plants were seen. The exotic pest plants *Melaleuca* and *Schinus terebinthifolius* (Brazilian pepper) are absent and occasional, respectively. It is recommended that timber logging for cypress and pine in basin swamp should be prevented or at least kept to a minimum in areas with rare plant populations.

**Hydric hammock** is typically along the upper edge of, or intermixed with, strand swamp. Hydric hammock occurs in lowland situations where the soils are generally saturated year-round, but which are inundated only for short periods after heavy rains. Elevated areas within the hydric hammock may support patches of wet or mesic flatwoods and lower areas usually have strand swamp or less commonly *Cladium jamaicense-Salix caroliniana* (sawgrass-willow) marsh. It is recommended that timber logging for cypress and pine in hydric hammock should be prevented or at least kept to a minimum in areas with rare plant populations.

The canopy of hydric hammock on PSSF is typically dominated by abundant *Sabal palmetto* (cabbage palm), *Quercus laurifolia* (laurel oak), and *Acer rubrum* (red maple), plus occasional *Taxodium distichum* (bald cypress). *Ilex cassine* (dahoon holly) is common in the subcanopy and myrsine (*Rapanea punctata*), wild coffee (*Psychotria nervosa*), and *Myrica cerifera* (wax myrtle) in the shrub layer. *Ficus aurea* (strangler fig) is found both free-standing and "strangling" other trees. Ferns are abundant, especially *Blechnum serrulatum* (sawtooth fern) and three epiphytic species: *Phlebodium aureum* (golden polypody), *Vittaria lineata* (shoestring fern), and *Polypodium polypodioides* (resurrection fern). The exotic pest *Schinus terebinthifolius* (Brazilian pepper) is occasional in the understory of some sections. The listed *Cheiroglossa palmata* (hand fern) occurs most frequently in this natural community. The hydric hammock/strand swamp mosaic along the west side of the Faka Union Canal at the south end was especially noteworthy for its large size, high quality, and the listed species *Cheiroglossa*, *Encyclia cochleata* (clam shell orchid), *Habenaria distans* (distans habenaria), *Roystonea elata* (royal palm), *Tillandsia balbisiana* (inflated airplant), *Tillandsia fasciculata* (common airplant), and *Tillandsia utriculata* (giant airplant). This area should be one of the top priorities for additional surveys as it probably harbors many other listed plant species.

**Marl prairie** occurs at the very south end of PSSF along the north side of US 41. This open and nearly treeless natural community is dominated by herbaceous species such as *Muhlenbergia capillaris*

(muhley grass), *Spatina bakeri* (sand cordgrass), and *Cladium jamaicense* (sawgrass). The listed species *Elytraria caroliniensis* var. *angustifolia* (narrow-leaved Carolina scalystem) occurs in the prairie south of the Miller Canal and west of the Faka Union Canal. The exotic pest plant *Melaleuca quinquenervia* is present in small, widely scattered colonies. It is imperative that these be eradicated before they spread further. Of even more serious management concern is the widespread use of all terrain vehicles (ATV). An ever expanding complex network of ATV trails has developed during the drought of the last couple of years. Unrestricted use has severely damaged the prairie by compacting the soil and killing the vegetation. A management plan is needed to halt or at least confine this disturbance.

**Mesic flatwoods** are widespread and vary in species composition depending on their soil type. At the north end adjacent to I-75, the flatwoods approach pine rockland status with limestone at the soil surface. The canopy of older mature *Pinus elliottii* (slash pine) shade abundant *Sabal palmetto* (cabbage palm) in the subcanopy. *Serenoa repens* (saw palmetto) averaging three to five feet tall dominate the open shrub stratum. Other shrubs include *Lyonia fruticosa* (staggerbush), *Ilex glabra* (gallberry), *Myrica cerifera* (wax myrtle), and the exotics *Schinus terebinthifolius* (Brazilian pepper) and *Lantana camara* (lantana). The diverse groundcover has *Chiococca pinetorum* (snowberry), *Clematis baldwinii* (clematis), *Coreopsis leavenwortii* (coreopsis), *Dyschoriste angusta* (twinflower), *Eryngium yuccifolium* (rattlesnake master), *Flaveria linearis* (yellowtop), *Heliotropium polyphyllum* (pineland heliotrope), *Piloblephis rigidus* (pennyroyal), *Pteridium aquilinum* (bracken fern), and *Solidago sempervirens* (goldenrod). The vine *Vitis rotundifolia* (grape) is abundant in disturbed sections. A potential new county record of the State Threatened *Angadenia berterii* (pineland yellow trumpet) was observed in the block west of Everglades Boulevard and next to Interstate 75. Frequent wildfires have kept the shrub stratum open.

Large sections of the central portion of the Belle Meade tract are covered with mesic flatwoods composed of typical species such as *Pinus elliottii*, *Serenoa repens*, and *Ilex glabra* (gallberry). The ground cover is variable depending on the density of the shrubs. South of Sabal Palm road, the pines are mostly mature trees averaging 10 to 12 inches dbh and the dense *Serenoa* is 5 to 7 feet high. Frequent prescribed fires are needed to open up the shrub vegetation. In the Golden Gate Estates tract, much of the flatwoods appear to have been disturbed by past land clearing, especially along roads and canals.

The mesic flatwoods occur on variously sized islands in the south end, at slightly higher elevations than the surrounding swamp or marl prairie. One typical island in the swamp has a canopy of older mature *Pinus elliottii* (slash pine) ranging from 8 to 18 inches dbh and 50 to 70 feet tall. A few scattered *Sabal palmetto* (cabbage palm, 10 to 20 feet tall) make up the subcanopy. *Serenoa repens* averaging five to six feet tall dominate the dense shrub stratum. Other tall shrubs include *Quercus myrtifolia* (myrtle oak), *Q. geminata* (sand live oak), *Lyonia fruticosa* (staggerbush), and *Ilex glabra* (gallberry). The vine *Vitis rotundifolia* (grape) scrambles through the shrubs. The fuel load in this

natural community is very high due to the long term lack of fire. Management efforts should focus on the use of prescribed fire to restore a more open habitat.

**Prairie hammock** occurs on upland islands in the basin swamp found in the Belle Meade tract and in the south end near US 41. One typical hammock is adjacent to the large slough located south of Sabal Palm Road. Coming from the west, it is about one mile southwest of the first gate to the south. The canopy is *Quercus virginiana* (live oak) growing over abundant *Sabal palmetto*. The shrub stratum is mainly *Serenoa repens* (saw palmetto), *Psychotria nervosa* (wild coffee), *Psychotria sulzneri*, and *Rapanea punctata* (myrsine). The listed *Myrcianthes fragrans* (twinberry stopper) is locally abundant as shrubs to 20 feet tall. The exotic pest plant *Schinus terebinthifolius* (Brazilian pepper) is the main threat to the health of the hammocks. It grows intermixed with the desirable tropical species and will require careful eradication.

**Slough** typically occurs along deeper channels in the strand swamp. This natural community provides the right conditions of high moisture and shade for many epiphytic species. Slough is characterized by a canopy of emergent *Taxodium distichum* (bald cypress) towering over *Fraxinus caroliniana* (pop ash), *Annona glabra* (pond apple), and *Salix caroliniana* (willow); emergent aquatics such as *Zizaniopsis milacea* (giant cutgrass) and *Thalia geniculata* (fireflag); and numerous epiphytes on the tree branches. It is recommended that no timber logging for cypress should occur in slough because of the high number rare plant species.

Several good examples of slough occur in the west side of the Belle Meade tract and south of Sabal Palm Road. Coming from the west, one example is southeast of the first gate to the south. This elliptical depression has an open center with herbaceous plants such as *Panicum hemitomon* (maidencane), *Pontederia cordata* (pickerel weed), *Zizaniopsis*, and *Thalia*. Next is a band of *Salix caroliniana* (willow) and *Fraxinus caroliniana* (pop ash) ranging from 10 to 25 feet tall. Around the periphery is a closed canopy ring of *Taxodium distichum* (bald cypress), with large trees on the inside and small trees on the outside. Many old stumps and horizontal logs attest to past timbering. Numerous epiphytes grow on the trees and logs, including *Campyloneurum phyllitidis* (long strap fern), *Polypodium polypodioides* (resurrection fern), and *Tillandsia setacea* (needle-leaf airplant). The listed bromeliads *Tillandsia balbisiana* (inflated wildpine), *T. fasciculata* (cardinal airplant), and *T. variabilis* (soft-leaved wildpine) are occasional to common. The only occurrence of *Campyloneurum costatum* (long strap fern) observed during the PSSF surveys occurs in this cypress band; a total of eight plants was noted, five on one log and three on an old decayed stump. About 20 trees (one 12 inches dbh) of the exotic pest plant *Melaleuca quinquenervia* grow on the north side of the slough. This species should be a priority target for eradication to protect the nearby listed plants.

The second example of slough is about one mile west of the first. It has a similar open center with *Panicum hemitomon* and *Thalia geniculata* at the north end surrounded by *Fraxinus caroliniana* ten feet tall. To the southeast, numerous *Annona glabra* (pond apple) grow up to 12 inches dbh and 10 to 20 feet tall. The base of these old plants average 10 feet in diameter and stand about three feet above

the ground indicating normally deep water. Epiphytes are abundant on the branches but the tops of the pond apples are dead (perhaps from a freeze last winter): the listed *Tillandsia balbisiana*, *T. fasciculata*, and *T. variabilis* are common while *T. utriculata* (giant wildpine) and *Epidendrum rigidum* (rigid epidendrum) are rare. This slough needs further exploration as other rare orchids and bromeliads are probably present. A few plants of the exotic pest *Lygodium microphyllum* (small-leaf climbing fern) climb in the cypress trees on the east side of the slough. These ferns should be promptly eradicated while the population is still small. Our map shows this parcel to be not yet in state ownership. It should be made an acquisition priority because of the unique size and age of the *Annona glabra* trees and the numerous epiphytes they support.

The third slough is one mile east of the limerock mine entrance road and runs across Sabal Palm Road. This deep hole makes the road impassible in times of high water (like in 2000 October) but can be nearly dry and thus driveable in times of drought (like in 2001 March). The slough is of better quality about 0.3 mile south of the road where it is surrounded by strand swamp. A series of deep holes has abundant pop ash covered with epiphytes. During our visit, a three feet long *Alligator mississippiensis* (alligator) was observed laying in a small pool of water in the dry swamp. The easy access from Sabal Palm Road may have contributed to possible poaching of the rarest species.

The relatively remote part of PSSF off Tomato Road provides some of the best habitat for rare species. A particularly high quality slough occurs about one half mile north of Collier-Seminole State Park. This slough has a center depression filled with *Zizaniopsis milacea* (giant cutgrass) and surrounded by a closed canopy of *Fraxinus caroliniana* (pop ash) under emergent *Taxodium distichum* (bald cypress). Numerous epiphytes cover the tree trunks and branches. The listed *Polyrradicion lindenii* (ghost orchid) was found on one of the pop ash trunks. Although it was not in flower, the roots were distinctive. Other orchids seen here were the listed *Epidendrum rigidum* (rigid epidendrum), the common *Encyclia tampensis* (butterfly orchid), and other sterile plants of *Epidendrum* we failed to identify.

**Strand swamp** is the dominant natural community in the Golden Gate Estates South half of PSSF. The once continuous band of strand swamp through the center has been fragmented by roads, drained by canals, and burned by wildfires since the 1960's. The strand was spot checked in many locations for listed species but much of the natural community (especially the north end) appear to be too dry and open for many of the epiphytic orchids and bromeliads and sections have been adversely impacted by past wildfires. The exotic pest plant *Schinus terebinthifolius* (Brazilian pepper) is a common to abundant tall shrub or small tree in the interior of the swamps where the water table has been lowered. It is recommended that timber logging for cypress and pine in strand swamp should be prevented or at least kept to a minimum in areas with rare plant populations.

Strand swamp at PSSF generally has a canopy of emergent *Taxodium distichum* (bald cypress) over *Acer rubrum* (red maple) and *Sabal palmetto* (cabbage palm). The subcanopy is generally composed of *Ilex cassine* (dahoon holly), *Persea palustris* (swamp bay), and younger *Sabal*, *Fraxinus caroliniana*

(pop ash) may be locally abundant, but only appears in less disturbed sections. The shrub stratum has scattered *Myrica cerifera* (wax myrtle), *Cephalanthus occidentalis* (buttonbush), and the exotic *Schinus*. *Blechnum serrulatum* (sawtooth fern) is the dominant herb; *Toxicodendron radicans* (poison ivy) is frequent. Epiphytic species are numerous on branches and trunks of trees and on fallen logs with *Phlebodium aureum* (golden polypody fern), *Vittaria lineata* (shoestring fern), *Campyloneurum phyllitidis* (strap fern), *Tillandsia setacea* (needle-leaf air plant), and *T. usneoides* (Spanish moss) being most common. Other widespread but less ubiquitous epiphytic bromeliads include the listed *Tillandsia balbisiana* (inflated wildpine), *T. fasciculata* (cardinal airplant), *T. utriculata* (giant wildpine), and *T. variabilis* (soft-leaved wildpine).

Some blocks in the south end near Lynch Boulevard have maintained a closed canopy and good diversity of epiphytes. A small population of the very rare bromeliad *Tillandsia pruinosa* (fuzzy-wuzzy airplant) was discovered in the strand near 116 Avenue. Other orchids seen here were the common *Encyclia tampensis* (butterfly orchid) and other sterile *Epidendrum* we failed to identify. The historical occurrences of *Polyradicion lindenii* (ghost orchid) and *Epidendrum nocturnum* (night scented orchid) were not confirmed but the drained and *Schinus* invaded habitat remains in good enough condition to support them.

The hydric hammock/strand swamp mosaic along the west side of the Faka Union Canal at the south end of PSSF was especially noteworthy for its large size and high quality. Generally north-south narrow bands of strand swamp divide the hydric hammock matrix. It is often difficult to separate the two natural communities where the cypress trees spread into the slightly higher hammock. The only observed population of the listed species *Roystonea elata* (royal palm) occurs in this mosaic near US 41: ten seedlings 10 to twenty feet tall were counted. Occasional terrestrial *Habenaria distans* (distans habenaria) orchids and one nonflowering epiphytic *Encyclia cochleata* (clamshell orchid) orchid were seen in the section just south of the Miller Canal. *Cheiroglossa palmata* (hand fern) was widespread but rare in this area.

The strand swamps adjacent to Seminole-Collier State Park appear to be the least disturbed and most intact hydrologically. This relatively remote part of PSSF provides some of the best habitat for rare species, such as *Polyradicion lindenii* (ghost orchid), which was observed in two locations. The section north of Tomato Road at the west edge of the forest was of particularly high quality with large *Taxodium distichum* (bald cypress) and a luxuriant fern groundcover of *Blechnum serrulatum* (sawtooth fern) and *Osmunda regalis* (royal fern). The imbedded slough had numerous other epiphytes and should be surveyed more extensively.

The strand swamp and slough intersecting Sabal Palm Road east of the limerock mine has many mature *Taxodium distichum* (up to 36 inches dbh) and *Acer rubrum* (red maple), a subcanopy of abundant *Fraxinus caroliniana* (pop ash), and a large compliment of epiphytes. The listed *Epidendrum anceps* (dingy-flowered epidendrum), *Tillandsia balbisiana* (inflated wildpine), *T. fasciculata* (cardinal airplant), and *T. variabilis* (soft-leaved wild pine) were observed. The section south of the

road appeared to be an especially promising area but the close proximity to Sabal Palm Road may have contributed to the few observed rare species.

**Wet flatwoods** are found in the northeast corner of Golden Gate Estates South tract and much of the Belle Meade tract. The *Pinus elliottii* (slash pine) canopy in the former area grow over scattered shrubs and an intact herbaceous groundcover. The listed species *Elytraria caroliniensis* var. *angustifolia* (narrow-leaved Carolina scalystem) was recorded in this area. This section has a poorly maintained road grid and a number of abandoned homesites. Exotic pest plants include *Imperata cylindrica* (cogon grass) in scattered patches, *Schinus* along roads, and a mature tree of *Syzygium cumini* (Java plum) at an old homesite.

The wet flatwoods in the Belle Meade tract have a canopy of mature slash pine and a diverse intact groundcover. *Taxodium ascendens* (pond cypress) often grow intermixed with the pines. Many areas are impacted by the exotic pest plant *Melaleuca quinquenervia* and parts in the west half by Sabal Palm Road have become *Melaleuca* thickets where the native vegetation is barely visible. The *Melaleuca* tends to thin out further east in the slightly drier mesic flatwoods.

#### Listed Plants

During the course of the survey, we had difficulty finding rare plant species, especially orchids and bromeliads. This may have been partially due to the lack of flowering caused by the prolonged drought. Amazingly, only a few orchid plants were observed in flower during the entire survey. Another factor is the population declines that have undoubtable resulted from the long term hydrological degradation from the canal system. The lowered water tables have altered the humidity and cold protection in the microhabitats needed by these species. An even more serious problem appears to be plant poaching by collectors in the area now within the boundaries of the Picayune Strand State Forest. The extensive road grid has allowed easy access to most of the otherwise remote swamp since the 1960's. In contrast, the adjacent Fakahatchee Strand State Preserve with few roads or canals has a well documented abundance of rare species. Enforcement of poaching laws is made nearly impossible because of the large number of privately owned land parcels within PSSF boundaries. The future completed state ownership and subsequent restoration of PSSF hydrology will be a major factors in the reestablishment of rare plant species.

This survey should be considered as part of a ongoing effort to gaining an understanding of the natural systems and rare species at PSSF. The one hundred square miles of forest land will require additional surveys during various seasons and hydrologic conditions to better determine the on site status of the numerous listed plant species.

Table 2 contains 21 listed species confirmed to be in Picayune Strand State Forest. Seven species of FNAI listed plants and eight additional species listed by the State of Florida and the Florida Department of Agriculture and Consumer Services (FDACS) were documented during this survey. Five other species from the FNAI database that have been reported in the past are also shown. Rare

species are found in many of the natural community types on PSSF, including mesic flatwoods, wet flatwoods, hydric hammock, strand swamp, basin swamp, and slough. The locations of rare species were plotted using ArcView and are shown on the GIS-generated maps in Appendix 2.

Table 2. Listed plant species documented on Picayune Strand State Forest. An explanation of ranks and legal status is in Appendix 1.

<i>Scientific Name</i> Common name	Natural Community on PSSF	FNAI Rank	Federal Status	State Status	Area Where Found
<i>Angadenia berterii</i> pineland yellow trumpet	mesic flatwoods	N	N	LT	North end of Golden Gate Estates beside I-75.
<i>Asplenium serratum</i> bird's nest fern	swamp	G4/S1	N	LE	Previously reported from the south end at the west edge of the Belle Meade tract.
<i>Campyloneurum costatum</i> tailed strap fern	slough	G5/S2	N	LE	Belle Meade tract south of Sabal Palm Road.
<i>Catopsis berteroniana</i> powdery catopsis	swamp	G5?/S1S2	N	LE	Previously reported from the west edge of the Belle Meade tract.
<i>Cheiroglossa palmata</i> Hand fern	hydric hammock	G5/S2	N	LE	Very south end of Golden Gate Estates Tract near US 41.
<i>Cyrtopodium punctatum</i> cowhorn orchid	swamp	G5/S1	N	LE	Previously reported from the southwest corner at the west edge of the Belle Meade tract.
<i>Elytraria caroliniensis</i> var. <i>angustifolia</i> narrow-leaved scalystem	wet flatwoods, marl prairie	G4T2/S2	MC	N	Northeast corner of Golden Gate Estates and in the south end marl prairie.
<i>Encyclia cochleata</i> clamshell orchid	strand swamp	G4/S2	N	LE	South end by intersection of Miller and Faka Union canals.
<i>Epidendrum anceps</i> dingy-flowered epidendrum	strand swamp	N	N	LE	West side of forest by Sabal Palm Road.
<i>Epidendrum nocturnum</i> night-scented orchid	strand swamp	G4G5/S2	N	LE	Previously reported from the south end of Golden Gate Estates within road grid
<i>Epidendrum rigidum</i> rigid epidendrum	strand swamp, slough	N	N	LE	Belle Meade tract south of Sabal Palm Road and by Tomato Road.
<i>Habenaria distans</i>					South end by intersection of Miller

<i>Scientific Name</i> Common name	Natural Community on PSSF	FNAI Rank	Federal Status	State Status	Area Where Found
<i>Distans habenaria</i>	hydric hammock	N	N	LE	and Faka Union canals.
<i>Ionopsis utricularioides</i> delicate ionopsis	swamp	G4G5/S1	N	LE	Previously reported from the south end at the west edge of the Belle Meade tract.
<i>Myrcianthes fragrans</i> twinberry stopper	hammock	N	N	LT	On islands in Belle Meade basin swamp south of Sabal Palm Road.
<i>Polyradicion lindenii</i> (= <i>Polyrrhiza lindenii</i> ) ghost orchid	slough, strand swamp	G2G4/S2	N	LE	South end of Belle Meade near Tomato Road.
<i>Roystonea elata</i> royal palm	strand swamp	G2G4Q/ S2	MC	LE	Very south end of Golden Gate Estates Tract near US 41.
<i>Tillandsia balbisiana</i> inflated wildpine	hydric hammock, strand swamp, slough	N	N	LT	Widespread in wetlands.
<i>Tillandsia fasciculata</i> common airplant	hydric hammock, strand swamp, slough	N	N	LE	Widespread in wetlands.
<i>Tillandsia pruinosa</i> fuzzy-wuzzy airplant	strand swamp	G4/S1	N	LE	South end of Golden Gate Estates within road grid
<i>Tillandsia utriculata</i> giant wildpine	strand swamp, slough	N	N	LE	Belle Meade tract south of Sabal Palm Road and in the very south end by the west side of the Faka Union Canal.
<i>Tillandsia variabilis</i> (= <i>T. valenzuelana</i> ) soft-leaved wildpine	hydric hammock, strand swamp, slough	N	N	LT	Widespread in wetlands.

*Angadenia berterii* (pineland yellow trumpet) is a State Threatened (but unranked by FNAI) herbaceous perennial found in mesic flatwoods with limestone at the soil surface at the north end of Golden Gate Estates. Only one small population was observed in a recently burned area immediately south of I-75. Six plants were counted in a 100 square foot area. The plants were in fruit when first observed in October 2000 and in flower in May 2001. *Angadenia* is not on the target list as it had not previously been reported from Collier County. It is known from pine rocklands in Dade and Monroe counties.

*Asplenium serratum* (bird's nest fern) is an epiphytic fern previously reported from the south end of the Belle Meade tract. It is listed as FNAI G4G5/S1 and State Endangered. The species was not observed in the area of the historic occurrence (with *Ionopsis*) or elsewhere during these surveys. *Asplenium* is typically found in swamps and can be recognized throughout the year.

*Campyloneurum costatum* (tailed strap fern) is listed as FNAI G5/S2 and State Endangered. Only one population of eight plants was found in a slough south of Sabal Palm Road in the Belle Meade tract.

*Catopsis berteroniana* (powdery catopsis) is an epiphytic bromeliad previously reported from the west edge of the Belle Meade tract. It is listed as FNAI G5/S1S2 and State Endangered. The known occurrence was not revisited as it is overrun with *Melaleuca*; the species was not observed elsewhere during these surveys. *Catopsis* is typically found in swamp and hammock and flowers throughout the year.

*Cheiroglossa palmata* (also known as *Ophioglossum palmatum*, hand fern) is listed as FNAI G5/S2 and State Endangered. Hand fern is rarely observed growing as an epiphyte on the trunks *Sabal palmetto* (cabbage palm) in moist habitats. In PSSF, it appears to be most common in the hydric hammock along the west side of the of Faka Union Canal in the south end and is also rarely found on *Sabal* growing along canal banks.

*Cyrtopodium punctatum* (cowhorn orchid) is an epiphytic orchid previously reported from the southwest corner and west edge of the Belle Meade tract. It is listed as FNAI G5/S1 and State Endangered. The known occurrences were not revisited because of dense *Melaleuca quinquenervia* now covering the sites. We surveyed nearby areas of similar habitat but the species was not observed during these surveys. *Cyrtopodium* is typically found in basin swamp and strand swamp and the large pseudobulbs are recognizable all year, even without flowers.

*Elytraria caroliniensis* var. *angustifolia* (narrow-leaved Carolina scalystem) is listed as FNAI G4T2/S2 but not state listed. It is occasional to common in wet flatwoods in "The Boot" section at the northeast corner of PSSF where the limestone is at the soil surface. It grows in the well developed graminoid groundcover. We saw it in flower on 2000-10-11 north of the 66 Avenue extension and 0.3 mile west of the forest boundary (Latitude 26 07'25"N/Longitude 81 28'05"W) and also northwest of the intersection of Merritt Blvd. and 52 Avenue. At the south end, *Elytraria* grows on the marl prairie south of Miller Canal.

*Encyclia cochleata* (clamshell orchid) is listed as FNAI G4/S2 and State Endangered. One plant was observed in the area just south of the Miller Canal and 0.9 mile east of Everglades Boulevard. It was not in flower but had an old persistent inflorescence stalk.

*Epidendrum anceps* (dingy-flowered orchid) is an epiphytic orchid listed as State Endangered. The strand swamp and slough cutting through Sabal Palm Road east of the limerock mine had one plant of

*E. anceps* in bud but the flowers were not yet open. This species is probably fairly common but was likely overlooked because of the absence of flowering during the survey.

*Epidendrum nocturnum* (night scented orchid) is an epiphytic orchid previously reported (with *Polyradicion lindenii*) from the south end of the Golden Gate Estates tract. It is listed as FNAI G4G5/S2 and State Endangered. The Everglades Blvd. and 116 Avenue location is in relatively fair condition with a closed canopy. The night scented orchid was not found but the habitat that remains could still support it. The species was not observed elsewhere during these surveys. *E. nocturnum* is typically found in strand swamps and blooms most of the year.

*Epidendrum rigidum* (rigid epidendrum) is an epiphytic orchid listed as State Endangered. This species is probably fairly common but was likely overlooked because of the absence of flowering during the survey. It was observed in slough in the Belle Meade tract south of Sabal Palm Road and by Tomato Road.

*Habenaria distans* (distans habenaria) is listed as State Endangered. It was locally occasional in the north end of the hydric hammock south of the Miller Canal and west of the Faka Union canal.

*Ionopsis utricularioides* (delicate ionopsis) is an epiphytic orchid previously reported (with *Asplenium serratum*) from the south end of the Belle Meade tract. It is listed as FNAI G4G5/S1 and State Endangered. The species was not observed in the area of the historic occurrence or elsewhere during these surveys. *Ionopsis* is typically found in strand swamps which should be protected from logging operations. Surveys for this orchid are best performed from January to April when the plants are in flower.

*Myrcianthes fragrans* (twinberry stopper) is a State Threatened shrub or small tree found in prairie hammocks scattered in the basin swamp in the Belle Meade basin swamp and at the south end marl prairie. It was also observed in the hammock along the north side of Tomato Road about 1.3 miles east of the boundary gate.

*Polyradicion lindenii* (or *Polyrrhiza lindenii*, ghost orchid) is an epiphytic orchid listed as FNAI G2G4/S2 and State Endangered. Ghost orchid was found as single individuals in two locations off Tomato Road in the southwest corner of the site. These areas of slough and strand swamp have intact hydrology and appear to be high quality habitat with little disturbance. The ghost orchid was previously reported from two locations at the south end of the Golden Gate Estates tract. Both occurrences were revisited but the species was not observed. The degraded strand swamp at the DeSoto Blvd. and 114 Avenue location has been severely dried out by the open canopy and the canal system; the exotic pest plant *Schinus terebinthifolius* is now abundant. The Everglades Blvd. and 116 Avenue location is in relatively better condition with a closed canopy. The ghost orchid was not found but the habitat that remains could still support it. *Schinus* is also abundant because of the

lowering of the water table. Surveys for ghost orchid should be performed from May to September when the plants are in flower as the leafless stems are very difficult to see.

*Roystonea elata* (royal palm) is listed FNAI ranked as G2G4Q/S2 and State Endangered. There is uncertainty among botanists on whether the correct name should be *Roystonea regia*. The only population found is located at the extreme south end of PSSF in a strand swamp/hydric hammock mosaic along the west side of the Faka Union Canal. The ten palms observed are all seedlings ranging from 10 to 20 feet tall and having a clear trunk up to 5 feet tall. They are spread over about one acre located roughly 200 feet or more west of the canal. The origin of these royal palm seedlings should be investigated. Although the deep canal is nearby, the flowing water was one to two feet deep during the October 2000 visit. The hammock was completely dry on the return survey in May 2001. This section will greatly benefit from the restoration of normal hydrology.

*Tillandsia balbisiana* (inflated airplant) is an epiphytic bromeliad listed as State Threatened. It is widespread and often abundant in the wetlands of PSSF.

*Tillandsia fasciculata* (cardinal airplant) is an epiphytic bromeliad listed as State Endangered because of the recent threat of an exotic weevil (*Metamasius callizona*) which kills the plants. It is widespread and can be locally abundant in the basin swamps of PSSF.

*Tillandsia pruinosa* (fuzzy-wuzzy airplant) is a very rare epiphytic bromeliad listed as FNAI G4/S1 and State Endangered. A small population of three plants was found in the south end of the Golden Gate Estates tract southeast of the Everglades Blvd. and 116 Avenue intersection. This section of the strand swamp is in relatively fair condition with a closed canopy. The species was not observed elsewhere during these surveys.

*Tillandsia utriculata* (giant airplant) is an epiphytic bromeliad listed as State Endangered because of the recent threat of an exotic weevil (*Metamasius callizona*) which kills the plants. It was observed in a slough south of Sabal Palm Road in the Belle Meade tract and in the hydric hammock/strand swamp landscape at the very south end of the forest beside the Faka Union Canal.

*Tillandsia variabilis* (= *T. valenzuelana*, soft-leaved wildpine) is an epiphytic bromeliad listed as State Threatened. It is widespread and locally common in the wetlands of PSSF.

#### Exotic Pest Plants

Exotic pest plants are numerous and some populations locally dominant on Picayune Strand State Forest. Eleven of the most common exotic species are shown in Table 3. *Melaleuca quinquenervia* (melaleuca) and *Schinus terebinthifolius* (Brazilian pepper) are by far the two worst pest species. *Melaleuca* trees are a severe problem in basin swamp and wet flatwoods in the west part of the Belle Meade tract. Some sections near Sabal Palm Road are impenetrable thickets where the native

vegetation is barely visible. Outlying populations were recorded in the marl prairie south of the Miller Canal. DOF is combating this scourge with herbicides and biological controls. *Schinus* has utilized disturbed areas along roads and canals to spread nearly throughout the entire PSSF. It is a nearly ubiquitous shrub or small tree invading into many wetland areas where the water table has been lower by the canal system. Even the least disturbed natural communities at the south end such as hydric hammock have *Schinus*.

Representative locations of exotic pest plant species were plotted using ArcView and are shown on the GIS-generated maps in Appendix 2. These locations are by no means complete for widespread species such as *Melaleuca* and *Schinus* but are only meant to give an indication of the areas where they might be found.

Table 3. Exotic pest plant species documented on Picayune Strand State Forest.

<i>Scientific Name</i> Common name	Natural Community on PSSF	Florida Exotic Pest Plant Council Category*	Area Where Found
<i>Casuarina glauca</i> suckering Australian pine	ruderal	1	At old homesite by marl prairie in very south end.
<i>Dioscorea bulbifera</i> air potato	ruderal	1	Along the west side of Miller Blvd. Extension just north of US 41.
<i>Ficus microcarpa</i> laurel fig	strand swamp	1	South end of Belle Meade tract by old homesite on Tomato Road.
<i>Hibiscus tiliaceus</i> mahoe	ruderal	2	South end of Belle Meade tract by old homesite on Tomato Road.
<i>Imperata cylindrica</i> cogon grass	ruderal, especially in flatwoods	1	Golden Gate Estates Tract by canals and roads.
<i>Lantana camara</i> lantana	ruderal and in flatwoods	1	North end of Golden Gate Estates Tract in flatwoods.
<i>Leucaena leucocephala</i> lead tree	wet flatwoods	2	Localized in the area east of Patterson Blvd. by the 66 Avenue extension and at the very south end of the forest along Miller Blvd. Extension.
<i>Lygodium microphyllum</i> small-leaf climbing fern	slough	1	South of Sabal Palm Road in Belle Meade tract.
<i>Melaleuca quinquenervia</i> melaleuca	basin swamp, wet flatwoods, etc.	1	Widespread but especially abundant in west half of Belle Meade tract.
<i>Schinus terebinthifolius</i> Brazilian pepper	flatwoods, swamps, etc.	1	Throughout forest, especially in disturbed areas by canals and roads.
<i>Syzygium cumini</i> Java plum	strand swamp	1	Northeast corner of PSSF and at south end of Belle Meade tract by old homesite on Tomato Road.

\*Florida Exotic Pest Plant Council definitions: Category 1- Invasive exotics that are altering native plant communities by displacing native species, changing community structures or ecological functions, or

hybridizing with natives. Category 2- Invasive exotics that have increased in abundance or frequency but have not yet altered Florida plant communities to the extent shown by Category 1 species.

*Casuarina glauca* (suckering Australian pine) is a tree growing in one location at the edge of the marl prairie south of the Miller Canal. This population covering about a 100 feet diameter circle is restricted to a former homesite.

*Dioscorea bulbifera* (air potato) is a vine growing in small patches along the west side of Miller Blvd. Extension at the very south end of the forest. It appears to have originated from dumped piles of trash. One *Bischofia javanica* (bischofia) sapling tree was also observed growing out of dumped debris.

*Ficus microcarpa* (laurel fig) is a rare tree represented by a single individual (4 inch dbh and 25 feet tall) observed in a strand swamp south of Tomato Road. It is near abandoned homesites and grows in the swamp next to two *Syzigium cumini*.

*Hibiscus tiliaceus* (mahoe) was observed on the north side of Tomato Road by abandoned homesites about 0.5 mile east of the boundary gate. The large mature trees grow into a huge mound next to old cattle pens.

*Imperata cylindrica* (cogon grass) is an infrequently seen grass in areas of past land clearing. Two small patches are east of Patterson Blvd. (along with scattered exotic *Leucaena leucocephala*): 0.5 mile north of the 66 Avenue extension and 0.3 mile west of the forest boundary and at the east end of 55 Avenue. Cogon grass covers a 30 by 100 foot area at the west side of the Faka Union Canal between 56 and 58 Avenues. Other scattered patches occur on the disturbed canal banks and along roads in the north end of the Golden Gates Estates tract.

*Lantana camara* (lantana) is common and widespread shrub in the disturbed mesic flatwoods at the northwest corner of Golden Gates Estates South.

*Leucaena leucocephala* (lead tree) is a small tree localized in the area east of Patterson Blvd. by the 66 Avenue extension and at the very south end of the forest along the Miller Blvd. Extension.

*Lygodium microphyllum* (small-leaf climbing fern) occurs as a small localized population of a few vines found climbing cypress trees in a slough south of Sabal Palm Road.

*Melaleuca quinquenervia* (melaleuca) is a widespread tree nearly throughout PSSF. The highest densities form impenetrable thickets in the basin swamp in the west half of the Belle Meade tract. It is spreading eastward into various wetlands with a few outlying populations in the marl prairie at the south end of PSSF.

*Schinus terebinthifolius* (Brazilian pepper) is a nearly ubiquitous shrub or small tree found throughout PSSF. It is abundant wherever the soil has been disturbed, such as canal banks and roadsides. It has spread into many wetland areas where the water table has been lower by the canal system.

*Syzygium cuminii* (Java plum) is a rare tree found at or near old homesites. One tree grows in “The Boot” at the northeast corner of PSSF about 600 feet north of 66 Avenue extension and 0.7 mile west of the forest boundary. It is next to a faint road where it curves around a small pond. Another population of two individuals (8 inch dbh and 50 feet tall) was observed in a strand swamp south of Tomato Road at the southwest corner of the forest. Another mature tree grows at a nearby abandoned homesite on the south side of Tomato Road and 0.5 mile east of the boundary gate. One *Ficus microcarpa* stands next to the two *Syzygium* in the swamp.

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Appendix 1. Florida Natural Areas Inventory Rank and Status Explanations.

## ELEMENT RANKING AND LEGAL STATUS EXPLANATION

An **element** is any exemplary or rare component of the natural environment, such as a species, natural community, bird rookery, spring, sinkhole, cave, or other ecological feature. An **element occurrence** (EO) is a single extant habitat that sustains or otherwise contributes to the survival of a population or a distinct, self-sustaining example of a particular element. The major function of the Florida Natural Areas Inventory is to define the state's elements of natural diversity, then collect information about each element occurrence.

The Florida Natural Areas Inventory assigns two ranks for each element. The global element rank is based on an element's worldwide status; the state element rank is based on the status of the element in Florida. Element ranks are based on many factors, the most important ones being estimated number of Element occurrences, estimated abundance (number of individuals for species; area for natural communities), range, estimated adequately protected EOs, relative threat of destruction, and ecological fragility.

### FNAI GLOBAL ELEMENT RANK

- 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 human 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 human 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 of 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.
- GU** = due to lack of information, no rank or range can be assigned (e.g., GUT2).
- G?** = not yet ranked (temporary)

### FNAI STATE ELEMENT RANK

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

## FEDERAL LEGAL STATUS

- 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.
- 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.
- PT** = Proposed for listing as Threatened Species.
- C1** = Candidate Species for addition to the list of Endangered and Threatened Wildlife and Plants, Category 1. Taxa for which the USFWS currently has substantial information on hand to support the biological appropriateness of proposing to list the species as endangered or threatened.
- FC2** = Formerly a Candidate Species, Category 2. Category 2 species recently lost this status and are no longer considered candidates for federal listing. Formerly these were considered taxa for which information indicates that proposing to list the species as endangered or threatened is possibly appropriate, but for which conclusive data on biological vulnerability and threat(s) are not currently available to support proposed rules at this time.
- N** = Not currently listed, nor currently being considered for addition to the List of Endangered and Threatened Wildlife and Plants.

## STATE LEGAL STATUS

- LE** = Listed as Endangered Plants in the Preservation of Native Flora of Florida Act. Defined as species of plants native to Florida 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 for listing by Florida Department of Agriculture and Consumer Services (FDACS) as Endangered.
- LT** = Listed as Threatened Plants in the Preservation of Native Flora of Florida Act. Defined as species native to Florida 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.
- PT** = Proposed by the FDACS for listing as Threatened.
- CE** = Listed as a Commercially Exploited Plant in the Preservation of Native Flora of Florida Act. Defined as species native to state which are subject to being removed in significant numbers from native habitats in the state and sold or transported for sale.
- PC** = Proposed by the FDACS for listing as Commercially Exploited Plants.
- N** = Not currently listed, nor currently being considered for listing.

Appendix 2. Locations of natural communities, rare plant species, and exotic pest plant species on Picayune Strand State Forest.

Appendix 3. Plant species lists from selected areas at Picayune Strand State Forest.

**Picayune Strand State Forest** Basin Swamp Survey Site: South Side of Sabal Palm Road

Surveyor(s): Gary E. Schultz

Date: 2001-03-14

Quad: Belle Meade 2608116

Aerial Photo: 3616-7-17

Flown: 1989-04-02

Location: Township 50S Range 27E Section 29 W2

0.7 mi S of Sabal Palm Road, SW of limerock mine

Field Quad #25

**Listed Species**

	Lycopus rubellus	Woodwardia virginica
Campyloneurum costatum	*Lygodium microphyllum	Xyris
Tillandsia balbisiana	Magnolia virginiana	Zizaniopsis milacea
Tillandsia fasciculata	Mecardonia acuminata	

**Other Species**

Amphicarpum	Mikania scandens
muhlenbergianum	Myrica cerifera
Andropogon	Nephrolepis exaltata
Aster carolinianus	Osmunda regalis
Baccharis halimifolia	Oxypolis filiformis
Blechnum serrulatum	Panicum sp.?
Boehmeria cylindrica	Panicum hemitomon
Campyloneurum phyllitidis	Parietaria floridana
Cassytha filiformis	Persea palustris
Centella asiatica	Phlebodium aureum
Cephalanthus occidentalis	Phyla nodiflora
Chrysobalanus icaco	Pinus elliottii
Cladium jamaicense	Pluchea rosea
Dichromena colorata	Polygonum hydropiperoides
Diodea virginica	Polypodium polypodioides
Encyclia tampensis	Pontederia cordata
Erechtites hieracifolia	Rapanea punctata
Erigeron quercifolius	Rhynchospora
Eriocaulon decangulare	Sabal palmetto
Eupatorium capillifolium	Salix caroliniana
Ficus aurea	Sarcostemma clausum
Flaveria linearis?	*Schinus terebinthifolius
Fraxinus caroliniana	Senecio glabellus
Fuirena scirpoidea	Serenoa repens
Heliotropum polyphyllum	Smilax laurifolia
Hypericum fasciculatum	Stillingia aquatica
Hypericum mutilum	Taxodium ascendens
Ilex cassine	Thalia geniculata
Ilex glabra	Thelypteris
Ipomoea sagittata	Tillandsia recurvata
Iva microcephala	Tillandsia setacea
Juncus effusus	Tillandsia usneoides
Lachnocaulon anceps	Toxicodendron radicans
Lindernia grandiflora	Vitis rotundifolia
	Vittaria lineata

**Picayune Strand State Forest** Flatwoods. Survey Site: NW of 48 Avenue and Everglades Blvd

Surveyor(s): Gary E. Schultz

Date: 2001-05-21

Quad: Belle Meade NE 2608125 Aerial Photo: 3616-10-18 Flown: 1989-04-02

Location: Township 50S Range 28E Section 6? 0.1 mi S of I-75 and 0.2 mi W of Everglades

Blvd. Field Quad #17

**Listed Species**

Angadenia berteri

**Other Species**

Amphicarpum muhlenbergianum

Andropogon

Andropogon virginicus?

Aristida simpliciflora?

Aster dumosus?

Baccharis halimifolia

Bidens alba

Blechnum serrulatum

Callicarpa americana

Chiococca pinetorium

Clematis baldwinii

Conyza canadensis

Coreopsis leavenworthii

Cuscuta pentagona?

\*Dactyloctenium aegyptium

Dyschoriste angusta

Elephantopus elatus

Eragrostis

Eryngium yuccifolium

Eupatorium capillifolium

Eustachys petrea

Flaveria linearis

Galactia

Gnaphalium obtusifolium

Hedyotis procumbens

Heliotropium polyphyllum

Ilex glabra

Ipomoea sagittifolia

Iresine diffusa

Lantana camara

Liatis gracilis

Lyonia fruticosa

Melochia hirsuta

Myrica cerifera

Parthenocissus quinquefolia

Paspalum setaceum

Passiflora suberosa

Pectis glaucescens?

Persea borbonia

Phlebodium aureum

Physalis viscosa

Pinus elliottii

Piloblephis rigidus

Pityopsis graminifolia

Pluchea rosea

Polygala grandiflora

Psidium guajava

Pteridium aquilinum

Pterocaulon pycnostachyum

Rhus copallina

Rhynchelytrum repens

Sabal palmetto

\*Schinus terebinthifolius

Serenoa repens

Sida

Sisyrinchium miamiensis

Sideroxylon celastrina

Smilax auriculata

Smilax bona-nox

Solidago sempervirens

Solidago stricta

Spermacoce

Stachytarpheta jamaicensis

Teucrium canadense

Toxicodendron radicans

Trema micranthum

\*Urena lobata  
Vitis rotundifolia

Picayune Strand State Forest Flatwoods. Survey Site: NW of Merritt Blvd and 52 Avenue  
Surveyor(s): Gary E. Schultz and Ann Johnson Date: 2000-10-11  
Quad: Catherine Island 2608124 Aerial Photo: PD3616-11-20 Flown: 1989-04-02  
Location: Township 50S Range 28E Section 0.7 mile S of I-75 Field Quad #7

**Listed Species**

*Elytraria caroliniensis* var *angustifolia*

**Other Species**

*Andropogon*  
*Baccharis halimifolia*  
*Callicarpa americana*  
*Chamaecrista nictitans*  
*Cirsium horridulum*  
*Cladium jamaicense*  
*Coreopsis leavenworthii*  
*Cuscuta pentagona?*  
*Eupatorium capillifolium*  
*Habenaria floribunda*  
*Iresine diffusa*  
*Ludwigia alata?*  
*Parthenocissus quinquefolia*  
*Passiflora suberosa*  
*Phlebodium aureum*  
*Pinus elliottii*  
*Pluchea rosea*  
*Rhus copallina*  
*Rhynchelytrum repens*  
*Sabal palmetto*  
*Schinus terebinthifolius*  
*Schizachyrium*  
*Serenoa repens*  
*Smilax bona-nox*  
*Stillingia sylvatica*  
*Toxicodendron radicans*  
*\*Urena lobata*  
*Vitis rotundifolia*

Picayune Strand State Forest Hammock. Survey Site: Tomato Road west of hunt camp

Surveyor(s): Gary E. Schultz Date: 2001-05-24

Quad: Belle Meade SE 2608115 Aerial Photo: 3616-09-09 Flown: 1989-04-02

Location: Township 51S Range 27E Section 23 W2 and along N side of road. Field Quad #38

### Listed Species

*Myrcianthes fragrans*

*Tillandsia fasciculata*

### Other Species

*Annona glabra*

*Ardisia escalloniodes*

*Blechnum serrulatum*

*Callicarpa americana*

*Cephalanthus occidentalis*

*Cornus foemina*

*Cynanchum*

*Diospyros virginiana*

*Ficus aurea*

*Mikania scandens*

*Nephrolepis biserrata?*

*Parthenocissus quinquefolia*

*Persea borbonia*

*Phlebodium aureum*

*Polypodium polypodioides*

*Psychotria nervosa*

*Psychotria sulzneri*

*Quercus laurifolia*

*Quercus virginiana*

*Rapanea punctata*

*Sabal palmetto*

*Serenoa repens*

*Smilax bona-nox*

*Tillandsia setacea*

*Toxicodendron radicans*

*Vitis rotundifolia*

*Vittaria lineata*

*Ximenia americana*

*Zanthoxylum fagara*

Picayune Strand State Forest Marl Prairie. Survey Site: Bad Luck Prairie

Surveyor(s): Gary E. Schultz Date: 2000-10-27

Quad: Royal Palm Hammock 2508185 Aerial Photo: 3616-10-10 Flown: 1989-04-02

Location: Township 51S Range 28E Section 29 S of Miller Canal. Field Quad #21

**Listed Species**

*Elytraria caroliniensis* var. *angustifolia*

**Other Species**

*Aletris lutea*

*Andropogon glomeratus*

*Aristida simpliciflora*?

*Bigelowia nudata*

*Bletia purpurea*?

*Buchnera americana*

*Cuscuta pentagona*

*Dichromena colorata*

*Eragrostis*

*Eupatorium capillifolium*

*Eupatorium mikanioides*

*Fimbristylis castanea*?

*Hymenocallis palmeri*

*Ilex cassine*

*Lobelia*

*Muhlenbergia capillaris*

*Passiflora pallens*?

*Phragmites australis*

*Pinus elliottii*

Picayune Strand State Forest Swamp Survey Site: Sabal Palm Road deep hole east of mine

Surveyor(s): Gary E. Schultz

Date: 2001-03-14

Quad: Belle Meade SE 2608115

Aerial Photo: 3616-8-13

Flown: 1989-04-02

Location: Township 50S Range 27E Section 28 NE4 S of road

Field Quad #18

**Listed Species**

Epidendrum anceps

Tillandsia balbisiana

Tillandsia fasciculata

Tillandsia variabilis

Persea palustris

Phlebodium aureum

Phyllanthus nodiflora

Pluchea rosea

Polygonum hydropiperoides

Polypodium polypodioides

Pontederia cordata

Psilotum nudum

Psychotria nervosa

Rapanea punctata

Rhynchospora inundata?

Sabal palmetto

Sagittaria lancifolia

Salix caroliniana

Sarcostemma clausum

\*Schinus terebinthifolius

Senecio glabellus

Smilax laurifolia

Taxodium distichum

Thalia geniculata

Tillandsia setacea

Tillandsia usneoides

Toxicodendron radicans

Vittaria lineata

Woodwardia virginica

Zizaniopsis milacea

**Other Species**

Acer rubrum

Aster carolinianus

Baccharis halimifolia

Berchemia scandens

Blechnum serrulatum

Campyloneurum phyllitidis

Canna flaccida

Cephalanthus occidentalis

Cladium jamaicense

Diodea virginica

Encyclia tampensis

Erechtites hieracifolia

Erigeron quercifolius

Eryngium baldwinii

Eupatorium capillifolium

Ficus aurea

Fraxinus caroliniana

Hyptis alata

Ilex cassine

Ipomoea sagittata

Iris hexagona

Itea virginica

Juncus effusus

Lycopus rubellus

\*Melaleuca quinquenervia

Mikania scandens

Myrica cerifera

Nephrolepis exaltata

Osmunda regalis

Parietaria floridana

Picayune Strand State Forest Swamp. Survey Site: Sabal Palm Road- slough S of mine entrance

Surveyor(s): Gary E. Schultz Date: 2001-03-16

Quad: Belle Meade 2608116 Aerial Photo: 3616-7-17 Flown: 1989-04-02

Location: Township 50S Range 27E Section 29 NE4 NE4 SW4

0.5 mi S of Sabal Palm Road & S of limerock mine entrance road Field Quad #32

**Listed Species**

Campyloneurum costatum

Tillandsia balbisiana

Tillandsia fasciculata

Tillandsia variabilis

Rapanea punctata

Sabal palmetto

Salix caroliniana

\*Schinus terebinthifolius

Senecio glabellus

Taxodium ascendens

Thalia geniculata

Thelypteris sp.

Tillandsia setacea

Tillandsia usneoides

Toxicodendron radicans

Vittaria lineata

Zizaniopsis milacea

**Other Species**

Acer rubrum

Annona glabra

Aster carolinianus

Blechnum serrulatum

Campyloneurum phyllitidis

Cephalanthus occidentalis

Encyclia tampensis

Erechtites hieracifolia

Eupatorium capillifolium

Fraxinus caroliniana

Hypericum mutilum

Ilex cassine

Juncus effusus

Lindernia grandiflora

Magnolia virginiana

\*Melaleuca quinquenervia

Myrica cerifera

Nephrolepis exaltata

Osmunda regalis

Panicum hemitomon

Parietaria floridana

Phlebodium aureum

Phyla nodiflora

Pluchea rosea

Polygonum hydropiperoides

Polypodium polypodioides

Pontederia cordata

Psilotum nudum

Picayune Strand State Forest Swamp Survey Site: Sabal Palm Road; S of road

Surveyor(s): Gary E. Schultz Date: 2001-03-16

Quad: Belle Meade 2608116 Aerial Photo: 3616-7-17 Flown: 1989-04-02

Location: Township 50S Range 27E Section 30 SE4 S of road, SW of first gate to S from W  
Field Quad #33

**Listed Species**

Epidendrum rigidum  
Tillandsia balbisiana  
Tillandsia fasciculata  
Tillandsia utriculata  
Tillandsia variabilis

Sabal palmetto  
Salix caroliniana  
Sarcostemma clausum  
\*Schinus terebinthifolius  
Solanum sp.  
Taxodium ascendens  
Taxodium distichum  
Thalia geniculata  
Thelypteris kunthii  
Tillandsia setacea  
Tillandsia usneoides  
Toxicodendron radicans

**Other Species**

Acer rubrum  
Ambrosia artemisiifolia  
Annona glabra  
Aster carolinianus  
Blechnum serrulatum  
Boehmeria cylindrica  
Campyloneurum phyllitidis  
Cephalanthus occidentalis  
Erechtites hieracifolia  
Eupatorium capillifolium  
Ficus aurea  
Fraxinus caroliniana  
Ludwigia repens  
\*Lygodium microphyllum  
Mikania scandens  
Myrica cerifera  
Nephrolepis exaltata  
Panicum  
Panicum hemitomon  
Parietaria floridana  
Phlebodium aureum  
Phyla nodiflora  
Pinus elliottii  
Pluchea rosea  
Polygonum hydropiperoides  
Polypodium polypodioides  
Rapanea punctata

Picayune Strand State Forest Swamp. Survey Site: Tomato Road South of old homesites

Surveyor(s): Gary E. Schultz Date: 2001-05-23

Quad: Belle Meade SE 2608115 Aerial Photo: 3616-09-09 Flown: 1989-04-02

Location: Township 51S Range 27E Section 22 NE4 of SW4 Field Quad #37

**Listed Species**

Epidendrum rigidum  
Tillandsia balbisiana  
Tillandsia fasciculata  
Tillandsia utriculata

Phlebodium aureum  
Pinus elliottii  
Polypodium polypodioides  
Pontederia cordata  
Psilotum nudum  
Psychotria nervosa  
Psychotria sulzneri  
Ptilimnium capillacium  
Rapanea punctata  
Sabal palmetto  
Sagittaria lancifolia  
Salix caroliniana  
Sarcostemma clausum  
\*Schinus terebinthifolius  
Solanum  
\*Syzygium cumini  
Taxodium ascendens  
Teucrium canadense  
Thalia geniculata  
Tillandsia setacea  
Tillandsia usneoides  
Toxicodendron radicans  
\*Urena lobata  
Vittaria lineata  
Zizaniopsis milacea

**Other Species**

Acer rubrum  
Acrostichum danaeifolium  
Ampelopsis arborea  
Annona glabra  
Apios americana  
Aster carolinianus  
Baccharis halimifolia  
Blechnum serrulatum  
Boehmeria cylindrica  
Campyloneurum phyllitidis  
Cephalanthus occidentalis  
Chrysobalanus icaco  
Cladium jamaicense  
Commelina diffusa  
Crinum americanum  
Epidendrum tampensis  
Erechtites hieracifolia  
Eupatorium capillifolium  
Ficus aurea  
\*Ficus microcarpa  
Fraxinus caroliniana  
Hydrocotyle umbellata  
Ilex cassine  
Juncus effusus  
Lycopus rubellus  
Mikania scandens  
Myrica cerifera  
Nephrolepis biserrata  
Parthenocissus quinquefolia

**Picayune Strand State Forest** Swamp Plant List. Survey Site: Tomato Road hunt camp

Surveyor(s): Gary E. Schultz and Ann Johnson Date: 2000-10-12 and 2001-05-23

Quad: Belle Meade SE 2608115 Aerial Photo: 3616-09-09 Flown: 1989-04-02

Location: Township 51S Range 27E Section 23 SE corner of NW4 Field Quad #13

**Listed Species**

Polyradicion lindenii  
Tillandsia balbisiana  
Tillandsia fasciculata  
Tillandsia variabilis

Pluchea odora  
Polygonum hydropiperoides  
Polypodium polypodioides  
Pontederia cordata  
Psilotum nudum  
Rapanea punctata

**Other Species**

Acer rubrum  
Baccharis halimifolia  
Bacopa monnieri  
Berchemia scandens  
Blechnum serrulatum  
Bletia purpurea?  
Boehmeria cylindrica  
Campyloneurum phyllitidis  
Carex gigantea?  
Centella asiatica  
Cephalanthus occidentalis  
Cladium jamaicense  
Conoclinium coelestinum  
Diodea virginica  
Encyclia tampensis?  
Epidendrum anceps?  
Erechtites hieracifolia  
Eupatorium capillifolium  
Ficus citrifolia  
Fraxinus caroliniana  
Hyptis alata  
Ilex cassine  
Magnolia virginiana  
Mikania scandens  
Myrica cerifera  
Nephrolepis biserrata  
Osmunda regalis  
Persea palustris  
Phlebodium aureum  
Phoradendron leucarpum

Sabal palmetto  
Salix caroliniana  
Sarcostemma clausum  
\*Schinus terebinthifolius  
Smilax laurifolia  
Solanum  
Taxodium ascendens  
Tillandsia setacea  
Tillandsia usneoides  
Toxicodendron radicans  
Vitis rotundifolia  
Vittaria lineata  
Woodwardia virginica  
Ximenia americana  
Zizaniopsis milacea

**Picayune Strand State Forest** Strand Swamp. Survey Site: Tomato Road west of hunt camp

Surveyor(s): Gary E. Schultz Date: 2001-05-24

Quad: Belle Meade SE 2608115 Aerial Photo: 3616-09-09 Flown: 1989-04-02

Location: Township 51S Range 27E Section 23 W2 and N of road Field Quad #39

### Listed Species

*Polyradicion lindenii*

*Tillandsia balbisiana*

*Tillandsia fasciculata*

*Tillandsia variabilis*

### Other Species

*Acer rubrum*

*Annona glabra*

*Baccharis halimifolia*

*Blechnum serrulatum*

*Boehmeria cylindrica*

*Campyloneurum phyllitidis*

*Cephalanthus occidentalis*

*Cynanchum*

*Erechtites hieracifolia*

*Ficus citrifolia*

*Fraxinus caroliniana*

*Ilex cassine*

*Myrica cerifera*

*Nephrolepis biserrata*

*Osmunda regalis*

*Parthenocissus quinquefolia*

*Persea palustris*

*Phlebodium aureum*

*Polypodium polypodioides*

*Psychotria nervosa*

*Rapanea punctata*

*Sabal palmetto*

*Salix caroliniana*

*Saururus cernuus*

*Taxodium ascendens*

*Tillandsia setacea*

*Tillandsia usneoides*

*Toxicodendron radicans*

*Vittaria lineata*

Picayune Strand State Forest Swamp. Survey Site: Bad Luck Prairie west end

Surveyor(s): Gary E. Schultz Date: 2001-03-15

Quad: Royal Palm Hammock 2508185 Aerial Photo: 3616-10-10 Flown: 1989-04-02

Location: Township 51S Range 27E Section 36 NE4NE4 0.9 mile S of Miller Canal turn to the E. Field Quad #28

**Listed Species**

Tillandsia balbisiana

Tillandsia fasciculata

Rhynchospora miliacea

Sabal palmetto

Smilax laurifolia

Taxodium ascendens

Teucrium canadense

Tillandsia setacea

Toxicodendron radicans

Vittaria lineata

Ximenia americana

**Other Species**

Acer rubrum

Baccharis glomeruliflora

Berchemia scandens

Blechnum serrulatum

Boehmeria cylindrica

Centella asiatica

Cephalanthus occidentalis

Chiococca pinetorum

Cladium jamaicense

Encyclia tampensis

Eupatorium capillifolium

Ficus aurea

Hymenocallis palmeri

Hypericum fasciculatum

Ilex cassine

Ipomoea sagittata

Lycopus rubellus

Magnolia virginiana

Mikania scandens

Myrica cerifera

Nephrolepis exaltata

Osmunda regalis

Parthenocissus quinquefolia

Persea palustris

Phlebodium aureum

Pinus elliottii

Pluchea rosea

Polypodium polypodioides

Psilotum nudum

Psychotria nervosa

Rapanea punctata

**Picayune Strand State Forest** Swamp Survey Site: Everglades Blvd & 116 Avenue SE

Surveyor(s): Gary E. Schultz and Ann Johnson Date: 2000-10-11, 10-25

Quad: Belle Meade SE 2608115 Aerial Photo: 3616-10-12 Flown: 1989-04-02

Location: Township 51S Range 28E Section 17 0.3 mile E of Everglades Blvd, S of 116 Ave

Field Quad #11

**Listed Species**

Tillandsia balbisiana

Tillandsia fasciculata

Tillandsia pruinosa

\*Schinus terebinthifolius

Taxodium distichum

Tillandsia setacea

Toxicodendron radicans

**Other Species**

Acer rubrum

Annona glabra

Bacopa caroliniana

Baccharis glomeruliflora

Berchemia scandens

Blechnum serrulatum

Boehmeria cylindrica

Campyloneurum phyllitidis

Cephalanthus occidentalis

Cladium jamaicense

Epidendrum sp.?

Ficus aureum

Fraxinus caroliniana

Hydrocotyle umbellata

Ilex cassine

Ludwigia repens

Lycopus rubellus

Mikania scandens

Myrica cerifera

Parthenocissus quinquefolia

Persea palustris

Phlebodium aureum

Pontederia cordata

Psychotria nervosa

Psychotria sulzneri

Quercus laurifolia

Rapanea punctata

Rhynchospora inundata?

Sabal palmetto

Sarcostemma clausum

**Picayune Strand State Forest** Swamp Survey Site: Bad Luck Prairie S of Miller Canal

Surveyor(s): Gary E. Schultz Date: 2000-10-27

Quad: Belle Meade SE 2608115, Royal Palm Hammock 2508185

Aerial Photo: 3616-10-10 Flown: 1989-04-02

Location: Township 51S Range 28E Section 29 S4 of NE4 S of Miller Canal and 0.8 mi E of Everglades Blvd. Field Quad #22

**Listed Species**

Cheiroglossa palmata

Encyclia cochleata

Habenaria distans

Tillandsia balbisiana

Tillandsia fasciculata

Smilax laurifolia

Taxodium distichum

Thelypteris palustris?

Tillandsia setacea

Toxicodendron radicans

Vittaria lineata

Ximenia americana

**Other Species**

Acer rubrum

Acrostichum danaeifolium

Baccharis glomeruliflora

Blechnum serrulatum

Boehmeria cylindrica

Campyloneurum phyllitidis

Chiococca pinetorium

Cladium jamaicense

Cynanchum scoparium

Ficus aurea

Hydrocotyle umbellata

Ilex cassine

Mikania scandens

Myrica cerifera

Parthenocissus quinquefolius

Persea palustris

Phlebodium aureum

Polypodium polypodioides

Psychotria nervosa

Psychotria sulzneri

Quercus laurifolia

Rapanea punctata

Rhynchospora miliacea

Sabal palmetto

\*Schinus terebinthifolius

Sideroxylon reclinatum

Picayune Strand State Forest Swamp. Survey Site: W of Faka Union Canal at S end, N of bend

Surveyor(s): Gary E. Schultz Date: 2001-03-15

Quad: Royal Palm Hammock 2508185 Aerial Photo: 3616-11-11 Flown: 1989-04-02

Location: Township 51S Range 28E Section 33 center Field Quad #31

**Listed Species**

Cheiroglossa palmata  
Tillandsia balbisiana  
Tillandsia fasciculata  
Tillandsia variabilis

Rhynchospora miliacea  
Sabal palmetto  
Sarcostemma clausum  
\*Schinus terebinthifolius  
Serenoa repens  
Sideroxylon reclinata  
Smilax laurifolia  
Spartina bakeri  
Taxodium distichum  
Thelypteris kunthii  
Tillandsia setacea  
Tillandsia usneoides  
Toxicodendron radicans  
Vittaria lineata  
Woodwardia virginica

**Other Species**

Acer rubrum  
Acrostichum danaeifolium  
Annona glabra  
Baccharis glomeruliflora  
Berchemia scandens  
Blechnum serrulatum  
Boehmeria cylindrica  
Chiococca pinetorum  
Cirsium horridulum  
Cladium jamaicense  
Conoclinium coelestinum  
Diodea virginica  
Erianthus giganteus  
Eupatorium capillifolium  
Ficus aurea  
Fraxinus caroliniana  
Hydrocotyle umbellata  
Ilex cassine  
Mikania scandens  
Myrica cerifera  
Nephrolepis exaltata  
Persea palustris  
Phlebodium aureum  
Phyla nodiflora  
Pluchea rosea  
Pontederia cordata  
Psychotria nervosa  
Quercus laurifolia  
Rhynchospora corniculata

Picayune Strand State Forest Swamp. Survey Site: W side of Faka Union Canal at S end

Surveyor: Gary E. Schultz

Date: 2001-05-22

Quad: Royal Palm Hammock 2508185 Aerial Photo: PD3616-11-10 Flown: 1989-04-02

Location: Township 52S Range 28E Section 04 N4 Field Quad #40

**Listed Species**

Cheiroglossa palmata  
Tillandsia balbisiana  
Tillandsia fasciculata  
Tillandsia utriculata

Teucrium canadense  
Tillandsia setacea  
Toxicodendron radicans  
Vittaria lineata

**Other Species**

Acer rubrum  
Acrostichum danaeifolium  
Annona glabra  
Berchemia scandens  
Blechnum serrulatum  
Boehmeria cylindrica  
Campyloneurum phyllitidis  
Cladium jamaicense  
Conoclinium coelestinum  
Cornus foemina  
Erechtites hieracifolia  
Eupatorium capillifolium  
Ficus aurea  
Fraxinus caroliniana  
Ilex cassine  
Mikania scandens  
Myrica cerifera  
Nephrolepis biserrata  
Persea palustris  
Phlebodium aureum  
Pinus elliottii  
Polypodium polypodioides  
Psychotria nervosa  
Quercus laurifolia  
Rapanea punctata  
Sabal palmetto  
Sarcostemma clausum  
\*Schinus terebinthifolius  
Smilax laurifolia  
Taxodium distichum

**Picayune Strand State Forest** Swamp Survey Site: West side of Faka Union Canal at S end  
Surveyor: Gary E. Schultz and Ann Johnson Date: 2000-10-12 and 2001-05-22  
Quad: Royal Palm Hammock 2508185 Aerial Photo: PD3616-11-10 Flown: 1989-04-02  
Location: Township 52S Range 28E Section 4 E2of W2 of SE4 Field Quad #15

**Listed Species**

Cheiroglossa palmata  
Roystonea elata  
Tillandsia balbisiana  
Tillandsia fasciculata

\*Schinus terebinthifolius  
Smilax laurifolia  
Taxodium distichum  
Tillandsia setacea  
Toxicodendron radicans  
Vitis rotundifolia  
Vittaria lineata

**Other Species**

Acer rubrum  
Acrostichum danaeifolium  
Ampelopsis arborea  
Annona glabra  
Blechnum serrulatum  
Boehmeria cylindrica  
Campyloneurum phyllitidis  
Carex gigantea?  
Cephalanthus occidentalis  
Cladium jamaicense  
Cornus foemina  
Ficus aurea  
Fraxinus caroliniana  
Hydrocotyle umbellata  
Ilex cassine  
Myrica cerifera  
Nephrolepis biserrata  
Parthenocissus quinquefolia  
Persea palustris  
Phlebodium aureum  
Pinus elliottii  
Polypodium polypodioides  
Psychotria nervosa  
Psychotria sulzneri  
Quercus laurifolia  
Rapanea punctata  
Rhynchospora miliacea  
Sabal palmetto  
Sarcostemma clausum

Picayune Strand State Forest Swamp Survey Site:

Surveyor(s): \_\_\_\_\_ Date: \_\_\_\_\_

Quad: \_\_\_\_\_ Aerial Photo: \_\_\_\_\_ Flown: \_\_\_\_\_

Location: Township Range Section

**Listed Species**

Asplenium auritum	Pecluma ptilodon	Boehmeria cylindrica
Asplenium serratum	Peperomia glabella	Campyloneurum phyllitidis
Bletia purpurea	Peperomia obtusifolia	Canna flaccida
Bulbophyllum pachyrhachis	Pleurothallis gelida	Carex gigantea
Campylocentrum pachyrrhizum	Polyradicion lindenii	Carex lupulina
Campyloneurum angustifolium	Polystacha concreta	Cassytha filiformis
Campyloneurum costatum	Roystonea elata	Celtis laevigata
Catopsis berteroniana	Sacoila lanceolata	Centella asiatica
Catopsis floribunda	Spiranthes torta	Cephalanthus occidentalis
Catopsis nutans	Thelypteris reticulata	Chrysobalanus icaco
Cheiroglossa palmata	Tillandsia balbisiana	Cissus verticillata
Ctenitis sloanei	Tillandsia fasciculata	Cladium jamaicense
Cyrtopodium punctatum	Tillandsia flexuosa	Conoclinium coelestinum
Encyclia boothiana	Tillandsia pruinosa	Cornus foemina
Encyclia cochleata	Tillandsia utriculata	Crinum americanum
Encyclia pygmaea	Tillandsia variabilis	Cyperus
Epidendrum anceps	Vanilla phaeantha	Dicliptera sexangularis
Epidendrum blancheanum		Dichromena colorata
Epidendrum difforme	<b><u>Other Species</u></b>	Diodea virginica
Epidendrum nocturnum	Acer rubrum	Diospyros virginiana
Epidendrum rigidum	Acoelorrhaphe wrightii	Eleocharis
Epidendrum strobiliferum	Acrostichum danaeifolium	Eleocharis baldwinii
Guzmania monostachia	Ammannia coccinea	Eleocharis cellulosa
Habenaria distans	Ampelopsis arborea	Encyclia tampensis
Harrisella filiformis	Andropogon	Erechtites hieracifolia
Huperzia dichotoma	Annona glabra	Erigeron quercifolius
Ionopsis utricularioides	Apios americana	Eriocaulon decangulare
Lepanthopsis melanantha	Asclepias incarnata	Eulophia alata
Liparis nervosa	Aster carolinianus	Eupatorium capillifolium
Maxillaria crassifolia	Azolla caroliniana	Ficus aurea
Microgramma heterophylla	Baccharis glomeruliflora	Flaveria linearis?
Oncidium undulatum	Baccharis halimifolia	Fraxinus caroliniana
Passiflora pallens	Bacopa caroliniana	Fuirena scirpoidea
	Bacopa monnieri	Habenaria repens
	Berchemia scandens	Hamelia patens
	Blechnum serrulatum	Heliotropium polyphyllum

Hydrocotyle umbellata	Hypericum fasciculatum	Hyptis alata
Hydrocotyle verticillata	Hypericum hypericoides	Ilex cassine
Hymenocallis palmeri	Hypericum mutilum	Ilex glabra
Hypericum cistifolium	Hypoxis leptocarpa	Ipomoea alba
Ipomoea indica	Persea palustris	*Schinus terebinthifolius
Ipomoea sagittata	Phlebodium aureum	Senecio glabellus
Iris hexagona	Phragmites australis	Serenoa repens
Itea virginica	Phyla nodiflora	Sisyrinchium miamiensis
Iva microcephala	Pinguicula pumila	Smilax laurifolia
Juncus	Pinus elliotii	Sphagnum
Kosteletzkya virginica	Pluchea odora	Spiranthes
Lachnocaulon anceps	Pluchea rosea	Stillingia aquatica
Leersia hexandra	Polygonum densiflorum	Taxodium ascendens
Lemna	Polygonum hydropiperoides	Taxodium distichum
Leptochloa	Polygonum punctatum	Thalia geniculata
Lindernia grandiflora	Polypodium polypodioides	Thelypteris dentata
Lobelia feayana	Pontederia cordata	Thelypteris hispidula
Lobelia glandulosa	Proserpinaca palustris	Thelypteris interrupta
Ludwigia repens	Proserpinaca pectinata	Thelypteris kunthii
Lycopus rubellus	Psilotum nudum	Thelypteris palustris
*Lygodium microphyllum	Psychotria nervosa	Tillandsia paucifolia
Lythrum alatum	Psychotria sulzneri	Tillandsia recurvata
Magnolia virginiana	Quercus laurifolia	Tillandsia setacea
Malaxis spicata	Rapanea punctata	Tillandsia usneoides
*Melaleuca quinquenervia	Rhynchospora corniculata	Toxicodendron radicans
Mecardonia acuminata	Rhynchospora divergens	Tripsacum dactyloides
Mikania scandens	Rhynchospora inundata	Typha domingensis
Myrica cerifera	Rhynchospora microcarpa	Typha latifolia
Nephrolepis biserrata	Rhynchospora miliacea	Utricularia
Nephrolepis exaltata	Sabal palmetto	Vaccinium corymbosum
Nuphar lutea	Sabatia bartramii	Viburnum obovatum
Nymphaea elegans	Sabatia calycina	Vitis aestivalis
Nymphaea odorata	Sabatia stellaris	Vittaria lineata
Osmunda cinnamomea	Sacciolepis striata	Vitis rotundifolia
Osmunda regalis	Sagittaria graminea	Woodwardia virginica
Oxypolis filiformis	Sagittaria latifolia	Xyris
Panicum	Salix caroliniana	Zizaniopsis milacea
Panicum hemitomon	Salvinia minima	
Parietaria floridana	Sambucus canadensis	
Parthenocissus quinquefolia	Sarcostemma clausum	
Peltandra virginica	Saururus cernuus	

Picayune Strand State Forest Flatwoods Survey Site:

Surveyor(s): \_\_\_\_\_ Date: \_\_\_\_\_

Quad: \_\_\_\_\_ Aerial Photo: \_\_\_\_\_ Flown: \_\_\_\_\_

Location: Township      Range      Section

**Listed Species**

Bletia purpurea	Andropogon glomeratus	Cyperus surinamensis
Burmannia flava	Andropogon virginicus	Cyperus odoratus
Elytraria caroliniensis var angustifolia	Aristida purpurascens	*Dactyloctenium aegyptium
Gossypium hirsutum	Aristida simpliciflora	Desmodium incanum
Guzmania monostachia	Asclepias lanceolata	Desmodium paniculatum
Ionopsis utricularioides	Aster dumosus	Dichondra caroliniensis
Jacquemontia curtissii	Aster subulatus	Digitaria
Lechea divaricata	Aster tenuifolius	Diodea virginiana
Linum carteri_ smallii	Baccharis halimifolia	*Dioscorea bulbifera
Maxillaria crassifolia	Balduina angustifolia	Diospyros virginiana
Microgramma heterophylla	Bidens alba	Dyschoriste angusta
Pleurothallis gelida	Bigelowia nudata	Eleusine indica
Pteris bahamensis	Buchnera americana	Eragrostis
Pteroglossaspis ecristata	Callicarpa americana	Erianthus giganteus
Spiranthes lanceolata var paludicola	Campanula floridana	Erigeron quercifolius
Spiranthes torta	Centella asiatica	Erigeron strigosus
Stillingia sylvatica ssp tenuis	Cenchrus incertus	Eremochloa ophiuroides
Thelypteris reptans	Chamaecrista fasciculatus	Eryngium yuccifolium
Tillandsia balbisiana	Chamaecrista nictitans	Erythrina herbacea
Tillandsia fasciculata	Chamaesyce hypericifolia	Eupatorium capillifolium
Tillandsia flexuosa	Chloris	Euphorbia polyphylla
Tripsacum floridanum	Cirsium horridulum	Fimbristylis castanea
Vernonia blodgettii	Cladium jamaicense	Flaveria linearis
Zephyranthes simpsonii	Clematis baldwinii	Gaura angustifolia
	Coelorachis rugosa	Gnaphalium obtusifolium
	Commelina diffusa	Hedyotis corymbosa
	Conoclinium coelestinum	Helianthus angustifolius
	Conyza canadensis	Heliotropium polyphyllum
	Coreopsis leavenworthii	Hypericum cistifolium
	Crotalaria purshii	Hypericum hypericoides
	Crotalaria spectabilis	*Imperata cylindrica
	Cuscuta pentagona	Iresine diffusa
	Cynanchum scoparium	Juncus
	Cyperus compressus	Justicia angusta
	Cyperus ligularis	Liatris garberi
	Cyperus planifolius	

**Other Species**

Aeschenomene americana  
Agalinis obtusifolia  
Agalinis purpurea  
Aletris lutea  
Ampelopsis arborea  
Andropogon

Liatris gracilis  
Lindernia grandiflora  
Ludwigia maritima  
Ludwigia  
Nephrolepis  
\*Neyraudia reynaudiana  
Oxalis corniculata  
Panicum dichotomiflorum  
Panicum gymnocarpum  
Parthenocissus  
  quinquefolia  
Paspalum  
Pectis glaucescens  
Pennisetum purpureum  
Phragmites australis  
Phyllanthus caroliniensis  
Phyla nodiflora  
Physalis viscosa  
Pinus elliottii  
Piriqueta caroliniana  
Pityopsis graminifolia  
Plantago  
Polygala grandiflora  
Polypremum procumbens  
Pteridium aquilinum  
Pteris tripartita  
Pteris vittata  
Pterocaulon pycnostachyum  
Quercus laurifolia  
Quercus virginiana  
Rhus copallina  
Rhynchelytrum repens  
Rhynchospora divergens  
Rhynchospora microcarpa  
Richardia scabra  
Rubus trivialis  
Rudbeckia hirta  
Ruellia caroliniensis  
Sabal palmetto  
Sabatia brevifolia  
Samolus valerandi

Mecardonia acuminata  
\*Melaleuca quinquenervia  
Melanthera parvifolia  
Melochia hirsuta  
\*Schinus terebinthifolius  
Schizachyrium  
Schoenolirion albiflorum  
Serenoa repens  
Sesbania  
Sida  
Sisyrinchium miamiensis  
Sideroxylon celastrina  
Smilax auriculata  
Smilax bona-nox  
Solidago sempervirens  
Solidago stricta  
\*Sorghum halapense  
Sporobolus  
Stachytarpheta jamaicensis  
Teucrium canadense  
Tillandsia paucifolia  
Tillandsia recurvata  
Tillandsia usneoides  
Toxicodendron radicans  
\*Urena lobata  
Verbena scabra  
Vicia acutifolia  
Vigna luteola  
Viola affinis  
Vitis aestivalis  
Vitis rotundifolia  
Vitis shuttleworthii  
\*Wedelia trilobata

Melothria pendula  
Muhlenbergia capillaris  
Murdannia nudiflora  
Myrica cerifera

Picayune Strand State Forest Hammock Survey Site:

Surveyor(s): \_\_\_\_\_ Date: \_\_\_\_\_

Quad: \_\_\_\_\_ Aerial Photo: \_\_\_\_\_ Flown: \_\_\_\_\_

Location: Township      Range      Section

**Listed Species**

Asplenium auritum  
Bletia purpurea  
Bulbophyllum pachyrhachis  
Campyloneurum angustifolium  
Catopsis berteroniana  
Catopsis floribunda  
Cheiroglossa palmata  
Ctenitis sloanei  
Cyrtopodium punctatum  
Encyclia boothiana  
Encyclia cochleata  
Encyclia pygmaea  
Epidendrum anceps  
Epidendrum difforme  
Epidendrum nocturnum  
Epidendrum rigidum  
Guzmania monostachia  
Liparis nervosa  
Microgramma heterophylla  
Oncidium undulatum  
Passiflora pallens  
Peperomia glabella  
Peperomia obtusifolia  
Pleurothallis gelida  
Polypodium ptilodon  
Polystacha concreta  
Ponthieva racemosa  
Roystonea elata  
Thelypteris grandis  
Thelypteris kunthii  
Tillandsia balbisiana  
Tillandsia fasciculata  
Tillandsia flexuosa  
Tillandsia paucifolia  
Tillandsia utriculata

**Other Species**

Acacia pinetorum  
Acer rubrum  
Acoelorrhaphe wrightii  
Acrostichum danaeifolium  
Ammannia coccinea  
Ampelopsis arborea  
Annona glabra  
Apios americana  
Ardisia escalloniodes  
Berchemia scandens  
Blechnum serrulatum  
Boehmeria cylindrica  
Bursera simaruba  
Callicarpa americana  
Capparis flexuosa  
Celtis laevigata  
Cephalanthus occidentalis  
Chiococca alba  
Chrysobalanus icaco  
Chrysophyllum oliviforme  
\*Citrus  
Cladium jamaicense  
Coccoloba diversifolia  
Conoclinium coelestinum  
Cornus foemina  
Ctenitis submarginalis  
Cyperus  
Dichondra caroliniensis  
Diospyros virginiana  
Drypetes lateriflora  
Encyclia tampensis  
Erythodes querceticola  
Erythrina herbacea

Eugenia axillaris  
Eugenia foetida  
\*Eugenia uniflora  
Eulophia alata  
Hamelia patens  
Hippocratea volubilis  
Hydrocotyle umbellata  
Hypericum hypericoides  
Hypoxis leptocarpa  
Ilex cassine  
Ipomoea alba  
Ipomoea indica  
Magnolia virginiana  
Malaxis spicata  
Mikania scandens  
Morus rubra  
Myrica cerifera  
Nephrolepis biserrata  
Nephrolepis exaltata  
Ocotea coriacea  
Oplismenus setarius  
Osmunda cinnamomea  
Osmunda regalis  
Oxypolis filiformis  
Panicum dichotomum  
Panicum gymnocarpum  
Parietaria floridana  
Parthenocissus quinquefolia  
Passiflora suberosa  
Pentalinon lutea  
Persea borbonia  
Phlebodium aureum  
Pinus elliotii  
Pluchea odora  
Pluchea rosea  
Polypodium polypodioides  
Psilotum nudum  
Psychotria nervosa  
Psychotria sulzneri  
Quercus laurifolia  
Quercus virginiana

Ficus aurea  
Ficus citrifolia  
Habenaria floribunda  
Habenaria quinqueseta  
Randia aculeata  
Rapanea punctata  
Rhus copallina  
Sabal palmetto  
Sageretia minutiflora  
Salvia occidentalis  
\*Schinus terebinthifolius  
Sideroxylon foetidissimum  
Sideroxylon salicifolium  
Simarouba glauca  
Smilax laurifolia  
Stachytarpheta jamaicensis  
Teucrium canadense  
Thelypteris dentata  
Thelypteris kunthii  
Tillandsia paucifolia  
Tillandsia recurvata  
Tillandsia setacea  
Tillandsia usneoides  
Tournefortia hirsutissima  
Toxicodendron radicans  
Tripsacum dactyloides  
Verbesina virginica  
Viburnum obovatum  
Vitis aestivalis  
Vittaria lineata  
Ximenia americana  
Zanthoxylum fagara